External Aspects of State Aids

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State aid
and the single market

Abbreviations and symbols used

Member States

B	Belgium
DK	Denmark
D	Germany
WD	West Germany
EL	Greece
E	Spain
F	France
IRL	Ireland
I	Italy
L	Luxembourg
NL	The Netherlands
A	Austria
P	Portugal
FIN	Finland
S	Sweden
UK	United Kingdom
EU-9	European Community excluding Greece, Spain and Portugal
EU-10	European Community excluding Spain and Portugal
EU-12–	European Community, 12 Member States including West Germany
EU-12+	European Community, 12 Member States including Germany
EU-15+	European Community, 15 Member States including Germany
EUR-11	Group of 11 Member States participating in monetary union

Currencies

ECU	European currency unit
EUR	Euro
ATS	Austrian schilling
BEF	Belgian franc
DEM	German mark (Deutschmark)
DKK	Danish krone
ESP	Spanish peseta
FIM	Finnish markka
FRF	French franc
GBP	Pound sterling
GRD	Greek drachma
IEP	Irish pound (punt)
ITL	Italian lira
LUF	Luxembourg franc
NLG	Dutch guilder
PTE	Portuguese escudo
SEK	Swedish krona
CAD	Canadian dollar
CHF	Swiss franc
JPY	Japanese yen
RUR	Russian rouble
USD	US dollar

Other abbreviations

ACP	African, Caribbean and Pacific States having signed the Lomé Convention
ECSC	European Coal and Steel Community
EDF	European Development Fund
EIB	European Investment Bank
EMCF	European Monetary Cooperation Fund
EMS	European Monetary System
ERDF	European Regional Development Fund
Euratom	European Atomic Energy Community
Eurostat	Statistical Office of the European Communities
GDP (GNP)	Gross domestic (national) product
GFCF	Gross fixed capital formation
LDCs	Less developed countries
Mio	Million
Mrd	1 000 million
NCI	New Community Instrument
OCTs	Overseas countries and territories
OECD	Organisation for Economic Cooperation and Development
OPEC	Organisation of Petroleum Exporting Countries
PPS	Purchasing power standard
SMEs	Small and medium-sized enterprises
toe	Tonne of oil equivalent
:	Not available

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Introduction and synopsis ([1])

1. Outline of this volume

This edition of *European Economy* forms part of a series of publications on the economics of Community competition policy which started with *European Economy* No 40 of May 1989 on 'Horizontal mergers and competition policy in the European Community'. This was followed in September 1991 by an edition (No 48) on the control of State aids and in 1994 by a further edition (No 57) on merger control. Also in 1994, an analysis of 'State aid control in the context of other Community policy' was published in Supplement A, No 4, of *European Economy* and an annual series of supplements on mergers and acquisitions was launched.

The control of State aids is an almost unique feature of competition policy in the European Union. Only in the EFTA is there a similar system of supranational control over the subsidies granted by States to enterprises, a system which owes its existence to the need to harmonise competition policies in the European Economic Area. Other regional economic groupings and even federal States lack mechanisms for controlling the subsidies granted by their constituent parts. For example, in the United States the federal government has no mechanism for controlling or even coordinating the aids granted by the States, even though such aids are covered by the GATT subsidies code.

The benefits of State aid control are clear. In many circumstances, subsidies can reduce economic welfare by weakening the incentives for firms to improve their efficiency and by enabling the less efficient to survive or even expand at the expense of the more efficient. The resulting distortions of trade can lead to friction between national governments and to retaliatory measures which may be a source of further inefficiency. Furthermore, unless some supranational discipline is imposed, competition between governments to attract investment can lead to costly subsidies races. The EU's system of control, based on an agreed set of fundamental principles firmly anchored in the Treaties therefore makes an important contribution towards ensuring that the benefits of economic integration can be realised.

However, the practical application of these basic principles must evolve to keep pace with economic and technological change, with the emergence of new political priorities, such as the increased emphasis placed on the protection of the environment over the last decade, and with new developments in economic theory. Consequently, Community State aid policy has undergone a number of important changes since the publication of the previous edition of *European Economy* devoted to this subject. Furthermore, the completion of the Uruguay Round, including the adoption of a new 'subsidies code', has profoundly affected the international context of that policy. The purpose of the present volume is to update the information and economic analysis contained in the 1991 edition in the light of these developments and of the latest statistical information and also to present studies by academic experts on some particularly important issues.

Part I of this volume was written by officials of the Directorate-General for Economic and Financial Affairs. It contains three chapters. The first examines the economic arguments which may be advanced to justify State aids. Chapter 2 summarises the data gathered by the Directorate-General for Competition for the Commission's fourth, fifth and sixth surveys of State aid in the Community, covering the period 1990–96. The third chapter outlines the changes in Community State aid policy which have occurred since 1991.

Part II consists of four studies by external experts. The first of these, by John Fingleton, Frances Ruane and Vivienne Ryan, looks at the question of the definition of

([1]) By Roderick Meiklejohn.

the relevant market for the purposes of State aid control ([1]). The object of market definition is to permit an accurate assessment of the extent of the impact of a State aid, in terms of the economic activities which are affected and the geographical scope of the effects. The second study, by David Harbord and George Yarrow, discusses the policy issues raised by restructuring and privatisation of State-owned firms. The problems of applying the 'market economy investor principle' are examined in the light of the 'options theory' of investment and the impact of restructuring aid on the behaviour of the recipient firm is discussed in the context of asymmetric information, capital market imperfections and the differing objectives of managers and owners. The third study, by Lars-Hendrik Röller and Christian von Hirschhausen, examines the special case of restructuring and privatisation in the new German *Länder*. Although the integration of the former German Democratic Republic presented both the German Government and the Community with a set of problems which were historically unique in both their nature and their gravity, the authors point out that the lessons which can be learned from this experience will be of great value when the EU is enlarged to include other former Communist countries. In the last study, Patrick Messerlin discusses the international context of Community State aid policy; in particular the links with trade policy and the implications of the 1994 GATT subsidies code.

We are grateful to the staff of Directorate G of the Commission's Directorate-General for Competition for their assistance in preparing this volume and in particular to Ansgar Held, Anne Houtman, Keith Joels and Reinhard Walther. However, it should be noted that the opinions expressed in both parts of this volume are those of the authors and do not necessarily reflect the attitude of the Commission.

2. The economics of State aid

Chapter 1 of Part I gives a brief overview of the main economic arguments which may be used to justify State aids and the principal counter-arguments.

Essentially, the justifications for State aid are based on the identification of market failures. The standard model of perfect competition demonstrates that total welfare would be maximised by the free working of market mechanisms given a number of radical assumptions, such as perfect information and foresight, perfect factor mobility, no economies of scale, no externalities, etc. However, since the real world does not correspond to these assumptions, government intervention may increase total welfare.

We consider nine types of market failure which are relevant to the analysis of State aids:

— public goods, e.g. lighthouses, street lighting, policing;

— merit goods, e.g. cultural and educational services;

— increasing returns to scale, which tend to lead to oligopolistic or monopolistic markets;

— externalities, both positive (e.g. pollution) and negative (e.g. vocational training or research and development);

— imperfect or asymmetric information, notably in capital markets, which may affect the ability of small and medium-sized enterprises and innovative firms to obtain finance;

— institutional rigidities, notably in the labour market;

— imperfect factor mobility, which is relevant to the problems of unemployment and regional disparities;

— frictional problems of adjustment to changes in markets, which constitute a special aspect of imperfect factor mobility;

— subsidisation of foreign competitors.

Income redistribution constitutes an additional reason for government intervention. In general, State aids seem to be a poor instrument for achieving this objective, since they are difficult to target on those most in need and since, by favouring particular activities or products, they distort patterns of consumption and production.

We argue that, even when a market failure is correctly identified, government intervention should not be a foregone conclusion. Whether such intervention will actually be welfare enhancing depends on a number of

([1]) This study was commissioned by the Directorate-General for Industry (DG III).

factors, including in particular whether it is unduly influenced by certain interest groups ('government capture') and whether the government possesses better information and foresight than the market players. Assuming that there is a real need for intervention and the government is, in principle, capable of doing so effectively, the next step is to design an appropriate instrument for achieving the objective. This is by no means an easy task. The correct type of instrument has to be chosen from a wide panoply including regulation, direct government provision of certain goods or services, taxation and State aids. Each of these instruments has its own peculiar advantages and disadvantages. Consequently, each deserves separate analysis and, indeed, each is subject to different rules in the EC Treaty. The fact that we concentrate here on State aids should not be taken to imply that they are necessarily the most distortive or the least efficient instruments.

Whichever instrument is chosen, the precise rules governing the intervention must be carefully considered to minimise distortions of competition, evasion, abuse or the creation of perverse incentives. The interactions with other government measures need to be taken into account. Last, but not least, it must be borne in mind that the government's expenditure in implementing the policy has to be financed and this is likely to lead to some loss of efficiency in other parts of the economy.

3. Trends and patterns of State aids

Chapter 2 of Part I summarises the results of the Commission's surveys of State aids in the Community for the period 1990–96. The chapter, written by Eric Vanhalewyn, discusses the data relating to the following sectors: manufacturing industry, coal, railways, airlines, financial services and fisheries. Agriculture is not included because many Member States have failed to provide information on aid to this sector.

The total volume of aid granted by Member States has declined gradually since 1990. In the period 1994–96, the annual average amount of State aid granted in the EU as a whole was ECU 84 billion, representing 1.3 % of non-agricultural GDP and 2.6 % of total government spending. The most striking reductions in aid levels occurred in Luxembourg and Germany ([1]). Nevertheless, the level of aid in Germany (1.9 % of non-agricultural GDP) is the second highest in the EU after Italy (2.0 %). Spain and the United Kingdom, on the other hand, registered significant increases between 1992–94 and 1994–96, while still remaining below the average level of aid expressed as a percentage of GDP.

The overall decline was due mainly to reductions in support for manufacturing, which forms the largest category of aid (46 % of the total). Aid to the coal industry (10.5 % of the total) and fisheries (0.4 %) has also been reduced, while the amount of subsidies to the railways (40 % of the total) has remained quite stable. On the other hand, air transport and financial services have received large and increasing amounts of rescue and restructuring aid in the period 1992–96, although the volume concerned (3.3 % of the total) is small compared to the aid granted to manufacturing and coal mining.

For the EU as a whole, State aid to manufacturing industry represented 4 % of the sector's value added in 1990 but only 2.7 % in 1996. The largest reductions occurred in Belgium, Greece, Portugal and the United Kingdom. In Denmark and Spain, however, the trend is upwards. In Germany, there was a sharp increase in aid to manufacturing following reunification but a substantial reduction was achieved in the period 1994–96.

Regional aid accounts for the largest proportion of aid to manufacturing (57 % in 1994–96) and most of this goes to the most disadvantaged regions (so-called Article 87(3)(a) regions). However, an analysis of the figures indicates that the intensity of the aid, in terms of ECU per inhabitant, is a function of the Member State's budgetary resources rather than of the relative degree of economic disadvantage suffered by the regions.

Aids for horizontal objectives, i.e. objectives not linked to specific regions, sectors or firms, constitute the next largest category of aids to manufacturing (30 % in 1994–96). Within this group, the largest sub-categories are aids for research and development and aids to small and medium-sized enterprises.

Aids for specific sectors and enterprises constituted only 13 % of all aids to manufacturing in 1994–96. However, the proportion was much larger in Belgium, Spain and Portugal.

([1]) In Luxembourg the decline in the volume of aid was due to a very steep fall in social aid granted to the railways. In Germany there was a large reduction in aid to manufacturing, especially in the new *Länder*.

Aid to the railways fell considerably in Luxembourg and Portugal in 1994–96 by comparison with 1992–94. However, there were large increases in the Netherlands and the UK.

In 1994–96, as in the previous three-year period, Germany accounted for two thirds of all aid granted to the coal industry, while Spain and the UK accounted for about 12 % each and France for 9 %. Most of the aid granted by France and the UK was used to finance redundancy payments and other social costs of restructuring. The German and Spanish aids, on the other hand, were mainly devoted to supporting current production and were therefore much more likely to create distortions in the markets for coal.

France and Portugal accounted for most of the aid granted to airlines and financial services between 1992 and 1994. In these sectors almost all of the aid was used for rescue and restructuring operations. Together with the 'ad hoc' aids granted to individual manufacturing enterprises, these aids represent the most worrying development in the patterns of State aid spending since 1990. 'Ad hoc' aids represented only 6 % of the total in 1990 but 16 % in 1996 ([1]). France, Italy and Spain accounted for more than 80 % of these aids. Such aids can pose a serious threat to the conditions of competition since the individual aid awards tend to be very large and the beneficiaries are usually large companies, often operating in oligopolistic markets.

4. Recent developments in State aid policy

In Chapter 3 of Part I, Stephan Simon outlines the main changes that have occurred in the Community's State aid policy since 1991.

The Council recently adopted two important regulations in the field of State aids. The first of these ([2]) aims to reduce the administrative burden on both Member States and the Commission, thereby enabling the Commission to concentrate on the most important State aid cases. The second regulation ([3]) contains a number of procedural provisions aimed at improving the effectiveness of State aid control.

Part of Chapter 3 is devoted to the problem of determining whether a measure constitutes a State aid subject to the prohibition of Article 87(1) EC and other measures.

If a measure is subject in principle to the prohibition of Article 87(1), the Commission then has to decide whether any of the possible grounds for derogation are applicable. These grounds are specified in paragraphs 2 and 3 of Article 87, as well as Article 86(2). Under Article 87, the most frequently applied reasons for derogation relate to regional development and 'the development of certain economic activities' (e.g. support for SMEs or research). Article 86(2) can be applied to aid which is necessary to enable an undertaking to carry out public service obligations ('services of general economic interest'). In 1992 the Treaty of Maastricht introduced a new possibility for derogation in favour of 'aid to promote culture and heritage conservation' (Article 87(3)(d)). In order to clarify the application of the derogations, the Commission has issued a number of guidelines and 'frameworks'. These rules are classified as 'horizontal' or 'sectoral' according to whether they apply to all or most sectors of the economy or to a single sector.

In recent years the Commission has adopted new horizontal rules concerning aid for environmental purposes, R & D, small and medium-sized enterprises (SMEs), rescue and restructuring, employment aids and regional aid.

The guidelines on aid for environmental protection were published in 1994. They contain detailed rules on aid for investments in equipment to reduce pollution, save energy or exploit renewable energy sources.

A new framework for R & D aids was issued in 1996. This framework, like the GATT/WTO subsidies code, distinguishes between three types of R & D: fundamental research, industrial research and precompetitive development. The framework lays down the permissible aid intensities for each type of R & D and defines the eligible costs. It allows supplementary aid for SMEs, projects carried out in assisted regions, projects of

([1]) Excluding aid granted in the new *Länder* of Germany by the Treuhandanstalt and successor organisations.

([2]) 'Council Regulation (EC) No 994/98 on the application of Article 87 and 88 of the EC Treaty to certain categories of horizontal State aid', OJ L 142, 14.5.1998.

([3]) 'Council Regulation (EC) No 659/99 laying down detailed rules for the application of Article 88 of the EC Treaty', OJ No L 83, 27.3.1999.

Community importance, collaboration between universities and businesses and cross-border projects.

The latest guidelines on aid for SMEs date from 1996. They contain a new definition of the notions of SMEs and small enterprises and allow investment aid to be granted to SMEs even outside assisted regions. This aid is limited to 15 % of the investment cost for small enterprises and 7.5 % for medium-sized firms.

In 1997 the Commission adopted new guidelines on aid for rescue and restructuring. These guidelines confirm the policy laid down in 1994 with the addition of special provisions relating to agriculture.

The employment aid guidelines adopted in 1995 express a favourable attitude towards aid which promotes the creation of new jobs when it is targeted at SMEs, assisted regions or unemployed people who experience special difficulties in finding jobs.

In July 1998 the Commission adopted the first framework of rules governing aid for vocational training. This framework expresses a generally favourable attitude towards such aid, because of the strong externalities usually associated with training. A distinction is made between general training, which provides the employee with skills and knowledge which are readily transferable to other firms and sectors, and specific training, which is more precisely tailored to the needs of the individual firm. Higher aid rates are permitted for general training because the associated externalities are greater.

The new regional aid guidelines published in 1998 set out for the first time in a single text rules which were adopted piecemeal in a series of documents published from 1971 onwards. The guidelines also contain a number of innovations; the most important of which are aimed at restricting the geographical scope and the intensity of regional aids.

Since 1991 the rules governing aid to specific sectors have all been revised. In the shipbuilding industry, contract-related operating aid is still allowed pending ratification by the United States of an OECD agreement which would outlaw such aid. In the synthetic fibres industry, the aid code adopted by the Commission in 1996 allows the granting of regional investment aid if the project involves a significant decrease in capacity or if the project concerns a sub-sector with a structural shortage of supply but does not entail a significant increase in capacity.

Under the new steel aids code, effective from 1997 until the expiry of the ECSC Treaty in 2002, the horizontal rules on aid for R & D and environmental protection are now applicable to the steel industry. The possibility of granting aid for the closure of steel plant has been extended to partial closures, i.e. the closure of a firm which forms part of a larger group. The Commission decision of 1993 concerning aid to the coal industry, also valid until 2002, allows aid for a variety of purposes, including operating aid to cover the difference between production costs and market prices. However, Member States are required to submit plans for rationalising the industry so as to reduce production costs.

A new framework for aid to the motor vehicle industry was adopted in 1997. This framework extends the scope of the rules to cover component suppliers which are closely integrated with the assemblers. To benefit from regional aid, manufacturers must now show that there is a viable alternative location in the EEA or the central and east European countries for the project. The maximum permissible amount of aid is based on the additional costs of investing in the assisted region rather than the alternative location.

In the transport sector, the Commission adopted guidelines on aid to airlines in 1994 and a new strategy for shipping in 1996. The guidelines on air transport anticipated the completion of the liberalisation of the sector in 1997. They cover all types of aid but concentrate in particular on the application of the market economy investor principle ([1]) and the rules concerning rescue and restructuring aids. The new maritime strategy aims to enable Member States to compete with flags of convenience while establishing a clear framework of rules for the control of State aid to the sector.

Finally, in agriculture the 1992 CAP reform allowed Member States to grant direct income support to farmers in return for undertakings to adopt or continue farming practices beneficial to the environment. The R & D framework and the guidelines on rescue and restructuring aid have been amended to include specific provi-

([1]) The market economy investor principle (MEIP) distinguishes between State aid and transactions which can be expected to yield a return for the State which would be considered adequate by a private investor. As the latter transactions do not distort competition, they cannot be deemed to constitute aid.

sions on agriculture and in 1995 rules were introduced for the first time to control the subsidisation of interest on short-term loans to farmers.

5. Market definition

In Section 2 of this introduction, we have seen that State aids can help to correct allocative distortions. However, national aids which are specifically targeted on particular sectors or firms will almost inevitably lead to distortions of competition, especially when the aids are only available to domestic firms and when domestic firms operating in the same market are treated differently.

Even if it is safe to assume that State aids will normally distort competition, we need to delimit the market or markets which will be affected. This need arises firstly from the provisions of Article 87(1), which stipulates that the State aid rules of the Treaty apply to an aid only 'in so far as it affects trade between Member States'. This implies that the geographical extent of the market must be defined. Secondly, in order to clarify the trade-off between the competition distortions and the possible benefits arising from an aid, we have to know who are the competitors likely to be affected.

The paper by John Fingleton, Frances Ruane and Vivienne Ryan examines this problem and suggests basic principles and procedures for defining the relevant market in State aid cases. The paper is primarily concerned with assessing the effects of State aids on intra-Community trade, rather than the overall impact on welfare.

Market definition has hitherto been almost exclusively studied from the point of view of antitrust policy (control of cartels, monopolies and mergers). The paper therefore starts by examining the literature and the practice of EU and US authorities in the field of antitrust policy.

(a) Market definition in antitrust cases

Antitrust policy is mainly concerned with the adverse welfare consequences of market power. The analyses undertaken in antitrust cases therefore focus on assessing the market power of the firm or group of firms under consideration. The definition of the relevant market is a first step in this assessment. It requires the identification of those products which are substitutable for the products in question from the user's point of view (demand-side substitutability), production facilities which could be easily switched to the production of competing products (supply-side substitutability), definition of any temporal aspects ([1]) which limit the scope of competition, and delimitation of the geographic boundaries within which effective competition takes place. Conventionally, demand-side and supply-side substitutability, together with temporal aspects are grouped together under the heading of product market definition, while the spatial dimension is often discussed separately as geographic market definition. However, because of the interactions between all these elements and because sequential treatment can lead to excessively narrow market definitions, they should ideally be taken together. The narrower the market definition the more likely it is that a firm will be found to be dominant.

A number of methods can be used to define relevant markets. These include comparing the characteristics of different products and measuring the own-price elasticity of demand for the firm's product and the cross-price elasticities. On the supply side, an attempt is usually made to discover how easily producers of other products could switch to the product in question in reaction to an increase in the price of the latter. Here, two factors are particularly important: the sunk costs incurred in switching production and the time needed to do so.

The geographic extent of the relevant market depends in particular on two factors: transport costs and trade barriers (tariffs and non-tariff barriers such as import quotas or technical standards). Amongst the more precise methods proposed for defining the geographic market is the Elzinga-Hogarty test, which widens the geographic scope of the candidate market until there is little trade in either direction between that market and areas outside it. Another approach is to study the correlations of prices and price movements in different areas. However, both of these methods have important drawbacks.

Fingleton et al. point out that, in considering the geographic dimension of the market, it is important to distinguish between production inputs and final products.

([1]) Temporal aspects may include, for example, the perishability of the product and variations in demand according to the time of day or season (e.g. in transport or telecommunications).

Even if an input cannot be traded between areas, if there is competition between suppliers of the final product in different areas this will restrain any market power in the upstream market.

The temporal dimension of the market can be important in some cases, for example, if the product is a service (telecommunications, airline flights, electricity supply) or if a physical product is perishable or consumed at the point of sale. If a product has a short life span, competition is likely to be less intense than if the product is durable, even when the market structures are similar. Other temporal aspects to be taken into account are the lengths of time needed for consumer tastes to change or for manufacturers to switch to the production of a different product.

In a brief comparison of the practice of US competition authorities and the European Commission, Fingleton et al. note several differences. In the United States more emphasis is placed on the need to define all the dimensions of the market. The US authorities also make greater use of econometric techniques. In the EU, where it is often difficult to obtain consistent statistical data for all countries, much greater reliance has to be placed in the comparison of product characteristics. Although both the US authorities and the European Commission take account of supply-side substitutability, the latter considers that only switching that can occur rapidly and with small costs is relevant to market definition. Entry that may occur in the longer term is considered at a later stage in the investigation of a case, in the analysis of competitive conditions on the market.

(b) A framework for analysing the impact of State aids

The authors start their discussion of State aids by proposing a taxonomy of aids, since the extent of an aid's impact depends on certain characteristics. They distinguish between markets, industries and 'industry sectors'. 'Industry sector' covers not only the industry itself but also its suppliers and customers. State aids are divided into four categories:

— 'activity-specific' aids, which are given to firms to support the provision of a particular product or service,

— 'firm-specific' aids, which are granted to particular firms without conditions as to the product or service provided,

— 'industry specific' aids, for which all firms in the industry are eligible,

— 'region/area-specific' aids, available to any firm within a given geographic area.

A further important distinction made later in the paper is between selective aid to a single firm or group of firms and aid granted to all firms in an industry, industry sector or region.

After a brief discussion of the rationale for State aids, the paper analyses the impact of different types of aid in the context of autarky. When a selective aid is granted, one would expect the recipient's output to be higher than it would have been without the aid. However, the total output of the industry will not necessarily change. The effects on the industry and the industry sector will be as follows:

— an increase in the recipient's profits,

— reduced profits for non-aided firms,

— increased profits for upstream suppliers of the aided firm,

— reduced profits for suppliers of non-aided firms.

If the aid does not result in greater productive efficiency (e.g. through economies of scale or scope), the above changes will cancel each other out at the aggregate level and the effects of the aid will be purely distributional ([1]). If total industry output rises, the negative effect on the profits of non-aided firms and their suppliers will be smaller. In this case, there will be a positive market effect (higher consumer surplus) and the overall effect on the industry sector will be positive (higher demand for inputs).

An aid granted to all existing firms in an industry will result in higher total output and profits in that industry and increased consumer surplus. The demand for inputs will increase. However, potential new entrants may be deterred if they do not qualify for the aid.

([1]) However, the aid will have a negative effect on overall efficiency if the increase in output of the aided firm leads to a decrease in the output of more efficient firms.

The authors point out that when region-specific or activity-specific aid is given the effects will depend on the degree of geographical mobility of firms or their ability to switch to the production of different products. A region-specific aid will result in an increase in the market share of firms established in the assisted region. However, if firms can relocate their production activities without heavy sunk costs, they will tend to do so rather than suffer a loss of market share. Similarly, an activity-specific aid will tend to encourage firms to enter the aided activity if the barriers to entry are not too high. Hence, where there is a high degree of mobility between regions or activities, region-specific or activity-specific aids are potentially available to all firms. This tends to maximise the overall benefits of aid in the market.

In an open economy, State aids will have positive or negative spillover effects on other countries — hence the need to control them at the EU level. Governments will tend to grant aids when they appear to yield domestic benefits and to ignore the negative cross-border effects even when the latter outweigh the former. The authors show that the distribution of costs and benefits between the aid-awarding country and its trading partners will depend on the geographic boundaries of the markets for both final products and inputs. When both markets are national, there are no cross-border effects. When the output market is national but the industry uses inputs that are traded internationally, there is no effect on other countries at the industry level but a positive industry sector effect, because of the increased demand for inputs. On the other hand, if the output market is international and the input market is national, negative cross-border effects can be expected at both levels. Finally, if both markets are international, the cross-border effect of the aid will be negative at the industry level but the net effect on foreign suppliers of inputs is uncertain. These results demonstrate that accurate definition of the relevant market has an important role to play in Community State aid control.

(c) The concept of the market in State aid analysis

In the final section of their paper, the authors underline the fact that market definition is used for different purposes in antitrust cases and in State aid control. In the former, market definition is a first stage in the assessment of restraints on market power, while in the latter it is a means of tracing the effects of aid across markets. Although many elements of antitrust market definition procedures can be transposed to the context of State aids, the authors point to the following differences:

- In State aid control, attention should be paid to the ability of the aid recipient to switch production from one market to another. If the recipient can switch easily, even activity-specific aid may result in spillovers into other markets (e.g. where there are joint costs or where cross-subsidisation can occur).

- All the input and output markets must be defined where the recipient has a significant market share as either supplier or purchaser, including those markets where it might potentially operate.

- Particular attention must be paid to the geographic dimension of the market and to the possibility that the aid might lead the recipient to change its geographic market strategy.

- In defining the geographic market, greater weight should be given to potential competition. Although today's geographic market may lie within national boundaries, the Commission should be concerned with the prospects for creating a wider market and, hence, with the possibility that an aid may raise the barriers to entry.

After outlining how these principles would be applied to aids to airlines, the steel industry and foreign direct investment, the authors conclude by recommending that the Commission adopt a common framework for assessing the competition effects of all aids in the context of well defined markets, using the taxonomies proposed in the paper. Finally, their specific procedural suggestions include the following:

- Identify all markets in which the aid recipient sells output or buys inputs. In addition, relevant input markets should be included even if the recipient is vertically integrated and therefore not present on those markets.

- Attempt to identify markets which the recipient could enter if given the aid.

- Even if the aid is activity-specific, assess the possibilities of spillover to other activities.

- When delimiting the geographic extent of the market, take account of the potential for future widening.

- When the relevant markets have been defined, assess how costs and benefits are distributed between participants in the markets and between Member States. The degree of price competition in the market can be a guide to the distribution between producer surplus and consumer surplus.

(d) Main conclusions

This paper demonstrates the importance of careful analysis of an aid's impact on the markets concerned. This presupposes an accurate definition of those markets. The analysis has to be undertaken in a longer term perspective than that which is usual in antitrust cases, bearing in mind the trend towards a widening of the geographic extent of many markets. It is also important to take account of the possibility that an aid may affect not only the market in which a company sells its products but also on upstream markets where it buys its inputs and neighbouring markets. Dynamic effects of the aid, including possible incentives for the aided firm to enter into new markets and the reactions of competitors, also need to be considered.

6. Restructuring and privatisation

The contribution by David Harbord and George Yarrow focuses on the policy issues raised by government support for the restructuring of publicly owned firms to prepare them for privatisation. However, many of the valuable insights provided by this paper can also be applied to cases where privatisation is not envisaged.

(a) Problems posed by the application of the MEIP

Harbord and Yarrow start by outlining the Community rules relevant to restructuring aids. In the context of these rules, the first question to be asked when examining the provision of public funds for restructuring a State-owned company is whether the government is acting as any other major shareholder might act in similar circumstances, i.e. whether the 'market economy investor principle' (MEIP) is satisfied. If this is so, the transaction cannot be considered as State aid, since this would constitute discrimination on the basis of ownership, which is expressly forbidden by Article 222 of the EC Treaty. The MEIP is explained in some detail in a Commission communication of 1993 ([1]), but the practical application of this principle can pose a number of problems, because the probable behaviour of a hypothetical 'market economy investor' is often difficult to determine.

Harbord and Yarrow devote a substantial part of their paper to the problem of applying the MEIP. They point out that the elementary theory of the firm, which predicts that a firm will exit from a market when its revenues fail to cover its avoidable costs, does not correspond to observed reality. In industries with heavy sunk costs, there may be long periods when price-cost margins exceed 'competitive' levels and other long periods when firms remain in the market while incurring operating losses. In such cases, it should not be assumed that high price-cost margins necessarily imply long-run excessive profits or abuse of market power or that prices below short-run variable costs necessarily constitute dumping or predatory behaviour.

This observation can be explained by the 'options theory' of investment. The elementary theory tacitly assumes that the firm has only one opportunity to enter or exit from the market (or to expand or reduce capacity). The options theory, on the other hand, takes into consideration the value of the option of waiting for uncertainty about prices (or costs) to resolve itself. The value of this option is positively related to the level of expected demand (or costs) and the degree of uncertainty. However, if the remaining life of the assets is short or if it is expected that they will soon become obsolete as a result of technological progress, the value of waiting will be lower.

The net present value of the waiting option is compared with that of the exit costs, adjusted to take account of the fact that, after exiting, the firm acquires the option to re-enter should market conditions improve sufficiently. When the waiting option, even if negative, is more advantageous than exit, it is rational for the investor (the State) to continue to finance operating losses. The authors conclude that 'the mere observation that a firm is receiving financing to cover operating losses, with no particular expectation that the firm will be restored to profitability, is not sufficient to infer that

([1]) 'Application of Articles 87 and 88 of the EEC Treaty and of Article 5 of Commission Directive 80/723/EEC to public undertakings in the manufacturing sector', OJ C 307, 13.11.1993.

the firm is receiving 'State aid'. A rational private owner/investor will provide such financing when exit or shut-down costs are high enough.'

(b) The form of financial assistance

Harbord and Yarrow stress the need to pay attention to the form of the financial assistance provided by the State. Private investors would tend to prefer forms which give less discretion to management, especially when the poor past performance of the firm is attributable partly to poor management and when no management restructuring is envisaged. In such circumstances, private investors are likely to favour a loan rather than a debt write-off or an injection of equity capital. Thus, in applying the MEIP to decide whether an intervention constitutes State aid, the Commission needs to ask not only whether a private investor would provide the funds, but also in what form?

If the MEIP, interpreted in the light of the options theory, is not satisfied and the government intervention is therefore deemed to constitute State aid, the second stage of the analysis is to consider whether trade and competition are distorted by the aid.

The effects of aids on the firm's behaviour are first discussed in the light of the elementary theory of the firm, which leads us to expect that the incentives will differ according to the type of cost which is affected by the aid. Three types of cost are distinguished:

— variable costs, i.e. those which vary in the short term with output,

— avoidable fixed costs, i.e. costs which do not vary with output in the short term but can be recovered upon exit from the industry,

— unavoidable fixed costs (or sunk costs), i.e. costs which cannot be recouped on exit.

According to the elementary theory, a subsidy that reduces a firm's variable costs will, by affecting marginal cost, usually influence the firm's production decisions. An aid that affects avoidable fixed costs, such as an investment aid for the acquisition of new equipment, can be expected to influence the firm's decisions concerning capacity (i.e. entry and exit decisions). On the other hand, an aid which changes a firm's sunk costs, e.g. by paying off past debts, should not influence profit-maximising behaviour.

The traditional theory of the firm denies that financial structure has much influence on the competitive behaviour of private-sector firms. However, the theory draws a sharp distinction between the private and public sectors, in particular because the latter is subject to financial constraints, i.e. public sector firms do not have ready access to capital markets but must rely on their retained earnings or capital injections from the State to finance new projects. Consequently, State aid should affect the behaviour of public sector firms and private sector firms in very different ways.

However, Harbord and Yarrow point out that the above conclusions must be substantially modified if we relax the assumption that private firms maximise profits, allow for the possibility of asymmetric information between owners and managers and accept that capital markets are imperfect.

Most of the analyses which, in contrast to the traditional model of corporate decision-making, assign an important role to financial variables are based on the notion of conflicts of interest between borrowers and lenders and between the managers and owners of companies. Harbord and Yarrow identify four conclusions which can be drawn from these analyses and which could be important for the assessment of State aids:

(1) Managers' incentives are affected by the financial structure of the firm and its cash-flow position. Managers typically have less freedom to pursue their own objectives when debt/equity ratios are high.

(2) When investors have insufficient direct information, the financial position of the firm conveys important signals to the market about the objectives and behaviour of the managers. Since market values are affected by the investors' interpretation of these signals, managers have to take into account the effects of their decisions on the financial variables.

(3) Low-quality firms or high-risk borrowers can constrain the ability of high-quality firms or low-risk borrowers to raise finance (credit rationing).

(4) The financial position of a firm can affect its ability to pursue anti-competitive or predatory strategies.

The implications of these conclusions for State aid policy are as follows:

- Aid may influence market behaviour even if it affects only non-avoidable costs (e.g. an unconditional lump-sum payment). However, the effect of such aid is difficult to predict.

- Credit market failures constitute a possible justification for aid, provided that the aid is granted to all firms facing similar capital market imperfections.

- The existence of information asymmetries means that the internal cost of finance may be less than the external cost, i.e. current insiders will be willing to provide funds under conditions not acceptable to outsiders. Consequently, when the State is the owner of a firm, the behaviour of an outside private investor may not be an appropriate benchmark for judging whether the MEIP is satisfied.

(c) Assessment of the impact of the aid on the market

With more specific reference to the problems posed by State aid to support ailing marginal firms, Harbord and Yarrow start from the basic premise that such aid should be given only if the net welfare effect is positive. However, if there is more than one marginal firm in the industry, the aid should be targeted in priority on the most efficient of them, since there would otherwise be a risk that the survival of the aided firm would lead to the exit of a more efficient enterprise. Community control of State aid has an important role to play in this respect, since national governments are not likely to attach sufficient weight to the effects of the exit of firms in other Member States.

In highly concentrated homogeneous goods industries, maintaining a marginal firm in business can be welfare-enhancing because of the price effect of preventing further concentration. In highly competitive markets, however, the main result of supporting ailing firms will be to reduce the output per firm and the welfare effect will therefore be negative. In differentiated goods industries, since consumers may benefit from the availability of the additional varieties offered by the marginal firm, the net welfare effect may be positive even if there is no impact on prices.

(d) Privatisation

The last part of the study is concerned with the particular problems of State aid control which arise in privatisation cases. When public firms are sold to individuals, rather than other commercial enterprises, the sale is unlikely to involve any element of State aid, even if the share price rises sharply after privatisation. However, when a firm is sold to another commercial enterprise at less than its market value, there may be a distortive effect on markets where the purchaser is active. An open and unconditional tendering procedure should ensure that the price corresponds to the true market value of the firm, but Harbord and Yarrow warn that the social value of the firm may differ from its private value, since the highest bid may be tendered by the firm on which the acquisition will confer most market power. If one is confident that the normal competition rules are sufficient to deal with this problem, no special precautions need to be taken. However, the authors suggest that, in certain circumstances, it may be necessary to adjust the application of the MEIP to take account of increases in market power ([1]).

They also point to the need for particular vigilance when there is a continuing strong relationship between the State and the privatised firm, as in the case of public utilities which are subject to regulation or of firms which supply goods or services to the government. In such cases, the Commission needs to ensure, for example, that the State does not impose explicit or implicit obligations which favour certain customers or suppliers of the privatised firm and does not confer on the firm a privileged status in public procurement.

(e) Main conclusions

Summing up, Harbord and Yarrow emphasise that an adequate assessment of a rescue and restructuring case has to take account of complex interactions between the particular combination of measures implemented and the market and regulatory environments, including the capital market. In applying the MEIP, it is important to take a realistic view of the exit decisions of private firms faced with exit and re-entry costs, which mean that existing facilities have an 'options value'. At all stages of the analysis (MEIP, assessment of viability after restructuring, evaluation of the terms of privatisa-

([1]) For example, one may legitimately be concerned with market power which falls short of level of dominance, as defined in the case law relating to Article 82 of the EC Treaty.

tion) attention should be paid to dynamic factors such as the rate of technical progress and the future evolution of the market and regulatory environments in which the firm operates.

The authors' analysis shows convincingly that the application of the MEIP is not straightforward. However, incorporating the 'options theory' into the assessment of State aid cases would probably pose difficult practical problems due to the difficulty of gathering reliable information about such factors as future market prospects.

Concerning the assessment of the impact of aid, the authors point in particular to two major conclusions. Firstly, the aid's influence on the firm's behaviour will depend on whether it affects variable or fixed costs and, if the latter, whether these are avoidable or unavoidable. Secondly, it is important to consider the structure of the market in which the firm operates, because the net welfare effect of the aid depends on the degree of concentration and whether the product is homogeneous or differentiated.

7. The case of the new German *Länder*

Lars-Hendrik Röller and Christian von Hirschhausen examine the transformation process in the former GDR from command to market economy. The processes of restructuring and privatisation in the new *Länder* presented unique characteristics, requiring special solutions also in the context of Community State aid policy. The authors first take a general look at the economic rationale of the massive flows of State aid, distinguishing between static and dynamic arguments, before examining two industries, shipbuilding and synthetic fibres, in more detail.

(a) Peculiarities of the east German experience

According to the authors, the east German experience was unique for several reasons. Firstly, the industrial units were not simply public enterprises but multifunctional units where the physical production was just one activity among many others, including a variety of social functions. Before any negotiation with investors interested in acquiring production capacity could take place, the multifunctional socialist *Kombinate* had to be split up and restructured, a process referred to as 'enterprisation'. Between 1990 and 1994, 2 500 combines were split up and 14 000 new enterprises created. Secondly, the time frame was very tight because of the monetary union in July 1990 and the complete breakdown of the trade relations with the former Soviet bloc in 1991. This post-socialist restructuring is therefore very different from classical restructuring inside the EU, which normally takes several years or decades instead of months to a few years as in this case.

The institutional setting was also unique. One single institution was in charge of the whole process, the State agency Treuhandanstalt (THA), which had almost unlimited funds for massive expenditures before privatisation and generous State aid thereafter. As a result of the THA's investments, new and quite often state-of-the-art production capacity was added to the western markets. This form of industrial policy in the new *Länder* was in permanent conflict with the EC State aid rules, in particular the 'guidelines on aid to the rescuing and restructuring of companies in difficulties'. However, the Commission acknowledged the uniqueness of the task and allowed a more lenient approach to be taken (under the name 'Treuhand-Regime' in place until 31.12.1995).

The authors do not recommend the THA approach as a role model for the institutional framework in the central and east European countries but advocate solutions adapted to the differing situations. Privatisation can take many different forms, from classical auctioning to the best bidder to mass-privatisation via vouchers. However, privatisation is a necessary but insufficient condition for the needed structural change. While privatisation has been under way for a while in the central and east European countries, enormous further structural change lies ahead. So far, true strategic restructuring is rare; the markets are characterised by more dominant firms than in established market economies, while most new firms enter the markets at a very small scale and grow very slowly ([1]).

(b) Economic arguments for State intervention

Röller and von Hirschhausen analyse the restructuring of east German industry using two groups of arguments which can justify State intervention from an economic point of view. The first group is headed 'static arguments'. State aid may have positive effects, if it increases competition in an otherwise imperfectly com-

([1]) Fingleton, J., Fox, E., Neven, D. and Seabright, P. (1996) 'Competition policy and the transformation of central Europe', *CEPR*, p. 39.

petitive market. State aid can create a viable competitor, thereby increasing competition, lowering prices and ultimately increasing consumer welfare. The conditions are that the amount of aid granted to increase the number of viable competitors should be relatively small, that there is no collusive behaviour among the players and that economies of scale are not such that new entry, by obliging existing suppliers to reduce their output, will significantly raise their marginal costs.

A second line of arguments takes into account the dynamic effects of State aid for restructuring. Temporary support to a potentially viable enterprise can result in establishing an efficient competitor over the long run. In the case of the former GDR combines, this meant separating productive and social functions as well as limiting the risk of short-term disappearance. Keeping an enterprise afloat could also have positive externalities in the sense of setting in motion a bandwagon of other (private) investors. Another dynamic argument in favour of State aids is the possible shifting of rents to the home country or region.

(c) Two case studies: shipbuilding and synthetic fibres

The static and dynamic arguments for State aid were used to assess the outcome of State aid in two cases, namely the shipbuilding and the synthetic fibre industry in the new *Länder*.

Case 1: The shipbuilding industry

The shipbuilding industry of the GDR consisted of one *Kombinat* with seven yards. Before privatisation, this *Kombinat* was split up into five companies according to a master plan drawn up by THA. As a condition for clearing the restructuring aid, the Commission demanded that 40 % of the old capacity be scrapped. To preserve 6 500 jobs the THA spent DEM 6.3 billion (ECU 550 000 per job). The PPR ratio (private investment over public expenditure) was low: 0.05 (for ECU 1 of public money, 0.05 of private investment).

From a static point of view this State aid had no positive impact. There was already overcapacity in the European and world markets of 22 % and 27 % respectively, there was intense competition and a high flexibility of product ranges (and hence low economies of scale). As a consequence, the reduction of dead-weight losses would appear marginal compared to the massive amounts spent.

From a dynamic point of view it is too early to make a final assessment. The east German shipbuilding industry has been rapidly integrated into large western shipbuilding groups and is now the most productive in Europe. Because of the impressive increase in the productivity of the east German shipyards it is even questionable whether a real reduction in capacity has occurred. According to the authors, it seems reasonable to suspect that other European yards have suffered.

Case 2: Synthetic fibres

Here the one and only *Kombinat* has been split into 10 companies. In comparison to the shipyard case only ECU 215 000 have been spent per job saved and the PPR ratio also looks better (0.12).

As in the shipbuilding case, there is no positive impact from the static perspective. Overcapacities of 25 % have persisted in the European market, and the market structure was highly competitive before. It is also too early to judge the dynamic trade-off. Small, modern producers have been created, some of them integrated into international groups. The impact on European competitors is, according to the study, rather small.

(d) Main conclusions

Röller and von Hirschhausen conclude that from a static perspective there was no economic efficiency gain from the State aids granted to the two industries examined. Indeed, they judge the result of five years of Treuhandanstalt management as being negative from the static point of view, but the question of the dynamic effects remains open. State aids were used to create productive and competitive enterprises. When all investment projects are completed in a couple of years, the new *Länder* will possess some of the most modern production facilities and organisations in the world. Whether these facilities will stand alone as 'cathedrals in the desert' or become industrial cores of a flourishing industrial landscape remains to be seen.

8. The international context

In his paper, Patrick Messerlin discusses the interrelationships between State aid policy and trade policy, with particular reference to the 1994 GATT/WTO subsidies code (SAG). He stresses that subsidies should not be considered in isolation but as complementary to or substitutes for trade policy measures. Subsidies are a

better instrument than trade measures for achieving objectives not directly related to trade flows, such as the correction of domestic market failures.

(a) The relationship between subsidies and trade measures

Messerlin's paper starts by outlining three conflicting points of view on the effects of subsidies. The 'mercantilist' approach focuses on the effects of foreign subsidies on the interests of domestic producers and disregards the interests of domestic consumers. This approach favours countervailing subsidies or other retaliatory measures to discipline foreign subsidies. The 'pure trade theory' approach, on the other hand, tends to emphasise the benefits that foreign subsidies confer on domestic consumers and stresses that subsidies are less distortive than alternative forms of protection (import duties or non-tariff barriers). Finally, the 'political economy' approach leads to the conclusion that subsidies should be constrained in the interest of economic efficiency in the country granting the aids, because they are easily captured by vested interests.

Messerlin argues that trade policies tend to treat trade restriction and trade expansion asymmetrically. Thus, under GATT rules import tariffs are, within limits, regarded as an acceptable instrument of protection while export subsidies are forbidden per se. Importing countries may take anti-subsidy measures which could lock both the subsidising country and its trade partners into the most protectionist world possible.

Messerlin then examines the Community's experience in controlling State aids. He notes that some commentators had expected the single market programme (SMP) to lead to a big upsurge in State aids as Member States attempted to compensate for other forms of protection eliminated by that programme. In fact, this increase did not occur. The author suggests the following explanations:

- The SMP was mainly concerned with manufacturing, where most trade barriers had already been eliminated. The liberalisation of services is still in its infancy.

- Enterprises may have been able to erect private barriers to replace the government-imposed barriers.

- Without trade barriers, the budgetary cost of providing significant protection through subsidies is too high.

In relation to this last point, the author outlines the views of the 'Australian school' of economists, who hold that subsidies tend to be greatest in the presence of moderate trade barriers. When trade barriers are very high, subsidies are unnecessary. When trade barriers have been abolished, subsidies are too costly. Hence, the most effective way of eliminating subsidies is to ensure free trade.

Messerlin notes that subsidies can take many forms, some of which, such as direct grants, are easy to identify and quantify. While others, such as preferential loans, are quite easy to detect, the aid element may be difficult to estimate. Finally, aids in the form of capital injections or the conversion of loans into equity may be difficult both to identify and to quantify. Analysing a sample of cases dealt with by the Commission in the period 1984–92, Messerlin concludes that there is some evidence that stricter control has led Member States to make greater use of the less transparent forms of aid. He notes that, with the exception of Germany, the Member States which give relatively large volumes of aid tend to have greater recourse to the less transparent forms.

The analysis of the relationship between subsidies and trade measures is made difficult by the lack of data on the sectoral distribution of State aids. As a proxy for aid volumes, Messerlin uses a sectoral breakdown of the sample of cases showing the number of different forms of aid per case. The wider the variety of aid forms used to support a sector, the greater the propensity to subsidise that sector is assumed to be. The evidence presented suggests, as the 'Australian school' would predict, that industries protected by high trade barriers are more heavily subsidised than those which are more open to world trade. Furthermore, Messerlin notes that in the service sectors the beginnings of liberalisation appear to be accompanied by a trend towards more State aid. An annex on the steel sector shows that the effect of trade barriers initiated by the United States in the 1960s, followed by the EC in the 1970s, has been to isolate the European, American and Japanese steel markets from each other. Production quotas under the Davignon Plan of the 1980s hindered the development of efficient electric arc furnace technology (minimills) in the Community, while the main effect of sub-

sidies granted to Community steel producers seems to have been to raise the effective price per tonne (including subsidy) to the world level (including transport costs).

(b) The GATT/WTO subsidy rules

The next part of the paper is devoted to the GATT/WTO subsidy rules. These rules are based on Articles XVI and VI of the 1947 GATT and initially focussed on export subsidies. A party to the agreement may take countervailing measures (CVMs) if its domestic industry is harmed by subsidies granted by another party. These CVMs may take the form of countervailing duties (CVDs). Alternatively, the injured party may accept an undertaking by the subsidising country to limit exports or to fix a minimum price. The GATT approach is open to criticism because the margins of subsidisation tend to be overestimated and because the rule that exporters may not absorb CVDs means that the imposition of these duties is tantamount to fixing a minimum price.

The 1994 GATT/WTO subsidies code is an interpretation of Articles XVI and VI, which remain unchanged. The code gives a wide definition of the concept of subsidy and stipulates that subsidies are actionable only if they are specific. The notion of a specific subsidy is very close to that of a State aid falling under Article 87(1) of the EC Treaty. Subsidies for exports and import substitution are forbidden per se. Subject to certain conditions, aids for R & D, disadvantaged regions and environmental protection are non-actionable ([1]). The main difference between actionable and non-actionable subsidies is that CVMs may be taken against the latter only if they are specifically authorised by the WTO Committee on Subsidies and Countervailing Measures.

Comparing the WTO rules with those of the Community, Messerlin notes that the latter are *de jure* less strict because they provide more possibilities for derogations. However, he considers that the Community rules are based on sounder economic foundations. The Community rules emphasise the effects of an aid rather than the form and distortions of competition rather than adverse effects on domestic industry. The WTO system focuses on the interests of import-competing producers to the detriment of consumers. It does not take into account the possibility that the situation before the subsidy may have been non-competitive (i.e. the market in the importing country may have been monopolistic or oligopolistic). Furthermore, the WTO code assumes a direct link between the aid intensity and adverse effects. An adverse effect is presumed to exist if the subsidy amounts to more than 5 % of the value of the product, while no finding of adverse effect can be made if the subsidy is less than 1 %. Furthermore, the Community rules permit more efficient enforcement by means of an order to withdraw the aid. In the absence of a negotiated settlement, the WTO rules offer only the possibility of imposing countervailing measures.

(c) The future of anti-subsidy measures in the WTO

In the next section of his paper, Messerlin discusses the future of anti-subsidy measures in the framework of the WTO. Noting that the United States has had recourse to anti-subsidy measures much more often than any other party (371 cases since 1979, compared to 11 in the EC), he asks whether the US attitude is likely to change under the new code. While the number of anti-subsidy complaints in the United States has declined over the period 1980–92, the percentage of cases in which subsidies were found increased, as did the proportion of findings of injury. While the officially estimated subsidy margins were often very high, Messerlin quotes independent estimates by Morkre and Kelly which suggest that, under realistic assumptions, the injury to US domestic producers has been insignificant in all but two industries.

The new GATT/WTO subsidies code has required few major changes to the US regulations. The main changes reflect the stricter attitude towards subsidies for import substitution and the relaxation of the rules in relation to aid for R & D, regional development and environmental protection. The WTO rules on the calculation of subsidies differed little from the United States' established practice. Although the new code requires the parties to follow more rigorous procedures before implementing CVMs, Messerlin suggests that there are ample possibilities for circumventing these requirements. However, since subsidies granted at the sub-federal level are included for the first time in the scope of the code, the United States may be obliged to relax its attitude because of the importance of aid granted by the States, over which the federal government has no control. Furthermore, Messerlin notes that there is quite strong support in the United States for a more interventionist

([1]) In an annex Messerlin compares the code's rules on these types of aid with the equivalent Community rules.

industrial policy, which might also lead to a more accommodating approach to subsidies granted by other countries.

(d) Main conclusions

In his conclusion, Messerlin advocates a unilateral approach: greater self-discipline by all countries. Governments should consider the overall level of protection afforded to domestic industries by both subsidies and trade measures. A useful tool for this purpose is the concept of effective rates of assistance (ERAs), developed in Australia. By combining this approach with a critical analysis of the interactions between different measures, the true costs and impact of subsidies and trade measures can be made more transparent. The author hopes that greater transparency will lead governments to exercise greater restraint.

PART I

Chapter 1

The economics of State aid

by R. Meiklejohn

The principal economic justifications for State aid can be subsumed under the general heading of market failures. Nine main types of market failure are relevant to the analysis of State aids:

— public goods,

— merit goods,

— increasing returns to scale,

— externalities,

— imperfect or asymmetric information,

— institutional rigidities,

— imperfect factor mobility,

— frictional problems of adjustment to changes in markets,

— subsidisation of foreign competitors.

However, to justify government intervention, it is not enough to identify a market imperfection. The scale and form of the intervention must, as far as possible, be suited to the importance and nature of the problem. The assessment of the importance of a market failure poses very difficult problems. Externalities are, by definition, not the subject of market transactions and it is therefore difficult to measure their extent or to impute a value to them. Furthermore, the choice of the appropriate policy instrument is not simple. In the case of environmental protection, for example, the possible instruments would include regulation, taxation and tradable emission licences as well as State aids. Each of these approaches has advantages and drawbacks from the points of view of economic efficiency and competition policy.

Finally, it should be borne in mind that many State aids are motivated, at least in part, by an objective of income redistribution. As a general rule, however, if the aim is to raise the living standards of the poorest members of society, this can be more efficiently achieved by direct income support than by State aids, since the latter will distort patterns of consumption and production in a much more pronounced way. Furthermore, direct transfers can be more accurately and comprehensively targeted on the poor than subsidies to particular activities or products. Consequently, when income redistribution is the main motivation of State aid it is probable that this will be a response to lobbying by an influential interest group rather than a reflection of a real concern for equity.

1.1. Public goods

Public goods are usually defined by the terms ‘non-excludability’ and ‘non-rivality’. The first term means that access to the good cannot be restricted to those who are prepared to pay for it. The second term means that enjoyment of the good by one person does not reduce its availability to other users. The classic examples are lighthouses, street lighting and radio and television broadcasting before the introduction of encoding and decoding techniques. Other services, such as policing, do not correspond precisely to this definition but can be regarded as public goods because it would be very difficult, if not impossible, to create an efficient market for them. Since there is no market for public goods, State financing of their provision, i.e. when a public authority either provides the service directly or acts as purchaser, does not in itself give rise to competition concerns. However, if the public authorities practise some form of discrimination in awarding contracts for the provision of the necessary goods and services or in levying taxes to pay for the public good, distortions of competition may occur at the level of the markets for inputs.

1.2. Merit goods

Merit goods are goods whose consumption, if determined by the working of the free market, would fall short of the level which the government considers desirable even in the absence of externalities or economies of scale. In other words, the government can be said to identify a market failure which consists of an underestimation by the consumer of the utility of certain goods, so that demand at the market price would fall short of the level regarded as optimal by the government. The provision of such goods is therefore subsidised or financed entirely from State resources. Typical examples include education, cultural and health services, although it is also possible to detect some externalities arising from the provision of such services.

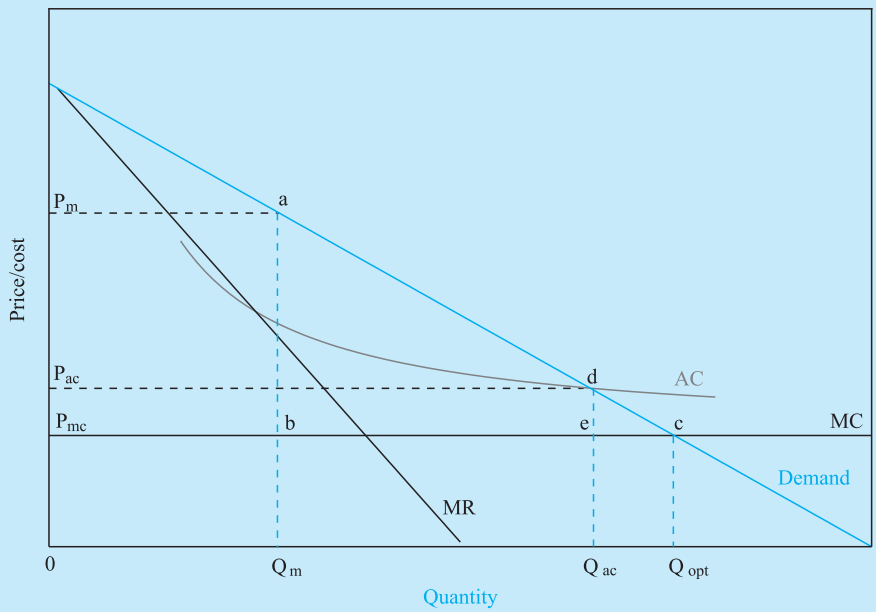
1.3. Economies of scale

Where industries are characterised by continuing economies of scale (i.e. where marginal costs are not increasing), markets are not perfectly competitive. Output is likely to be produced by a limited number of firms. A monopolistic or oligopolistic market structure will result in prices above average costs and quantities below the social optimum. In such circumstances, State aids may be an appropriate means of enhancing economic efficiency and even promoting competition.

Graph 1 depicts the case of a monopoly. In some markets of this type, the State may intervene with regulatory measures to restrict price to average cost. It may also grant a subsidy to cover the difference between average cost and marginal cost. Traditional examples would be railways, telecommunications (but here set-up costs are being greatly reduced by new technologies), electricity and gas transmission. The graph shows the effect on efficiency of such measures in the case of a monopoly. When the monopoly is obliged to reduce its price from P_m to the level of average cost (P_{ac}), the inefficiency ([1]) is reduced from abc to cde. A subsidy

([1]) Here we consider only the net loss of total welfare, not distributional implications. Thus, the rectangles representing monopoly profit and the volume of subsidy are disregarded.

Graph 1: **Economies of scale — production aid**

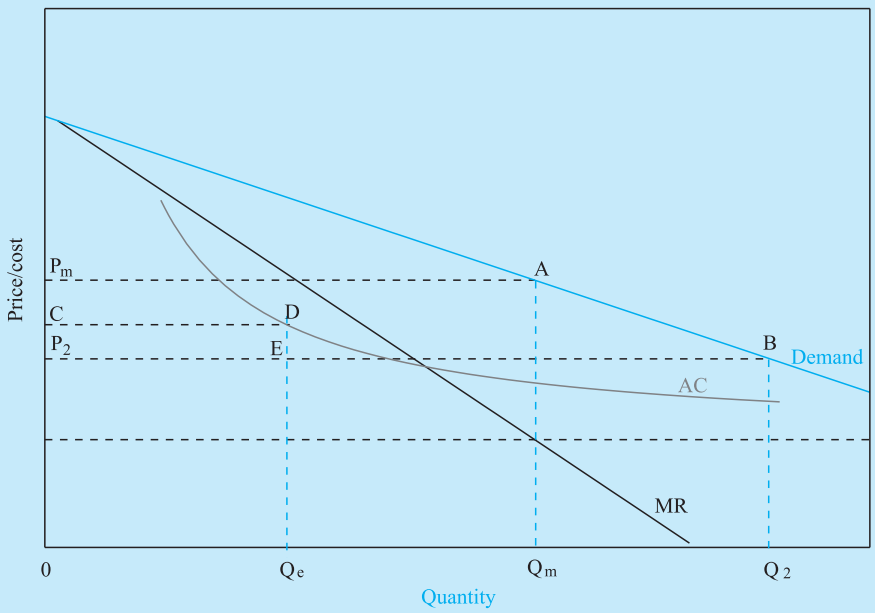


(P_{ac} - P_{mc}) to induce the monopoly to set its price at marginal cost eliminates the remaining distortion. The main drawbacks are: (a) the increased taxation to cover the subsidy will result in some loss of efficiency elsewhere in the economy and (b) governments often possess inadequate information about firms' costs, while the firms themselves have an incentive to make exaggerated claims in order to receive a higher subsidy.

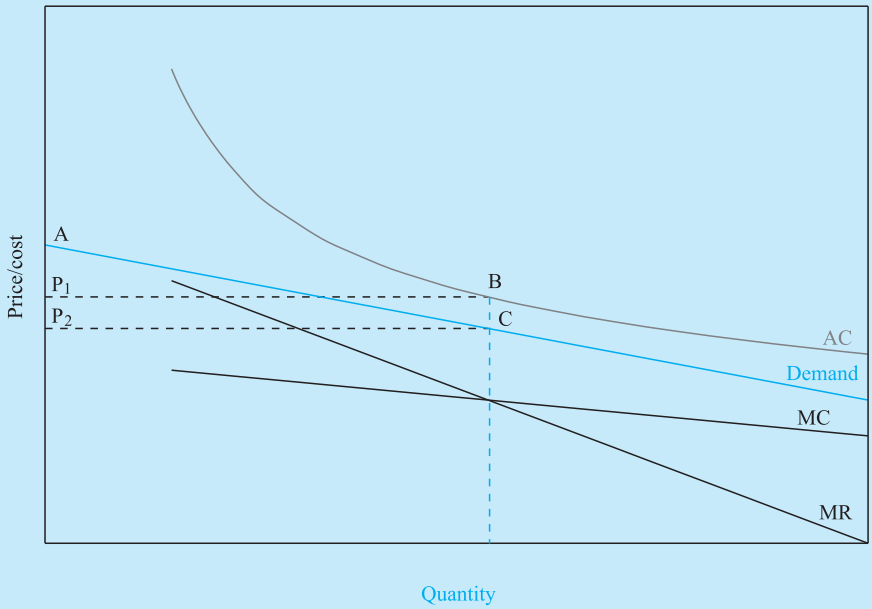
Graph 2 shows a case of State aid towards set-up costs for the entry of a new firm into a previously monopolistic market. The monopoly price is shown as P_m. The incumbent and the entrant have the same average cost curve. Because the incumbent firm has a reputational advantage, it is assumed that it will adopt the role of Stackelberg leader in a quantity-setting duopoly, i.e. the entrant firm decides its output in response to the output of the incumbent, while the latter anticipates this response. The equilibrium situation can be calculated from the reaction functions of the two firms. In the graph the equilibrium is found at a price of P_2, with the new entrant producing Q_e, which on the present assumptions is one third of the combined output of the two firms. This is only possible with a subsidy of $CDEP_2$, representing the difference between the entrant's total revenue and total cost. Consumer surplus increases by the amount represented by the area P_mABP_2, but the incumbent's profits fall. The amount of the reduction in the incumbent's profits depends on the precise demand and cost conditions. The government's willingness to grant the subsidy will depend *inter alia* on the extent to which domestic (rather than total) consumer surplus rises and the nationality of the incumbent: if the latter is a domestic firm, the government is more likely to take account of its loss of profits. The case depicted here may be likened to European governments' launch aid for Airbus. However, Neven and Seabright ([2]) have argued that the impact of the entry of Airbus on the prices of large airliners was rather small and that the main effect was to weaken the competitive pressure exerted by McDonnell Douglas, Boeing's existing competitor at that time.

([2]) Neven, D. and Seabright, P. (1995), 'European industrial policy: the Airbus case', *Economic Policy*, October.

Graph 2: **Aid for entry into a monopolistic market**



Graph 3: **Economies of scale support for a new product**



The set-up costs for a new product or service may be so high in relation to the demand that no firm would be willing to enter the market without aid. Graph 3 depicts government support for entry by a firm producing a new product through a subsidy towards fixed costs. Since the average cost curve is above the demand curve, entry would not occur in the absence of the subsidy, which eliminates the operating losses which the firm would otherwise incur. The entry is welfare-enhancing if the consumer surplus (represented by the triangle $ACP_{2)}$ exceeds the subsidy (represented by the rectangle P_1BCP_2) by an amount sufficient to compensate for inefficiencies caused elsewhere in the economy by the additional taxation needed to finance the subsidy.

1.4. Externalities

In the context of State aid policy, externalities are the most frequently discussed form of market imperfection. Externalities are said to exist when the activities of an individual, firm or other organisation have spillover effects on others and when these spillovers are not reflected in market prices. As a result, the economic incentives are not conducive to a welfare-maximising allocation of resources. Externalities may be positive or negative. Important positive externalities, for example, are usually considered to be associated with R & D and vocational training, while a major example of a negative externality is pollution.

In the case of R & D, externalities occur because it may be impossible for a firm to ensure that there is no leakage of knowledge acquired in the course of its research activities. Indeed, spillovers can occur through a number of channels: conversations between employees of different firms, technical publications and conferences, disclosure in patent documents, mobility of research personnel and imitation. Research results that do not lead directly to new products or processes can not be protected by patents. Furthermore, it can be costly to obtain or enforce patents and the period of validity of the patent may in some cases be shorter than the pay-back period.

The existence of spillovers means that the social benefits of an R & D project may greatly exceed the private benefits for the firm which undertakes the project. However the profit-maximising firm will not take the social benefits into account and will carry out research only if the private benefits exceed the cost which it has to bear. As a consequence, investment in R & D may be below the social optimum. Subsidisation of R & D can therefore be welfare-enhancing. Since the benefits can be widely dispersed across national boundaries, there are good reasons for the relatively favourable treatment given to R & D subsidies by both the European Commission and the WTO.

Similar considerations apply to vocational training. The training efforts of an individual firm increase the pool of skilled labour available to other firms to the extent that the skills acquired are transferable. At the limit, some firms can be total 'free riders' in this respect, relying on attracting skilled labour from other employers while spending nothing on training. If a firm loses many skilled employees to other firms, so that the benefits it derives from training its personnel are less than the costs, it will be likely to reduce its own training efforts. Subsidies may therefore be necessary in order to prevent the creation of a vicious circle. As labour becomes more mobile within the Community, the cross-border dimension of these externalities will assume increasing importance.

Negative externalities, such as pollution, can be dealt with by a number of means, including regulation, taxation or tradable emission licences. However, such measures put firms at a disadvantage in relation to competitors established in countries with weak environmental policies. Governments may therefore prefer to offer incentives for voluntary compliance with environmental standards or to accompany mandatory restrictions with subsidies to reduce the costs imposed on firms.

1.5. Imperfect information

Outside the pages of basic economics textbooks, perfect information does not exist. Consequently, uncertainty (risk) is a normal condition of economic life. Although it would obviously be futile for the State to attempt to remedy all the consequences of imperfect information, there are instances in which governments feel the need to intervene, often by means of subsidies. Such intervention occurs, in particular, in an attempt to address the problem of imperfect information in financial markets. For example, risk-averse financial markets may be unduly biased against new activities ('infant industries'). Furthermore, since uncertainty increases with time, it is often difficult to find finance for projects with long pay-back periods. In such circumstances, the State may substitute itself for the market as a source of finance for promising new products or for large projects involving high sunk (non-recoverable) costs, such as major infrastructure projects. However, the effective use of State aids in such circumstances requires that the government should possess better information and greater foresight than private lenders or investors, i.e. that it should be good at 'picking winners'. Measures directly aimed at improving the functioning of capital markets may therefore be more efficient.

The problem of imperfect information and risk-averse financial markets has also been identified as an important obstacle to the establishment and development of small and medium-sized enterprises (SMEs). SMEs typically have much more difficulty in raising finance than larger firms, because they can offer less security to lenders and because reliable information permitting an assessment of their future prospects is less easily available to potential lenders or investors. To overcome this problem, public authorities make use of various policy instruments, including subsidies to cover the costs incurred by banks in appraising loan applications, guarantees, interest rebates and the direct provision of finance to SMEs. In addition, a successful business needs a steady flow of information about existing or potential markets, new technologies or the possibilities for forming links with other firms but the costs of gathering such information may be very high for an SME in relation to its turnover. Public authorities frequently subsidise the provision of such information and advisory services to SMEs.

Asymmetric and imperfect information are also important characteristics of labour markets. The wide variety of jobs and skills in the economy results in substantial 'search costs' for both enterprises and job-seekers. Most governments address this problem by organising labour exchanges. However, even a well functioning system of labour exchanges does not solve the problem of mismatches between the skills possessed by job-seekers and those demanded in the labour market. Government intervention may help to remedy this problem, by providing information and advice to individuals about the training most likely to enable them to find stable employment or by financing such training. In partic-

ular, the State may provide incentives to encourage firms to provide a more broadly based training than is necessary to meet the firms' own needs, so that employees have a better chance of obtaining alternative employment if made redundant. Governments may also consider that employers underestimate the potential productivity of some disadvantaged groups, such as the long-term unemployed or the disabled, and may therefore provide subsidies to induce firms to recruit such workers ([1]).

1.6. Institutional rigidities

Under this heading, we can group various social, political and legal constraints which lead to economically sub-optimal outcomes. In particular, we have in mind factors which diminish labour market flexibility, such as minimum wages, unemployment benefits or employment protection legislation. The rise in the level of the 'natural unemployment rate' since the 1960s is generally attributed to such rigidities.

The two main transmission mechanisms which have been proposed to explain the impact of labour market rigidities on employment are the following: (a) loss of markets to countries where labour costs are lower and (b) substitution of capital for labour. Since it appears that the impact of international trade on employment in Europe has been relatively small ([2]), the most adequate explanation seems to lie in technological change.

If this explanation of structural unemployment is correct, the obvious solution would be to abandon the practices which cause labour market rigidities, in order to make more labour-intensive techniques and activities attractive. However, such a policy would be fiercely resisted, especially by trade unions. Furthermore, in terms of social cohesion, strong arguments can be advanced in support of most of these practices. It is therefore important to be able to identify and target the particular factors which have a significant influence on labour market flexibility. However, there is no general agreement on the relative importance of different rigidities. A further problem is that, even though European labour markets have become somewhat more flexible since the early 1980s, structural unemployment remains stubbornly high. This observation has led some observers to doubt whether the underlying causes of the problem have been properly identified. Perhaps one explanation of this phenomenon is that it is difficult for employees to provide a credible commitment concerning future levels of labour costs.

In these circumstances, more indirect approaches to the problem of structural unemployment may be appropriate. These are often aimed at lowering labour costs through employment subsidies or reductions in social security contributions. Such measures are subject to the State aid rules unless they are both *de jure* and de facto available to all enterprises on the same terms.

1.7. Imperfect factor mobility

Imperfect factor mobility is a problem addressed in particular by regional policy. The geographic mobility of labour is limited, particularly in Europe with its many linguistic barriers. Because of this and also because of a certain inflexibility of wages, there are wide regional disparities in unemployment levels and in labour productivity. A further contributing factor is the less than perfect mobility of physical capital. To move its economic activities to another region, e.g. to take advantage of lower labour costs, a firm may incur significant sunk costs.

These problems are compounded by so-called 'externalities of agglomeration' or 'clustering effects'. Firms will tend to prefer locations which are close to their main markets and where there is already a pool of labour with appropriate skills. Particularly in high-technology sectors, firms also favour locations which offer plentiful opportunities for formal or informal contacts between employees and managers in the same or related sectors. Consequently, some regions can enjoy strong first-mover advantages while others may find it very difficult to catch up. In the words of Paul Krugman ([3]), 'The long shadow cast by history and accident over the location of production is apparent at all scales — from the concentration of most US manufacturers of wind

([1]) The problem of structural unemployment does not fit neatly into a single category of market failure. Important externalities (social costs) are also involved, as well as institutional rigidities and imperfect mobility of factors of production (see below). Product market imperfections are probably also a significant contributing factor, since market power translates into artificially reduced output and, hence, employment.

([2]) See *European Economy, Reports and Studies*, No 3, 1997, Chapter II-A.

([3]) Krugman, P. (1991), 'Geography and Trade', MIT Press, Cambridge, Massachusetts.

musical instruments in the tiny town of Elkhart, Indiana, to the fact that a third of the US population still lives within the original 13 colonies.'

There are therefore strong grounds for believing that State intervention is necessary for the correction of regional imbalances. In theory a wide range of instruments is available for this purpose. They could, for instance, include measures to dissuade firms from locating in the developed regions, such as special taxes or infrastructure charges or the withdrawal of transport subsidies. However, such policies are likely to meet powerful resistance. Furthermore, unless accompanied by action to increase the attractiveness of the less favoured regions, they may cause some economic activities to be relocated outside the borders of the country. Traditionally, governments have therefore concentrated on various combinations of the following positive measures in favour of the disadvantaged regions: relocation of government activities, improvement of infrastructure, education and training, and financial incentives to encourage firms to invest (or remain) in the regions concerned. The ultimate aim of regional policy is to achieve a 'critical mass' such that, through externalities of agglomeration, the development of the region becomes self-sustaining and State aid is no longer necessary.

Although State aid probably has a useful role to play as part of a comprehensive and coherent regional development policy, there is danger that the uncontrolled use of regional aids could lead to a subsidies race, which could defeat the objectives of regional policy and create unacceptable distortions of competition.

1.8. Frictional problems

The frictional problems which occur when a firm is no longer viable or when a sector needs to be restructured constitute another aspect of imperfect mobility of factors of production. The factors 'liberated' by factory closures cannot be transferred overnight to some new productive activity. In some cases, therefore, acute unemployment problems can arise. In such cases, there can be a justification for State aid in order to ease the transition to a new structure of economic activity.

As many of the questions raised by restructuring aid are discussed in detail in the papers by Harbord and Yarrow and by Röller, we can limit ourselves here to three observations. Firstly, one of the dangers associated with such aid is that it will perpetuate the old, unviable structures rather than promote a genuine adjustment to new economic realities. Secondly, the knowledge that government is willing to intervene to rescue firms in difficulty may give rise to 'moral hazard'. The expectation that, if the worst comes to the worst, the government will not allow the company to fail may lead some managers to delay making difficult decisions on restructuring and may tempt others to expose their companies to excessive risks. Finally, although a few, relatively small schemes exist for assisting SMEs in difficulty, rescue and restructuring aid is overwhelmingly concentrated on large firms. Given the high failure rate of SMEs, it is quite probable that the resources devoted to aiding large companies might yield greater social and economic benefits if diverted to smaller firms. Such a change in approach would certainly reduce the risk of serious distortions of competition.

1.9. Foreign subsidies

A government may also grant State aids to protect domestic industries from the effects of subsidies granted by other countries. The best response to trade-distorting subsidies is to try to eliminate them through negotiation or through the WTO dispute settlement mechanism. If a solution cannot be found in this way, countervailing subsidies are in many ways preferable to countervailing import duties, as Messerlin points out in the paper included in this volume. The latter raise prices for domestic consumers and have an effect only in the importing country's home market. A countervailing subsidy, on the other hand, keeps domestic prices down and enables the domestic industry's exports to remain competitive in the world market. However, because of the danger of a chain reaction leading to a worldwide subsidies race, the GATT subsidies code does not allow the use of countervailing subsidies. It is therefore very important that the dispute settlement mechanisms of the WTO and other international agreements should function smoothly and rapidly.

Chapter 2

Trends and patterns in State aids

by E. Vanhalewyn

2.1. Introduction

Since 1988 the Commission's departments have attempted to quantify the amounts of aid granted by the Member States. The first survey, published in 1989 ([1]), gave detailed information covering the period 1981–88. Since then five other surveys have been published. This chapter is based on the fifth survey ([2]) for the years 1990 and 1991 and on the sixth survey ([3]) for the period 1992–96.

([1]) European Commission (1989), 'First survey on State aids in the European Community', Deadline 1992 document, Luxembourg, Office for Official Publications of the EC.

([2]) European Commission (1997), 'Fifth survey on State aid in the European Union in the manufacturing and certain other sectors', COM(97) 170 final.

([3]) European Commission (1998), 'Sixth survey on State aid in the European Union in the manufacturing and certain other sectors', COM(98) 417 final.

Table 1

Overall national aid in the Member States 1992–94 and 1994–96 in million ECU and % of GDP, excluding agriculture

	Million ECU		% of GDP*	
	1992–94	1994–96**	1992–94	1994–96**
Belgium	3 083	2 721	1.7	1.3
Denmark	1 162	1 207	1.1	1.0
Germany	39 976	34 039	2.5	1.9
Greece	976	978	1.3	1.2
Spain	4 601	5 024	1.1	1.2
France	14 218	12 755	1.4	1.1
Ireland	396	394	1.0	0.8
Italy	17 739	16 748	2.1	2.0
Luxembourg	258	131	2.4	1.0
Netherlands	1 827	2 062	0.7	0.7
Austria	:	1 104	:	0.6
Portugal	673	720	1.0	0.9
Finland	:	416	:	0.5
Sweden	:	1 405	:	0.8
United Kingdom	3 051	4 328	0.4	0.5
EU-12	87 961	81 107	1.6	1.4
EU-15	:	84 032	:	1.3

* As figures on aid to agriculture have been omitted from the overall aid totals, the GDP figures have been adjusted correspondingly by subtracting the value added for the agricultural sector.

** For Austria, Finland and Sweden, the figures are averages for 1995–96.

Source: Sixth survey on State aid in the EU.

The sixth survey contains data on aid to manufacturing, coal, railways, airlines, financial services, fisheries and agriculture. However, in spite of a Council resolution of 1974 calling on Member States to provide the Commission with annual data on aids to agriculture, many Member States have never supplied adequate information on this sector. Consequently, no reliable conclusions can be drawn from the data on agriculture. In what follows, therefore, the term 'total State aid' refers to the sum of aids to all the sectors mentioned above except agriculture.

The data on Austria, Finland and Sweden cover only the period since their accession, i.e. 1995–96. For Greece, many of the figures had to be estimated and the data on this country should therefore be treated with caution.

2.2. General overview

Since 1990 there has been a gradual decline in total State aid expenditure in the EU. In absolute terms, total State aid in the EU-12 fell from nearly ECU 88 billion per year in 1992–94 to just over ECU 81 billion per year in 1994–96. The annual average for EU-15 in the latest period was ECU 84 billion.

As a percentage of non-agricultural GDP, total aid in EU-12 fell from 1.6 % in the period of the fifth survey to 1.4 % in that of the sixth survey. The corresponding figure for the whole of the EU in 1994–96 was 1.3 %.

The level of aid has fallen most sharply in Luxembourg, from 2.4 to 1.0 % of non-agricultural GDP, mainly as a result of a substantial reduction in aid to railways. There have also been significant reductions in Germany (from 2.5 % to 1.9 %), Belgium, France and Ireland. In Spain and the UK, on the other hand, the level of aid increased, but these two countries still remain below the EU average. In both periods (from 1992 to 1996), the aid intensity as a percentage of non-agricultural GDP was substantially above the Community average in Germany and Italy.

Table 2

Distribution of State aids by sector, 1992–94 and 1994–96 (%)

	Manufacturing*		Railways		Coal		Financial services**		Airlines		Fisheries		TOTAL	
Member State	1992–94	1994–96***	1992–94	1994–96***	1992–94	1994–96***	1992–94	1994–96***	1992–94	1994–96***	1992–94	1994–96***	1992–94	1994–96***
Belgium	29.9	42.2	52.1	57.7	18.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	100	100
Denmark	46.4	55.6	52.2	43.7	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.7	100	100
Germany	49.7	48.9	27.0	34.2	23.3	16.8	0.0	0.0	0.0	0.0	0.1	0.0	100	100
Greece	74.0	67.6	25.9	27.8	0.0	0.0	0.0	0.0	0.0	4.5	0.1	0.1	100	100
Spain	28.5	41.8	43.8	37.0	25.6	20.0	0.0	0.0	0.0	0.0	2.0	1.2	100	100
France	34.7	29.3	41.8	46.4	17.2	5.9	2.4	9.9	3.6	8.2	0.2	0.3	100	100
Ireland	50.0	54.5	34.1	31.8	0.0	0.0	0.0	0.0	13.1	10.6	2.8	3.0	100	100
Italy	58.2	58.3	41.2	41.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	100	100
Luxembourg	21.3	35.0	78.7	65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100	100
Netherlands	38.0	33.3	59.7	64.8	0.0	0.0	0.0	0.0	0.0	0.0	2.3	1.9	100	100
Austria	:	40.6	:	59.4	:	0.0	:	0.0	:	0.0	:	0.0	:	100
Portugal	69.3	53.1	15.6	12.4	1.0	0.3	0.1	0.3	13.4	33.3	0.6	0.5	100	100
Finland	:	87.7	:	11.4	:	0.0	:	0.0	:	0.0	:	0.8	:	100
Sweden	:	22.6	:	76.8	:	0.0	:	0.0	:	0.0	:	0.5	:	100
United Kingdom	46.9	34.9	42.7	41.8	9.6	22.7	0.0	0.0	0.0	0.0	0.7	0.5	100	100
EU-12	47.1	46.3	35.7	39.6	15.7	10.5	0.4	1.6	0.8	1.7	0.4	0.4	100	100
EU-15	:	46.0	:	40.4	:	10.1	:	1.5	:	1.6	:	0.4	:	100

* The figures for manufacturing also include some aid to the services sector, notably aid to SMEs in that sector.
** The figures for financial services include only large 'ad hoc' aids.
*** For Austria, Finland and Sweden, the figures are averages for 1995–96.

Source: Sixth survey of State aids.

2.3. Sectoral distribution of aid

Table 2 shows how the aid was distributed between sectors in the periods of the fifth and sixth surveys. In both periods, manufacturing ([1]) accounted for the largest proportion, closely followed by railways. In France and Portugal the shares of airlines and financial institutions increased substantially between the two periods, because of large awards of rescue and restructuring aid. Aid to the coal industry was reduced in Germany, Spain and France but more than tripled in absolute terms in the UK. In Belgium, the closure of the last coal mines led to the disappearance of aid for this sector.

2.3.1. Manufacturing

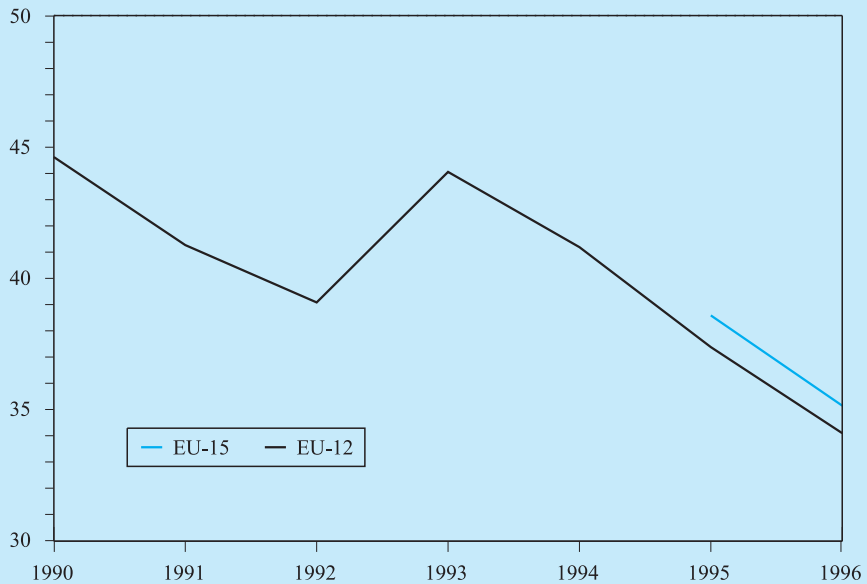
Aid to manufacturing constituted 46 % of total aid in the period 1994–96 (compared to 47 % in 1992–94). These figures include some aids to SMEs in service sectors and relatively small amounts of aid to tourism. In the European Union as a whole there was a continuous reduction in the volume of aid to manufacturing over the whole period 1990–96 with the exception of the years 1993 and 1994 (see Graph 1). Much of the increase which occurred in those two years is attributable to large volumes of restructuring aid granted in the new *Länder* of Germany.

The level of aids as a percentage of value added in manufacturing also declined continuously (from 4 % in 1990 to 2.7 % in 1996) apart from an increase (to 3.8 %) in 1993. The other indicators, aid per person employed and percentage of intra-Community trade, show the same trend, i.e. a decline except in 1993. Although a gradual downward trend is observed, the level of aid remains high with considerable disparities among countries.

When comparing the annual averages at constant prices for 1990–92, 1992–94 and 1994–96 (Table 4), the data show constant downward trend in six countries: Greece, France, Italy, Luxembourg, the Netherlands and Portugal. The decrease in the last period by comparison with the first was around 50 % in Portugal and Greece, and over 30 % in France, Luxembourg and the Netherlands. In Italy, the decline was slower (14 %).

([1]) The data on manufacturing include also some aids to miscellaneous service sectors, such as tourism (see Section 2.3.1).

Graph 4: **State aid to the manufacturing sector at 1995 prices and exchange rates (billion ECU)**



Source: European Commission, sixth survey.

Table 3

State aid to the manufacturing sector, EU-12 (1990–94) and EU-15 (1995–96)

	1990	1991	1992	1993	1994	1995	1996
In % of value added in manufacturing	4.0	3.6	3.2	3.8	3.4	2.9	2.7
In ECU per person employed at constant 1995 prices	1 365	1 270	1 209	1 441	1 380	1 224	1 127
In % of intra-Community trade in industrial products (SITC Classes 5 to 8)	7.9	7.1	5.7	8.3	6.8	4.8	4.4

Source: Fifth and sixth surveys of State aids.

Denmark, on the other hand, shows a constant upward trend, the aid volume in the last period being 85 % higher than that of 1990–92. In Germany there was a large increase during the second period as a result of measures to promote restructuring and regional development in the new *Länder*, but the volume of aid fell substantially in 1994–96, though without yet returning to the 1990–92 level.

In the other Member States, a decline in 1992–94 was followed by a rise in the subsequent period. However, there was an overall decline of 44 % in Belgium, 38 % in the UK and 24 % in Ireland. In Spain, on the other hand, the aid level was 44 % higher in 1994–96 than in the first period.

Table 4

Aid to manufacturing at 1995 prices and exchange rates (million ECU)

Member State	1990–92	1992–94	1994–96*
Belgium	2 056	916	1 149
Denmark	363	537	671
Germany	15 055	19 851	16 639
Greece	1 274	734	663
Spain	1 464	1 311	2 101
France	5 492	4 932	3 738
Ireland	284	198	215
Italy	11 319	10 320	9 760
Luxembourg	70	55	46
Netherlands	1 034	694	686
Austria	:	:	442
Portugal	808	462	381
Finland	:	:	365
Sweden	:	:	319
United Kingdom	2 437	1 431	1 512
EU-12	41 656	41 441	37 561
EU-15	:	:	38 687

* For Austria, Finland and Sweden, the figures are averages for 1995–96.

Source: Fifth and sixth surveys of State aids.

Table 5

State aid to the manufacturing sector in ECU per person employed (annual averages at 1995 prices and exchange rates)

Member State	1990–92	1992–94	1994–96
Belgium	2 772	1 296	1 692
Denmark	715	1 096	1 416
Germany	1 412	2 076	1 896
Greece	1 872	1 140	1 051
Spain	531	509	830
France	1 222	1 176	928
Ireland	1 192	815	832
Italy	2 258	2 203	2 139
Luxembourg	1 903	1 558	1 386
Netherlands	1 099	767	801
Austria	:	:	661
Portugal	720	438	370
Finland	:	:	920
Sweden	:	:	406
United Kingdom	459	246	262
EU-12	1 282	1 341	1 268
EU-15	:	:	1 229

NB: The figures differ slightly from those published in the sixth survey, because revised estimates of manufacturing employment have been used. The figures for Austria, Finland and Sweden are annual averages for 1995–96.

Sources: Fifth and sixth surveys of State aids and Eurostat.

One major explanation for these fluctuations is that a limited number of large individual aids account for a large part of total aid granted. Such ad hoc aids were given in France, Italy, Spain, Germany, Portugal, and to a lesser extent in the United Kingdom, Ireland, Greece and Belgium. In Denmark, the increase resulted partly from the introduction of a CO_2 tax and accompanying exemptions or rebates.

Table 5 shows the amounts of aid per person employed in manufacturing. In 1990–92 Belgium gave the highest level of aid according to this measure (ECU 2 772). Subsequently, this amount was greatly reduced and in 1994–96 Italy occupied the first place with ECU 2 139 per person employed. The general trend is downward. This is the case in 9 out of 12 countries. The rise in Germany is due to the large amounts of aid given in the new *Länder*, up to ECU 10 816 per person employed in 1992–94. Denmark and Spain have also increased their levels of aid per person employed.

2.3.1.a Objectives of aid to manufacturing

Traditionally, aids to industry have been classified in three broad categories: horizontal aids, sectoral aids and regional aids. These three categories are further subdivided by objectives (see box).

Box 1: **Classification by objectives of aid**

Aid to the manufacturing sector is classified according to the principal purposes for which it is given or the sector to which it is directed, as follows:

Horizontal objectives

- Research and Development
- Environment
- Small and medium-sized enterprises
- Trade
- Energy saving
- Other objectives

Particular sectors

- Shipbuilding
- Steel
- Other sectors

Regional objectives

- Regions falling under Article 87(3)(a)
- Regions falling under Article 87(3)(c)
- (Only for Germany) Berlin and Zonenrand aids.

The classification of aid is, in many cases, somewhat arbitrary because it is necessary to decide which of the objectives declared by a Member State is to be considered as the primary objective. In some Member States, aid for research and development is administered through sector-specific R & D programmes, in others aid to particular sectors is limited to small and medium-sized enterprises, etc. Furthermore, primary objectives cannot give a true picture of the final beneficiaries: a large part of regional aid is in fact paid to small and medium-sized enterprises, aid for research and development goes to particular sectors, and so on.

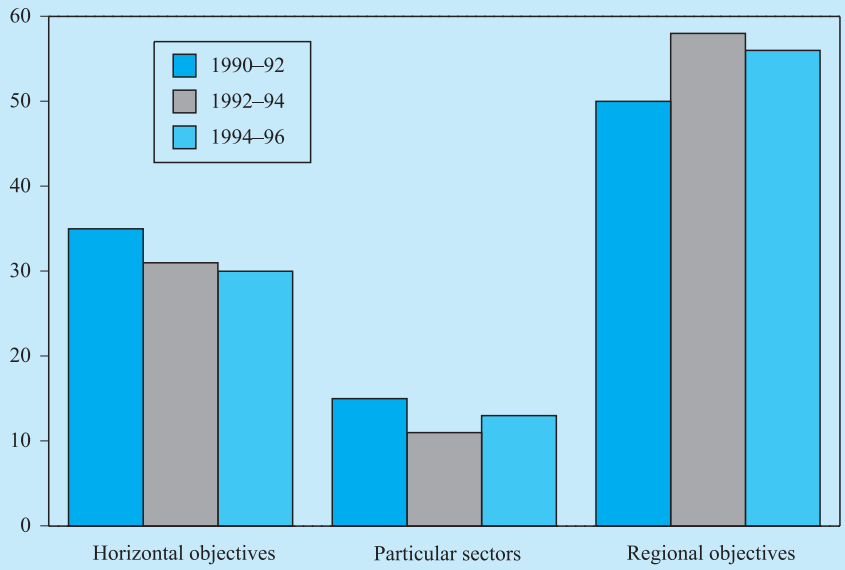
Consequently, conclusions about changes from one objective to another over time and, notably, conclusions about differences in objectives between Member States can only be drawn with caution.

Source: Sixth survey.

Graph 2 shows the proportions of aid to manufacturing represented by these different aid objectives over the three periods considered. Horizontal objectives account for about one third of total aids to manufacturing in the EU. The share of this type of aid is decreasing, falling from 35 % in 1990–92 to 30 % in 1994–96. Aid to specific sectors accounts for about 15 %. After a fall in 1992–94, sectoral aid rose by 2 percentage points in 1994–96. Regional aids account for the lion's share with more than 50 % in all three periods.

Table 6 gives a more detailed breakdown of aid to manufacturing by objectives or sectors during the period 1994–96. This table shows clear preferences of countries for particular kinds of aid.

Graph 5: **Breakdown of aid to manufacturing by objectives (%)**



Source: European Commission, sixth survey.

Table 6

Aid to manufacturing, 1994-96, broken down by sectors or objectives (%)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU–15
Industry/services: horizontal measures	**46**	**84**	**19**	**31**	**24**	**51**	**37**	**31**	**33**	**77**	**74**	**25**	**74**	**34**	**22**	**30**
R & D	10	29	7	2	7	28	6	3	7	21	19	4	35	11	12	9
Environment/energy saving	0	43	2	0	3	2	0	1	4	42	17	2	6	8	0	3
SMEs	21	5	5	2	10	6	17	6	22	8	13	0	21	16	5	7
Trade	4	7	0	15	0	11	3	9	0	3	0	0	10	0	5	4
Other purposes	11	0	4	12	4	5	10	12	0	3	24	19	2	0	1	7
Industry/services: sectoral measures	**29**	**14**	**6**	**3**	**62**	**15**	**8**	**11**	**2**	**6**	**13**	**51**	**2**	**4**	**19**	**13**
Iron and steel	0	0	2	0	32	0	7	6	2	0	2	30	0	0	0	4
Shipbuilding	2	10	3	0	19	1	0	2	0	3	0	1	0	0	1	3
Other sectors	26	4	1	3	11	14	0	3	0	3	11	20	2	4	18	5
Regional aids	**25**	**2**	**75**	**66**	**14**	**34**	**56**	**58**	**65**	**17**	**13**	**25**	**23**	**62**	**59**	**57**
Article 87(3)(c) regions	25	2	3	0	9	22	0	1	65	17	10	0	23	62	36	8
Article 87(3)(a) regions	0	0	70	66	4	12	56	57	0	0	3	25	0	0	23	48
Berlin and 'Zonenrand-gebiet'	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Sixth survey of State aids.

The aids are grouped into three main categories: horizontal objectives (applicable to all sectors and regions), aid for particular sectors (including rescue and restructuring aid) and regional aid. Although aids for horizontal objectives, such as the promotion of SMEs, R & D and environmental protection can be a means of correcting important market failures and may therefore be in the Community interest, they present the drawback that their impact on competition is often difficult to assess, because it is impracticable to examine each grant individually. Market failure arguments may be less strong in the case of regional aids and are rarely relevant to sectoral aids. However, for these two last categories of aids, equity arguments are often advanced to justify a policy of subsidisation.

Aid to SMEs

Aids to SMEs account for 7 % of all aids to manufacturing. This figure includes some aid to SMEs in service sectors. They are usually justified on efficiency grounds with reference to their disadvantaged position in export and credit markets. SMEs have more difficulties to acquire information about foreign markets and to deal with administrative procedures. They are also more affected by capital market imperfections since they have a lower capability of self-financing and less ability to raise collateral to ensure access to credit.

Whilst the Commission exercises a general ban on export aid, programmes which provide 'soft' non-product related aid are generally found to be compatible with the common interest. Such programmes are usually established to support SMEs. It is not surprising that the four countries where this type of aid represents the largest part of the total (Belgium, Ireland, Luxembourg and Finland) are rather small economies, more exposed to international competition.

Aids for R & D

R & D aids account for 9 % of total State aid to manufacturing. They are grounded on the basis of the significant positive externalities generated by R & D. As a general rule, the externalities are likely to be greatest for fundamental research and to diminish as the project nears the stage of commercial application.

Countries where the share of R & D aid is largest are Finland (35 %), Denmark (29 %), France (28 %), the Netherlands (21 %) and Austria (19 %). These countries are turning more and more towards high tech industries. At the other end of the scale we find Greece, Italy and Portugal (with respectively 2, 3, and 4 % of their aids to manufacturing).

Environmental objectives

In the Community as a whole, the share of aid for environmental objectives, including energy saving, is small (3 %). It is particularly high in Denmark (43 %) and the Netherlands (42 %), which have introduced CO_2 taxes accompanied by exemptions or rebates intended to reduce the negative impact of the taxes on the international competitiveness of energy-intensive industries.

Such aids also account for a high proportion of total aid to manufacturing in Austria (17 %) and Sweden (8 %).

Other horizontal objectives

In Portugal, where the whole territory is eligible for regional aids, a large part of the aid included in the category 'other objectives' was granted in the context of measures similar to regional development programmes.

Rescue, restructuring and sectoral aids

Sectoral aids may often simply delay and prevent adjustment in declining industries. They can only be efficient if they are temporary, but very often they tend to become permanent due to pressure exerted by the beneficiaries. There is also a risk of significant distortions of competition when large amounts of aid are concentrated on a few firms and a moral hazard problem if firms come to expect the State to support them if they run into difficulties. Finally, these aids may create artificial cost advantages for low-tech, low-demand sectors, and can therefore have an adverse effect on other sectors.

Over the period 1994–96, 13 % of aid to manufacturing was dedicated to sectoral aids. Countries where sectoral aids represented a particularly large proportion of the total were Spain (62 %), Portugal (51 %), Belgium (29 %) and the UK (19 %).

Shipbuilding is a heavily supported sector. Aid accounts for 25 % of the sector's value added, while for the whole manufacturing sector aid accounts for 3.5 %. The seventh shipbuilding directive ([1]), which applied from the 1 January 1991 states that aid ceilings are 4.5 %

([1]) OJ L 380, 31.12.1990.

of contract value both for ships with a contract value of less than ECU 10 million and for conversions, and 9.0 % of contract value for ships with a contract value of more than ECU 10 million. In addition to operating aid, the shipbuilding sector can receive aid for restructuring.

In Spain and Denmark shipbuilding accounted for respectively 19 % and 10 % of aid to manufacturing. No other countries exceeded the European average of 3 %.

By 1992, aid to the steel industry had been reduced to negligible levels. However, in the period 1994–96 large amounts of aid were authorised for restructuring steel companies in Germany, Spain, Ireland, Italy, Austria and Portugal.

Aid for 'other sectors' accounts for a very high proportion of the total in Belgium (26 %), Portugal (20 %) and the UK (18 %). In Belgium, a large part of the aid to 'other sectors' consists of aid granted under one single scheme, for which the Belgian Government must seek repayment and which, at the time of such repayment, will be withdrawn from the figures ([1]). In Portugal, the figure includes a substantial amount of aid to tourism and a large 'ad hoc' aid to the motor vehicle industry. Most of the figure for the UK is accounted for by an 'ad hoc' aid to an electronics company and aid to a broadcasting company.

Regional objectives

Regional subsidies can be used to avoid the geographical concentration of production and can contribute to the take off of poorer regions. However, the distribution of aids among the assisted regions does not necessarily reflect their degree of poverty because of the disparities of budgetary resources within the European Union.

Comparisons of the shares of regional aid in the total have to be treated with caution, because the State aid rules classify the entire territory of three countries as eligible for regional aid (Greece, Ireland and Portugal), while in other countries the proportions of the population living in assisted regions ranges from 17 % (the Netherlands) to 76 % (Spain).

In the EU as a whole, regional aids accounted for 57 % of all aids to manufacturing. Among the cohesion countries, Greece devoted the highest percentage to regional objectives (66 %), followed by Ireland with 56 %. Spain and Portugal, on the other hand, were well below the average with respectively 14 % and 25 %. In Ireland, spending on regional aids has fallen substantially since the previous period.

Amongst the other countries, the important regional problems of Germany (the new *Länder*) and Italy (the *Mezzogiorno*) are reflected in high shares of regional aids (75 % and 58 % respectively). However, Germany's regional aids have decreased considerably in absolute terms when compared with the previous period reviewed. At the other end of the scale, we find Denmark with only 2 %, Austria with 13 % and the Netherlands with 17 %.

Assisted regions are classified in two main groups. The least favoured regions are known as Article 87(3)(a) regions ('areas where the standard of living is abnormally low or where there is serious underemployment', see Chapter 3, Section 2.4). These are regions where the per capita GDP is less than 75 % of the Community average. Other regions are classified as Article 87(3)(c) regions. These regions, while suffering significant disadvantages in relation to the national average, normally measured in terms of GDP per capita or unemployment rates, are not necessarily significantly worse off than the Community average. In addition, Germany was permitted, pursuant to Article 87(2)c to grant regional aids in West Berlin and areas on the border with East Germany (areas affected by the division of Germany). These aids have been phased out since reunification. In the EU as a whole, aid to the least favoured regions accounted for 48 % of all aid to manufacturing and other regional aids for only 8 %.

In Spain, 60 % of the population lives in the (least favoured) Article 87(3)(a) regions. Nevertheless, the data show, rather surprisingly, not only that the overall level of regional aid was very low but also that twice as much aid was allotted to Article 87(3)(c) regions (covering 16 % of the population) as to Article 87(3)(a) regions. In Italy, on the other hand, almost all regional aid goes to the Article 87(3)(a) regions of the country. In the United Kingdom, aid to Northern Ireland, which is an Article 87(3)(a) region, accounts for almost 40 % of all regional aid, although Northern Ireland represents only 8 % of the total population of assisted regions in that Member State.

([1]) This aid was granted under the 'Maribel bis/ter' scheme (see Chapter 3 for a brief description).

A comparison of aid per head of population in the assisted regions reveals wide disparities (see Graph 3). Germany easily heads the list with ECU 396 per head per year ([1]), followed by Italy with ECU 205 per head. The 'cohesion countries' (Greece, Spain, Ireland and Portugal) are far behind. Regional aids amounted to ECU 42 per head in Greece, ECU 34 per head in Ireland and only ECU 9 per head in Portugal and Spain.

Even though higher aid intensities are allowed in the least favoured regions, a comparison between these regions and other, more prosperous assisted areas, shows that this differential is not reflected in the aid per capita figures. For example, aid per head in German Article 87(3)(c) regions greatly exceeded the level in the Article 87(3)(a) regions of the 'cohesion countries'. The level of regional aid per head in Belgian assisted areas (all Article 87(3)(c)) was almost twice as high as that of Greece and more than nine times as high as that of Portugal and the least favoured regions of Spain.

Graph 4, which includes both national aid and corresponding aid from the European Regional Development Fund ([2]), shows that Community aid from the Structural Funds is insufficient to compensate for these disparities. These results therefore suggest that efforts to develop the least favoured regions may be jeopardised by the large amounts of aid available to attract investment in the more prosperous Member States. Although the Commission has recently adopted new guidelines for regional aid which foresee reductions in the geographical coverage of assisted areas and in the permissible aid intensities, the question of the disparities in budgetary resources also needs to be addressed if a solution is to be found to this problem.

([1]) The very high level of regional aid in Germany is to a large extent attributable to the exceptional situation created by reunification.

([2]) ERDF aid relating to manufacturing industry, service sectors and economic development. Data from the sixth survey of State aid, Table C2.

Box 2: **German State aid to the new *Länder***

During the period under review, the process of reorganising the economy of the new *Länder* of Germany continued. The reunification of Germany is of particular importance for Community State aid policy. The transition from a centrally planned economy under State control typified by insufficient infrastructure and uncompetitive enterprises, to a decentralised market economy based essentially on private initiative and the need to develop the economy — could not be achieved without considerable financial transfers from the old into the new *Bundesländer*.

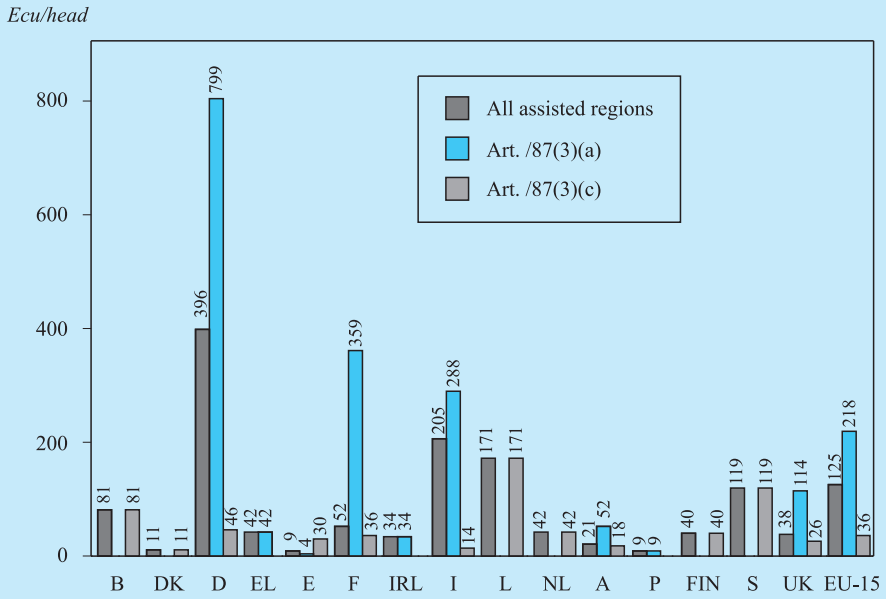
It was therefore unavoidable that the integration of the centrally planned East German economy into the internal market had to be facilitated by substantial amounts of national aid. During the period under review, a yearly average volume of almost ECU 13.5 billion was granted in aid to manufacturing in the new *Länder*. This, although on high level, is a marked decline in comparison with 1992-94, when ECU 15.5 billion were spent. The decline shows that the main repercussions on State aid of restructuring the economy of the new *Länder* occurred in the previous period. In addition, this reduction is accompanied by an even sharper decrease in aid to the old German *Länder* which has fallen from ECU 8.9 billion in 1990-92 and ECU 4.3 billion in 1992-94 to a low of only ECU 3 billion in 1994-96. These substantial reductions show the commitment of the German Government to shift its efforts to the new *Länder* without increasing the overall level of aid in Germany. Whereas in 1990-92 the old *Länder* absorbed 53 % of all aid to manufacturing in Germany, they only received 19 % of the total in the period under review.

In the context of privatising the former State-owned companies, aid during the period under review was also granted via the Treuhandanstalt (THA), the State holding company set up to administer, adapt, and privatise former East German public undertakings, and its successor, the Bundesanstalt für vereinigungsbedingte Sonderaufgaben (BvS). As laid down in the Commission's decisions of 1991, 1992 and 1995 on the interventions of the THA, some of these interventions may constitute aid. This was usually the case where the THA issued guarantees for loans granted by the banking sector at market rate to its generally poor-ranking undertakings. Equally, the THA itself borrowed at market rate and then awarded loans to its undertakings at the same rate.

In the period covered by the present survey including 1996 when normal State aid rules applied, guarantees totalling ECU 2 776 million and loans amounting to a total of ECU 13 484 million were given. Based on its previous experience, the Commission is of the opinion that 20 % of these amounts can be regarded as aid, which are included in the survey. In addition, grants totalling ECU 4 097 million in order to finance social plans were included in their totality.

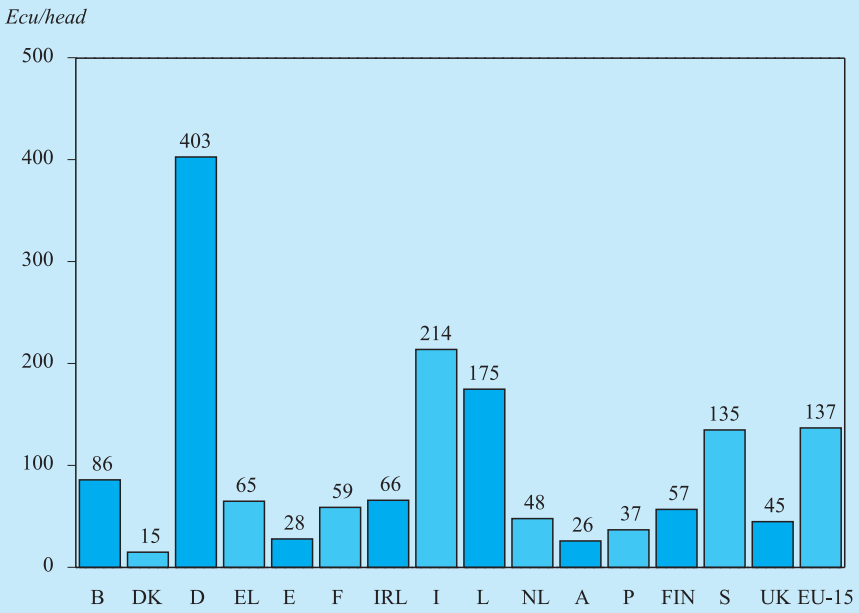
Source: Sixth survey

Graph 6: **Regional aid per head of population of assisted areas — annual average, 1994–96**



Source: European Commission, sixth survey.

Graph 7: **Regional aid per head of population of assisted areas, including ERDF — annual average, 1994–96**



Source: Own calculations on basis of data from European Commission, sixth survey.

2.3.2. Railways

Railways alone accounted for over 90 % of all aid to the service sectors and 40 % of total non-agricultural aids. Subsidies to railways are less likely than most other sectoral aids to have a serious effect on intra-Community trade. They can be justified to some extent by environmental externalities and by the fact that, unlike road transport, the railways have to bear the full cost of their infrastructure. However, there is considerable scope for reducing these subsidies by improving the efficiency of the railways, revising the taxation of motor vehicles and fuels and, possibly, introducing road usage charges. Such measures would encourage a transfer of traffic from road to rail and reduce the environmental damage caused by road transport. In Belgium, Luxembourg, the Netherlands, Austria and Sweden railways account for well over half of the total non-agricultural aids.

Table 7 shows that, in the EU-12, the total amount of aid to this sector increased only slightly in the period of the sixth survey. There were large reductions in Luxembourg (– 58 %) and Portugal (– 15 %) but substantial increases in the Netherlands (+ 22 %) and the UK (+ 39 %). The very large reduction in Luxembourg concerns the financing of pension payments. The Luxembourg Government has not explained why these transfers have declined so sharply.

2.3.3. The coal industry

Among the other sectoral aids, the coal industry stands out with 10.5 % of all non-agricultural aids. Germany alone accounts for two thirds of this aid, Spain and the UK for about 12 % each and France for 9 %. The last coal mines in Belgium and Portugal were closed in 1992 and 1994 respectively. These data do not reflect the full extent of the support given to the coal industry in Germany and Spain, where reference price systems keep domestic prices considerably above the world market prices for coal.

Table 8 suggests that aid not allotted for current production was reduced substantially in the period of the sixth survey in all the Member States with coal industries except the UK. However, the apparent decrease is largely the result of a change in the reporting requirements which came into effect in 1994, excluding social benefits from the data.

Table 7

Aid to railways, 1992–94 and 1994–96 (million ECU)

	MECU		% change
	1992–94	1994–96*	
Belgium	1 605.55	1 569.86	– 2.22
Denmark	606.67	527.15	– 13.11
Germany	10 796.11	11 649.20	7.90
Greece	252.91	271.67	7.42
Spain	2 017.36	1 857.23	– 7.94
France	5 944.54	5 912.44	– 0.54
Ireland	135.20	125.32	– 7.31
Italy	7 310.03	6 899.12	– 5.62
Luxembourg	203.18	85.40	– 57.97
Netherlands	1 091.19	1 336.29	22.46
Austria	:	655.80	:
Portugal	104.83	89.44	– 14.68
Finland	:	47.61	:
Sweden	:	1 078.82	:
United Kingdom	1 304.12	1 809.51	38.75
EU-12	31 371.69	32 132.64	2.4
EU-15	:	33 914.87	:

* For Austria, Finland and Sweden, the figures are averages for 1995–96.

Source: Sixth survey of State aids.

Table 8

Aid to the coal industry, 1992-94 and 1994-96 (million ECU)

	Aid to current production*			Other aids**			Total		
	1992–94	1994–96	% change	1992–94	1994–96	% change	1992–94	1994–96	% change
Belgium	16.0	0.0	– 100.0	538.6	0.0	– 100.0	554.6	0.0	– 100.0
Germany	5 563.9	5 599.8	0.6	3 744.7	134.2	– 96.4	9 308.6	5 734.0	– 38.4
Spain	522.0	767.6	47.1	657.4	236.5	– 64.0	1 179.4	1 004.0	– 14.9
France	237.4	149.5	– 37.0	2 211.6	608.4	– 72.5	2 449.0	757.9	– 69.1
Portugal	5.0	0.6	– 87.2	1.6	1.9	14.0	6.6	2.5	– 62.3
United Kingdom	7.1	6.4	– 8.8	286.4	976.1	240.9	293.4	982.5	234.9
EU-15	6 351.3	6 523.9	2.7	7 440.3	1 957.0	– 73.7	13 791.6	8 480.9	– 38.5

* These figures relate to direct transfers only and do not include estimates of the value of the support given by way of reference price systems in Germany and Spain.
** From 1994, social benefits are excluded from the data.

Source: Sixth survey of State aid.

Subsidies to current production increased in Germany and Spain, but decreased in France and Portugal. In the U.K. aid for current production remained at a level far below the EU average. In Germany and Spain, subsidies to current production account for most of the aid (98 % and 76 % respectively in 1994–96).

2.3.4. Financial services

Aid granted for rescue and restructuring measures in the financial services sector has risen from an annual average of ECU 340 million in 1992–94, to ECU 1 270 million in the latest reporting period. In both periods, France accounted for almost all the aids granted to this sector, amounting to 10 % of France's total non-agricultural aids in 1994–96. Small amounts of aid were also granted in Portugal. The rapid increase and concentration on a small number of companies in one country, means that continued vigilance must be exercised.

2.3.5. Air transport

Another sector where an increase of ad hoc aid can be observed is air transport. Aid granted to this sector doubled from a yearly average of ECU 660 million during the period 1992–94 to nearly ECU 1 370 million in 1994–96. In both periods, most of this aid was granted by France and Portugal. France granted ECU 519 million to airlines in 1992–94 and ECU 1 043 million in 1994–96. Portugal's aid to airlines increased from ECU 90 million in the first period to ECU 240 million in the second. Ireland and Greece granted smaller, but substantial, amounts of aid.

The steep rise in aid to airlines may represent a transient phenomenon. Previously enjoying protection, this sector has, following gradual liberalisation, been opened up to more intense competition, which has resulted in a need to undertake major restructuring programmes.

Table 9

Aid to the fisheries sector, 1992–94 and 1994–96 (million ECU)

	1992–94	1994–96*	% change
Belgium	2.5	1.9	– 23.8
Denmark	16.3	8.3	– 49.1
Germany	20.8	16.5	– 20.3
Greece	1.3	0.8	– 36.1
Spain	93.4	62.3	– 33.3
France	33.0	32.3	– 2.2
Ireland	11.0	11.8	7.8
Italy	109.3	88.9	– 18.7
Luxembourg	0.0	0.0	0.0
Netherlands	42.2	39.9	– 5.4
Austria	:	0.0	:
Portugal	4.3	3.9	– 10.7
Finland	:	3.5	:
Sweden	:	7.7	:
United Kingdom	22.0	23.3	5.7
EU-12	356.0	289.9	– 18.6
EU-15	:	301.0	:

* For Austria, Finland and Sweden, the figures are averages for 1995–96.

Source: Sixth survey of State aid.

Table 10

State aid on an ad-hoc basis and Treuhand aid awarded in the manufacturing, financial services and air transport sectors in the Member States, 1992-96

	1992		1993		1994		1995		1996	
	MECU	% of total aid	MECU	% of total aid	MECU	% of total aid	MECU	% of total aid	MECU	% of total aid
Ad-hoc aid	2 422	6	5 742	13	6 922	16	5 776	14	5 888	16
Treuhand aid	5 161	13	8 854	20	11 013	25	6 682	16	4 839	13
Total aid	39 062	100	44 800	100	43 466	100	41 732	100	37 677	100

Source: Sixth survey of State aid.

2.3.6. Fisheries

In the fisheries sector, national aids closely follow the development of and the limits imposed by the common fisheries policy (CFP), thereby contributing to the realisation of common objectives. Any conclusion to be drawn from the quantification of national aids must therefore take account of the fact that the aid is subject to very strict and precise Community rules.

Table 10 shows national aids in favour of the Community's fishing fleet, the marketing and first-stage processing of the products.

2.4. Conclusions

Although the overall trend of aid is downwards, a worrying trend observed during the 1990s is the rapid

Table 11

State aid on an ad-hoc basis, excluding Treuhand aid, awarded in the manufacturing, financial services and air transport sectors in the Member States — annual averages 1992–94 and 1994–96

	1992–94		1994–96*	
	MECU	%	MECU	%
Belgium	31	1	29	0
Denmark	0	0	0	0
Germany	686	14	584	10
Greece	75	1	44	1
Spain	473	10	1 088	18
France	1 663	33	2 532	41
Ireland	53	1	58	1
Italy	1 864	37	1 453	23
Luxembourg	:	:	0	0
Netherlands	:	:	0	0
Austria	:	:	65	1
Portugal	184	4	365	6
Finland	0	0	0	0
Sweden	0	0	0	0
United Kingdom	0	0	0	0
EU-12/EU-15	5 029	100	6 218	100

* For Austria, Finland and Sweden, the figures are averages for 1995-96.

Source: Sixth survey of State aid.

increase in 'ad hoc' aids to individual enterprises, i.e. aids not covered by any authorised scheme and mainly intended to finance restructuring. Because such aids are concentrated on a small number of firms, often operating in oligopolistic markets, they present a danger of significant distortions of competition through rent shifting.

Ad hoc aids (including rescue and restructuring aid awarded in eastern Germany by the Treuhandanstalt and successor organisations) represented 19 % of all non-agricultural aids in 1992 but 29 % in 1996 (see Table 11). If we exclude the rescue and restructuring aid granted in the new *Länder*, because it constitutes a special case, the increase was from 6 % to 16 %. Table 15, which does not include the 'Treuhand' aids, shows that France, Italy, Spain and Germany accounted for over 90 % of all 'ad hoc' aids in both 1992–94 and 1994–96. In 1994-96, France alone accounted for 41 %.

Chapter 3

Recent developments in State aid policy

by S. Simon

3.1. Introduction

Until 1997, the Council had never adopted legislation under Article 89 to determine the rules and criteria according to which the Commission should take decisions on State aids or should conclude that no aid in the sense of Article 87(1) is involved. As a consequence the Commission has issued guidelines and frameworks to communicate to the Member States the way in which the Commission will exercise its discretion under the Treaty. This body of rules/secondary legislation has a self-binding character for the Commission's interpretation of Article 87 and 88.

However, in view of the new challenges of monetary union and enlargement, which will increase the need for strict aid control, the Council adopted a regulation in May 1998, which enables the Commission to grant group exemptions for certain categories of State aid ([1]). Group exemptions allow the Commission to declare certain categories of aid compatible with the common market and exempt Member States from the obligation to notify if they fulfil the criteria for compatibility established by the Commission. These categories are the horizontal aids (small and medium-sized enterprises, research and development, environmental protection, employment and training), regional aid and *de minimis* aid. The regulation will thus enable the Commission to concentrate control on the 'essentials' by simplifying and clarifying existing rules and exerting stricter control on the most important cases.

In addition, the Council recently adopted a regulation containing procedural rules ([2]). This regulation also aims at improving the effectiveness of State aid control by codifying the existing practice of the Commission and the jurisprudence of the Court of Justice on the application of Article 88. However, it also contains a number of innovations. Under the title 'Monitoring' the Commission is granted the power to make on-site inspections and obtain information from the company concerned directly, should there be serious doubts whether conditional decisions were being complied with.

This chapter explains the major changes in the State aid rules that have occurred since the last edition of the *European Economy* on State aids (No 48, September 1991). Where appropriate an actual case is provided for illustration.

3.2. State aid as defined by the EC Treaty

Article 87(1) contains a general ban on any State aid 'which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods (...), in so far as it affects trade between Member States'. The Commission therefore has to decide first whether a State measure constitutes aid in the sense of the Treaty, and secondly, if this is the case, whether any of the derogations provided for in the Treaty or by the Council acting under powers granted by the Treaty applies ([3]).

Distinction between State aids, general measures and other transactions

General measures

State measures which do not discriminate between sectors, firms within a sector or regions are deemed general measures and do not constitute State aid in the sense of Article 87(1). This is the specificity criterion

([1]) Council Regulation (EC) No 994/98 on the application of Articles 87 and 88 of the EC Treaty to certain categories of horizontal State aid. OJ L 142, 14.5.1998.

([2]) 'Council Regulation (EC) No 659/99 laying down detailed rules for the application of Article 88 of the EC Treaty', OJ L 83, 17.3.1999.

([3]) An explanation of the concept of State aid under Article 87(1) can be found in 'Competition law in the European Communities, Volume IIB, Explanation of the rules applicable to State aid', OOPEC, Luxembourg, 1997.

which is used to draw a line between State aids and general measures. However, it is often not easy to evaluate the specificity of a measure. As a general rule, measures do not fall under Article 87(1), when;

— there is no specificity in terms of sector, region or category (for instance SMEs),

— the eligibility for aid is based on objective criteria, without any discretionary power of the authorities,

— the measure is in principle not limited in time or by a predetermined budget.

Case: **Maribel quater ([1])**

In 1997 the Commission judged the fourth version of the Maribel scheme to be a general measure not constituting State aid. Maribel quater foresees a reduction in social security contributions for all companies employing manual workers in order to promote employment of manual workers. The reduction per worker is calculated according to the formula BEF 20 000 +(BEF 20 000*X), where X represents the ratio of the firm's manual workers to total workforce and may vary between 0.01 and 0.66.

The Commission based its conclusion on the fact that the scheme does not discriminate a priori between sectors, the automatic application which leaves no discretionary power to the Belgian authorities, and the absence of any budget or time limit. One might argue that the scheme does discriminate in favour of industries within the manufacturing sector which have a high percentage of manual workers. However, the X coefficient is limited to 66 %, thereby giving the vast majority of industries the same reduction. Also, since the aim of the scheme is to promote employment of manual workers, because the danger of being made redundant as a result of automation is greater, it is by its very nature that the scheme gives greater support to firms with a high share of manual workers. In effect the measure reduces the cost of one input factor, manual labour, which will not distort competition but might have effects on competitiveness.

([1]) Case N-132/97, Press Release IP(97) 251.

Market economy investor principle (MEIP)

Since the beginning of the 1990s many Members States have started large-scale privatisation programmes. Some of these State-owned enterprises could be sold by an initial public offering and subsequent listing on the stock exchange, among them famous names such as Seita or Deutsche Telekom. Others were loss-making, needed restructuring and could be sold only at a negative purchase price. It is often this constellation that involves State aid subject to approval by the Commission.

No aid is involved when the proceeds from the sale on market conditions of a previously State-owned company are higher than the costs of closure and subsequent liquidation (i.e. when the opportunity costs of a closing down are higher than the sale). The Commission regards a sale of the shares on the stock exchange and a trade sale as sales on market conditions, provided that the trade sale takes the form of a competitive public tender with no conditions imposed and the company is sold to the highest bidder (quite often for a negative purchasing price).

In more general terms the MEIP is used as a benchmark to evaluate any transaction between a government and a company of which it is a shareholder to determine whether any other (hypothetical) shareholder would have acted the same way under the same circumstances.

Case: **Mercedes-Benz, Ludwigsfelde**

The former GDR-heavy truck producer IFA was taken over from the State agency Treuhandanstalt by Mercedes Benz in 1994 by means of a trade sale. Since there was no open tender the Commission demanded an evaluation by an independent expert. The expert's value was higher than the price paid by MB. The difference of DEM 8.6 million constituted State aid which had to be paid back by the company ([1]).

([1]) OJ L 5, 9.1.1997.

Public service obligations (PSO)

A PSO is any obligation imposed upon a service provider to ensure the provision of a service satisfying standards of continuity, regularity, capacity and pricing, which standards the service provider would not assume if it were solely considering its economic interest. The Commission considers that such compensation is not State aid if the PSO is subject to an open and transparent public tender procedure where the lowest bidder meeting the set quality standards wins the contract. Moreover, the aid amount must be limited to covering the operating losses, allowing for a normal return on capital employed ([1]).

However, the Court of First Instance (CFI) ruled in the case of *La Poste* ([2]), that the tax concessions given to the French public law undertaking were caught by Article 87(1), contrary to what the Commission had concluded ([3]). Since these concessions were necessary compensations for the performance of public interest tasks (here: postal services in sparsely populated rural areas), they could be exempted under Article 86(2). Therefore, compensations for services of general economic interest do constitute State aid, at least, if they are given without a prior open tender procedure, or where there is no analytical accounting showing the exact additional cost incurred in rendering the service. However, the CFI ruled that such compensations can be justified by Article 86(2), as long as they are not greater than what is necessary to perform the service of general interest.

Land sales by public authorities

Following several big deals such as the sale of large sites at the Potsdamer Platz in Berlin to Daimler Benz and Sony the Commission issued guidelines on the sale of publicly owned real estate ([4]). The guidelines establish two principles that ensure the absence of aid in such transactions. No aid is involved when the property is sold to the best or only bidder following a sufficiently well publicised open bidding procedure and when there is no condition imposed on the buyer. Second, no aid is present when an independent valuer determines the market price.

De minimis

In 1992 the Commission introduced what is known as a *de minimis* rule: Aid below a certain threshold is believed to have no appreciable effects on trade and competition between Member States. This threshold was set at ECU 50 000 over a three year period for each of the two cost categories: investment (excluding R & D) and other expenses, giving a possible total of ECU 100 000, if both categories were applicable. Since small amounts of aid are usually given to SMEs, the de minimis rule was part of the guidelines on aid to SMEs although it also applied to larger firms. The experience gained during the four years the old *de minimis* rule was in force led to the new, separate Commission notice on the *de minimis* rule published in 1996 ([5]). The threshold was raised to ECU 100 000, applicable to the sum of aid for all purposes. However, the *de minimis* rule does not apply to the steel and shipbuilding industries nor to agriculture and fisheries. Moreover, export aid is excluded from the scope of this rule.

([1]) See for instance point III.2 of the guidelines for the airline industry, OJ C 350, 10.12.1994.
([2]) Case T-106/95 *Fédération française des sociétés d'assurances v Commission*, 27.2.1997, [1997] ECR II-229.
([3]) OJ C 262, 7.10.95.
([4]) Commission communication on State aid elements in sales of land and buildings by public authorithies, OJ C 209, 10.7.1997.
([5]) OJ C 68, 6.3.1996.

Derogations: the legal bases

The legal bases for exemptions or derogations are found in Articles 36 (agriculture and fisheries), Article 73 (transport), Article 86(2) (services of general interest), and Article 87(2) and (3). The derived legislation and guidelines based on these Treaty provisions can be divided into two main categories: horizontal and sectoral rules. Horizontal rules apply to all or most sectors of the economy, sectoral to only one single sector. However, regional aid is often referred to as a third category.

The new Article 87(3)d

All Member States have adopted policies for the promotion and expression of their culture. In accordance with Article 151 of the Treaty the EU, 'shall contribute to the flowering of the cultures of the Member States, while respecting their national and regional diversity,' and 'shall take cultural aspects into account in its action under other provisions of the Treaty'. This article has been introduced by the Maastricht Treaty together with the new Article 87(3)(d), which provides for a specific derogation for State aids to culture and heritage conservation. This derogation applies also to the arts and the audiovisual sector.

However, in the field of culture and arts there is frequently competition for audiences and advertising. Therefore, competition policy has a role to play. The Commission normally takes a positive attitude towards State aid for the audiovisual sector, which is identified as a fast growing industry by the White Book on Growth, Competitiveness and Employment (Chapter 5). Approval will normally be given as long as the aid is in proportion to the objectives and does not discriminate on grounds of nationality. Almost all notified aid schemes aiming at a derogation under this new article concerned the film industry. The European film industry is still not commercially viable, despite some recent major box office successes. In 1996, for instance, among the top 10 films in terms of admissions, there was only one film from Europe (Sense and Sensibility, a US/UK co-production). Therefore, many Member States run schemes to aid the production of films on their territory and/or in the national language.

3.3. Horizontal rules

The conditions and derogations contained in the horizontal guidelines apply in principle to all sectors of the economy except coal and steel which are covered by the ECSC Treaty. Agriculture, fisheries and transport are also excluded from the scope of some guidelines.

Guidelines on environmental aid

In March 1994 the Commission published new guidelines on State aid for environmental protection ([1]) which replaced the previous ones dating back to 1974. These guidelines set out the policy in this area while stressing that further progress needs to be made towards full application of the 'polluter pays' principle. This principle means that those who cause environmental damage should be forced to bear the costs which they would otherwise impose on the rest of society. For the foreseeable future, however, both incentives such as State aids and disincentives such as taxes and levies are necessary. In contrast to the old guidelines, operating aid is allowed under certain circumstances, and aid for investment has more subcategories. Aid is now allowed not only for investment in new equipment to reduce or eliminate pollution, but also in energy-saving technology and for the use of renewable energy sources.

(a) Aid to investments that enable firms to adapt to new mandatory standards.

Up to 15 % gross of the eligible investment costs can be accepted if the investment is necessary to comply with new mandatory standards or legal obligations. As a further condition the installations concerned must have been operating for at least two years before the introduction of the new environmental standards.

(b) Aid to encourage firms to improve on mandatory standards or in the absence of mandatory standards.

Aid for investment that allows significantly higher levels of environmental protection than required or aid in fields where there is no legal obligation at all may be granted to a maximum of 30 % gross.

([1]) OJ C 72, 10.3.1994.

Case: **Energy tax for small-scale consumers ([1])**

In order to reduce carbon dioxide emissions and to promote energy saving the Dutch authorities introduced an energy tax on the small-scale consumption of natural gas, oil and electricity. However, a special exemption concerning the tax on gas is granted to horticulture under glass. While the introduction of an energy tax is a general measure, the exemption from it for a specific industry constitutes operating aid. The reason for the exemption from the tax on gas is that the Dutch horticulture sector is characterised by its high energy intensity and its dependence on the export market (65-80 % in terms of value) with little influence on prices. The tax would therefore seriously damage the competitive position of the industry. The Commission accepted the exemption as being in line with the relevant clause of the guidelines.

([1]) Case N-760/95, Press Release IP(95) 1446.

In all three categories an extra 10 % for SMEs may be allowed. Investments carried out by SMEs in disfavoured regions may receive an extra 15 %, if it concerns a 87(3)(a) region, and 10 % in a 87(3)(c) region.

In keeping with the 'polluter pays' principle no aid should be given towards the operating costs of complying with mandatory requirements. However, the Commission deviates from this principle in two cases. The first concerns the introduction of environmental taxes to better reflect true costs of production. Such a tax might harm certain sectors particularly if introduced in only one Member State. Therefore a temporary relief of these taxes, although an operating aid, might be justified. The second exception to the general rule concerns grants to cover parts or all of the operating costs of waste disposal or recycling facilities, often accompanied by green levies.

New R & D framework (1995)

Improving its international competitiveness by strengthening the scientific and technological bases of its industry is one of the priority objectives of the Community and embodied in Article 163 of the Treaty. In view of the positive externalities involved, the Commission takes a generally favourable attitude towards aid for R & D. The Community framework on State aid to R & D first introduced in 1986 was substantially revised in 1995 ([1]).

The new framework is in line with the international commitments of the Community in framework of the WTO agreement on subsidies and countervailing measures (SAC) in its distinction between three different categories of research. The financing of fundamental research normally carried out by universities or other non-profit-making research establishments does not constitute State aid. For industrial research which is aimed at the acquisition of new, rather theoretical knowledge useful for the development of new products aid up to 50 % of the eligible costs can be allowed. For precompetitive development activities the aid ceiling is set at 25 %. SMEs, projects in less favoured regions, projects of Community interest, cooperation between universities and industry or cross-border projects may receive additional aid of between 5 and 25 percentage points. The total aid must not exceed 75 % for industrial and 50 % for precompetitive development activities, which are the maximum intensities authorised by the WTO's subsidy code for non-actionable subsidies. An alignment with the WTO subsidies code is possible, if in a specific case a similar project carried out by a competitor in a third country would receive such higher aid.

The Commission must ensure that the aid does not simply replace the firm's own expenditure, thereby becoming mere operating aid. In other words, the aid should have an incentive effect. Firms should carry out more research than they would have done without the aid. However, this criterion of additionality is hard to verify. Indicators such as number of employees working on R & D or R & D expenditure as a percentage of turnover might not reveal the true picture, since, for instance, the turnover might have decreased in a given year while R & D expenditure, which is usually part of a long-term budget, remained constant. Despite these shortcomings these figure can serve as useful indicators for an evaluation of the aid.

([1]) OJ C 45, 17.2.1996.

Case: **The anti-obesity drug 'Orlistat' by Hoffmann-LaRoche ([1])**

In the Orlistat-case the Austrian authorities intended to grant ATS 300 million (ECU 22 million) as research and development aid to Hoffmann-LaRoche. However, the Commission took the view that neither the necessity for the aid not the incentive criterion had been met, and, furthermore, the project could not be classified as precompetitive research. It therefore forebade the aid.

At the time of the notification Phase III clinical trials were well underway, meaning that the project was more than half complete in terms of both duration and expenditure. Therefore, the necessity of the aid could not be demonstrated. The incentive effect was non-existent, since the development of the anti-obesity drug Orlistat was one typical for the pharmaceutical industry and besides a strategic objective of Roche, which previously had five other obesity drugs in development. Moreover, the final stages of testing and the application to the drug administration for approval for marketing are too close to the market to be classified as precompetitive research.

([1]) Case C-6/96, not yet published.

Aid for vocational training

The first framework of rules concerning aid for vocational training was adopted by the Commission on 22 July 1998 ([1]). In this framework the Commission observes that most public financing in the field of training does not fall within the scope of the competition rules. However, some financial measures to promote training confer benefits on particular firms or sectors and must be considered under Articles 87 and 88. The Commission generally takes a favourable view of such aids provided they reflect the externalities associated with the worker exploiting the newly acquired knowledge on the labour market. The positive externalities have to be demonstrated by the degree of transferability of the newly acquired skills.

To this end a distinction is made between general and specific training. General training is defined as training which includes tuition which is not applicable only or principally to the employee's present or future job in the assisted firm but leads to qualifications which are largely transferable to other firms and other fields of work. Specific training is narrower in scope, being mainly limited to skills and knowledge specifically linked to the activities of the aided firm. The authorised maximum aid intensities for general training are considerably higher than for specific training, e.g. for a large firm not in an assisted area the ceiling is 50 % for general training but only 25 % for specific training. For SMEs, these intensities are increased to 70 % and 35 % respectively. For firms located in Article 87(3)(c) and Article 87(3)(a) regions, the ceilings are raised by 5 and 10 percentage points respectively.

New SME guidelines (1996)

It is generally accepted that SMEs play a decisive role in creating employment and in innovation. They act as a factor of social stability and economic drive as the European Council stated at its meeting in Cannes in 1995. However, SMEs often face certain handicaps in comparison to large enterprises, particularly in raising finance and complying with government regulations. Therefore, the Commission has adopted a fairly favourable approach to aid to SMEs and published detailed guidelines for State aid to SMEs. The first guidelines of 1992 were revised substantially in 1996 ([2]).

The definition of SMEs has been brought in line with the Commission recommendation concerning the definition of SMEs ([3]). According to the new definitions a medium-sized company has a maximum turnover of ECU 40 million or a balance-sheet total not exceeding ECU 27 million. Figures for a small company are ECU 7 million and ECU 5 million respectively. Small companies with no more than 50 employees may receive up to 15 % of their investment costs, medium-sized companies with fewer than 250 workers up to 7.5 % regardless of their location. These thresholds also apply to intangible investment in technology transfer. According

([1]) At the time of going to press the 'framework on training aid' had not yet appeared in the Official Journal. It is available on the Commission's Internet site 'Europa' (http://europa.eu.int/dg04/lawaid/aid3.htm#training).

([2]) OJ C 213, 23.7.1996.
([3]) OJ L 1076, 30.4.1996.

to recent Commission decisions this includes also locations outside the EEA, e.g. for subsidiaries of SMEs in emerging markets as part of an internationalisation strategy. In assisted regions and for several other defined purposes such as R & D or environmental protection bonus points can be added to these ceilings.

FDI/Internationalisation

Recently, a number of Member States have presented schemes for aiding foreign direct investment (FDI) by domestic firms in other countries. For the purpose of European competition policy two cases might be distinguished: foreign direct investment in another Member State (intra-EU FDI) and FDI in a third State (extra-EU FDI), for instance in eastern Europe. For many FDI is perceived as replacing home production facilities and leading to delocalisation and a loss of employment in the source country. However, there are also arguments in favour of FDI, namely that FDI is a necessity to conquer new markets, contributes to the development of poorer countries, creates trade and new jobs in the source country through secondary flows of machinery and other capital goods to the new outlet and generates factor income for the source country.

Still another question is whether Member States should aid this economic activity. At least in the case of SMEs one could argue that their specific difficulties in raising funds for expansion is even greater for investment projects outside their home country, and in particular for projects outside the EEA. Therefore, the Commission has decided to allow aid for FDI by SMEs up to an intensity of 7.5 % for medium-sized and 15 % for small enterprises which are the ceilings for aid to projects outside assisted regions.

Rescue and restructuring

When firms run into difficulties and are threatened with closure, governments often come under intense pressure to grant aid to enable them to survive. In the Commission's terminology such aid is referred to as rescue aid when the purpose is merely to keep the firm in business and as restructuring aid when the objective is to reorganise and restore long-term viability. Such aid raises particular competition concerns, as it can shift the burden of structural adjustment to changing market conditions and the attendant social and industrial problems on to other producers who are managing without aid and to other Member States.

The Commission acknowledges that social or regional policy considerations or the desire to maintain a competitive market structure might justify rescue and restructuring aid. However, in guidelines published in 1994 ([1]), the Commission stressed the need for strict control of such aids.

Rescue aid may be only approved if it is restricted to the amount needed to keep the firm in business, consists of liquidity help taking the form of a loan guarantee or a loan and is limited to the time needed to devise the recovery plan, generally not exceeding six months. Loans or loan guarantees will give the State a better chance to recover the aid should a subsequent restructuring be impossible.

Aid for the execution of a restructuring plan will only be approved if this plan restores the long-term viability of the company within a reasonable time frame. Viability means that as a result of the restructuring plan the company must be able not only to cover all its costs including depreciation and financial charges but also to generate an adequate return on capital so that no further State aid will be required. Moreover, the aid must be limited to the strict minimum necessary to enable the restructuring. Therefore, the aid must not provide the company with surplus cash which could be used, for instance, to undercut prices of competitors. Financial ratios such as the debt/equity ratio or the net financial charges compared to the average of the industry concerned might serve as an indicator for the amount of aid needed. Also, beneficiaries are expected to contribute significantly to the restructuring plan from their own resources.

Usually, the company must undergo both financial and physical restructuring. When the firm is active in a sector with structural overcapacity physical restructuring normally means a reduction in capacity as a contribution to the restructuring of that industry and a counterpart for the negative effects on the competitors. However, it is not always easy to assess a genuine reduction of capacity. Apart from the problem of determining the theoretical capacity as the denominator it is often difficult to agree on the current average use of this capacity over (usually) the past 3 years. If the average utilisation rate was already very low then scrapping the idle capacity cannot be taken as a genuine reduction.

([1]) OJ C 368, 23.12.1994.

Exceptions to this provision are foreseen for Article 87(3)(a) regions and in cases where a capacity reduction would make it impossible for the company to become viable again. In the *Irish Steel* ([1]) case it was technically impossible to have capacity reductions as a counterpart for the restructuring aid without closing the plant since Irish Steel has only one hot rolling mill. Instead, a limitation was imposed on the annual levels of production, and any increase in existing capacity apart from productivity gains was forbidden for a certain time.

Employment

In 1997 there were 18 million unemployed people in the Community, representing 10.7 % of the labour force. The unemployed rate among women and young people was even higher: 12.4 % and 21.2 % respectively. Another worrying feature of the labour market is that the percentage of long-term unemployed (more than one year) is nearly 50 %.

While encouraging the development of active labour market policies the Commission has to ensure that measures to promote employment do not adversely affect competition. In its guidelines on aid to employment ([2]) the Commission adopts a favourable attitude towards aid to the (net) creation of employment, if the creation takes place in SMEs, in assisted regions or helps disadvantaged groups of workers with particular difficulties in entering or re-entering the labour market, such as the long-term unemployed, is accompanied by training measures and based on a long-term or unlimited contract. Aid for training measures and the acquisition of new skills by employed people is also viewed favourably. However, the aid should be a compensation for positive externalities associated with the workers' overall improved chances on the labour market. Therefore the training should not be narrowly focused on the specific needs of the aided company. The Commission also supports aid to encourage job sharing, but is critical of aid for maintaining existing jobs, which should be granted in 87(3)(a) regions only.

Several Member States have tried to reverse the downward trend in employment by lowering the cost of labour, mostly through a reduction in social security contributions. However, these measures were quite often incompatible with the Treaty. Therefore, the Commission sent a communication to the Member States, entitled 'Monitoring of State aid and reduction of labour costs' ([3]). This paper explains why the Commission is unable to accept some of the measures taken by the Member States, and, secondly, proposes compatible alternative measures. Measures that aim at specific sectors or companies are incompatible with the common market. A currency devaluation of another Member State cannot be invoked to justify reducing social charges for the affected home industries. General reductions of labour costs and de minimis measures do not fall under the competition rules. Other measures can be authorised provided that they comply with the guidelines on aid to employment.

([1]) OJ L 121, 21.5.1996.
([2]) OJ C 34, 12.12.1995.
([3]) OJ C 1, 3.1.1997.

Case: **Maribel bis/ter (Belgium)**

Introduced in 1981 Maribel foresaw a reduction of social security contributions for manual workers of the magnitude of 6.17 % of the earnings. This measure applied to all sectors and was accepted by the Commission as a general measure not constituting State aid. Maribel was amended in 1993 and 1994 (version *bis* and *ter*), allowing for higher reductions for manual workers in sectors most exposed to international competition. This change meant an increase in government spending for Maribel of ECU 295 million in 1995, attributed to only 47 % of manual workers in Belgium. However, the Commission could not accept this amendment, because it was aimed at specific sectors and did not qualify for any of the derogations under Article 87(3). It was neither regional aid, since the whole of Belgium was covered, nor aid to promote the hiring of manual workers as such, because the aid was granted in respect of each manual worker employed by the undertaking even if its workforce was reduced during the previous year. Instead, the measure was operating aid, which had the potential to seriously distort trade and competition between Member States ([1]).

([1]) OJ L 95, 10.4.1997.

3.4. Regional rules

Regional guidelines

In 1998 the Commission published new guidelines for regional aid ([1]). The new guidelines replace a series of texts issued since the 1970s. Besides integrating the existing material in one comprehensive document the guidelines introduce several new measures, first and foremost a limitation of the percentage of population covered and a reduction of the ceilings. These limitations may help to reduce the volume of regional aid, which, according to the fifth and sixth surveys on State aid, has been stable in the European Union since 1990.

The new regional aid policy of Commission limits the population living in areas eligible for regional aid to 42.7 %. Whereas the method for delineating 87(3)(a) regions stays the same (below 75 % of the EU average GDP per capita), the approach taken for 87(3)(c) regions is new. A quota is allocated to each Member State on the basis of two criteria, GDP/head and unemployment. The Member State can then determine the regions eligible by applying up to five criteria of its own choice. This ensures subsidiarity, but may lead to the delineation of regions which do not fulfil the two criteria applied by the Commission.

In 87(3)(a) regions the new maximum aid intensity will be 50 % instead of 75 %, in 87(3)(c) regions 20 % (30 % before). For ultra-peripheral regions the intensities are 65 % and 30 % respectively. A top up of 15 % or 10 % for SMEs is possible.

Regional aid must be neutral towards the inter-sectoral allocation of resources. Otherwise it becomes an industrial policy instrument with a potential to cause serious distortions of competition. Therefore, any sector is in principle eligible for regional aid under the regional guidelines, except those sectors to which special sectoral rules apply. In particular, the guidelines on aid to the synthetic fibres industry and the Community framework for State aid to the motor vehicle industry can be understood as stricter regional aid guidelines for those industries. In both industries investment aid will usually be accepted only up to an intensity below the normal regional aid ceiling.

The aid can be given as aid to the initial investment or to the creation of jobs. For the first time immaterial assets can be included in the eligible investment costs. Operating aid can also be given in 87(3)(a) regions, but only in exceptional circumstances. However, such aid has to be limited in time and on a digressive basis.

Multisectoral framework ([2])

This framework was adopted by the Commission at the same time as the regional guidelines and can be seen as a complement to it. The aim of this document is to provide a coherent horizontal framework on regional aid for large investment projects that may eventually replace almost all sectoral frameworks. The first sectoral guideline incorporated is the one concerning the

([1]) OJ C 74, 10.3.1998.

([2]) OJ C 107, 7.4.1998.

Case: **Bestwood Kynder**

Operating aid is allowed in Article 87(3)(a) regions. However, it must not be used to keep an inefficient company in business. In the case of Bestwood Kynder GmbH, one of Germany's largest producers of chipboard and fibreboard, the Commission had serious doubts 'whether the aid actually promotes the economic development of the 87(3)(a) area, since it is intended, if anything, to rescue a firm which is constantly operating on a loss-making basis, instead of promoting investment and creating jobs... It appears that the aid is intended primarily to maintain the status quo, postpone the inevitable and in the meantime transfer Bestwood's attendant industrial and social problems to other, more efficient producers and other Member States.' ([1]) The Commission upheld these preliminary doubts in its final negative decision ([2]).

([1]) Opening of the procedure OJ C 144, 16.5.1996.
([2]) OJ L 194, 23.7.1997.

textile industry. Due to a Court decision in June 1995 ([1]) the rules on the textile and clothing industry dating from 1971 are no longer legally valid. Instead of renewing it, the Commission decided to subject the industry to the multisectoral framework with lower notification thresholds than those applicable to other industries. The framework enters into force on 1 September 1998 for an initial trial period of three years.

The framework was initiated because of the fact that large-scale investments have the highest potential to distort competition as well as to widen the gap between richer and poorer Member States, thereby endangering cohesion. At the same time competitiveness aspects are important. A good illustration for all these considerations is the semiconductor industry, which is seen as a high-tech industry of vital importance to the competitiveness of European industry, and which is capital-intensive and therefore prone to get enormous subsidies. In recent years several greenfield investments were made in Dresden, Germany (AMD and Siemens) and in Great Britain (LG and Hyundai), which received State aids totalling almost ECU 1 billion.

In order to capture only the large investment projects the framework covers those cases in which either the total project costs are at least ECU 50 million, the proposed aid intensity is at least 50 % and the aid per job is at least ECU 40 000, or the total aid is higher than ECU 50 million. The Commission will determine the maximum allowable aid intensity by adjusting the regional ceiling laid down in the regional aid map. There are three adjustment factors, which will be multiplied by the regional ceiling R. The first one, called competition factor T, is based on the degree of structural overcapacity, the second, called capital-labour factor I, is based on the ratio of new capital to jobs created, and the last factor, the regional impact factor M, is based on the ratio of indirectly to directly created jobs. The formula therefore becomes R*T*I*M. Since the first two factors can assume values between 0.25 and 1, whereas the third factor varies between 1 and 1.5, the resulting aid ceiling will in most cases be less than the original regional ceiling.

Deprived urban areas ([2])

Many European cities have parts or suburbs in which high unemployment, a high crime rate and a decay of the environment and public infrastructure lead to economic handicaps for firms located there, usually resulting in their relocation and exacerbating the problems further. The existing rules on State aids did not address this challenge adequately. Under the regional aid rules the designation of assisted regions is normally based on a low GDP per capita index or a high unemployed rate at NUTS II or III level. Serious local problems within a region may be masked by the aggregate figures for the region as a whole. The maximum aid to SMEs outside assisted areas is 15 %, and the guidelines for aid to employment do not cover the creation of jobs linked to an investment. Following a specific case in France (N-159/96 *Pacte de relance pour la ville*) ([3]) the Commission decided to introduce new guidelines to regulate aid for such areas. Deprived urban areas are defined as areas which have a population of between 10 000 and 30 000, belong to a city with at least 100 000 inhabitants and have significantly worse statistics than both the national average and the city to which they belong. Beneficiaries are only new or existing small enterprises according to the definition in the SME guidelines carrying out local activities (mainly in the service sector). The maximum aid intensity is 26 % net grant equivalent of the (past or initial) investment or ECU 10 000 per job created.

3.5. Sectoral rules

Several sectors with often chronic structural problems, which are sometimes referred to as 'sensitive sectors,' are subject to special aid rules. These industries usually operate in mature markets characterised by overcapacity and stagnating or falling demand. Therefore, sectoral frameworks try to mitigate the effect of aid to investment by requiring either no increase or a decrease in capacity unless it can be demonstrated that in that particular market segment there is no overcapacity. Sector-specific rules currently apply to shipbuilding, shipping, airlines, motor vehicles, synthetic fibres, coal, steel and agriculture. Other sectors such as the banking sector and semiconductors have received massive State aid without special rules.

Shipbuilding

The shipbuilding industry in the EU has had to undergo extensive restructuring over the last 20 years or so in

([1]) Case C-135/93, *Spain v Commission*, 29.6.1995.
([2]) OJ C 146, 14.5.1997.
([3]) OJ C 215, 25.7.1996.

response to a highly competitive international market characterised by over-capacity, depressed prices and aggressive policies by non-Community yards, particularly those in the Far East. For instance, the Korean share of the world market for ships completed rose from 3.5 % in 1980 to 21.5 % in 1996. At the same time, the share of the EU of completed vessels has dropped from 29.3 % to 21.3 %, the share of new orders from 28.2 % to 19.4 %. Between 1980 and 1996, approximately half of the jobs in EU shipbuilding were lost. In Belgium the production of seagoing vessels was terminated entirely in 1996.

A competitive shipbuilding industry is seen as important for the EU. Therefore the EU pursued a twofold strategy. In order to safeguard the Community shipbuilding industry the seventh Council directive on aid to shipbuilding ([1]) was introduced to provide a defensive instrument against unfair competition such as injurious pricing; to encourage the necessary structural adjustment of European shipyards and to establish common rules throughout the Community to minimise distortions to competition contrary to the common interest. At the same time the EU sought to conclude an international agreement respecting normal competitive conditions in the shipbuilding and repair industry within the framework of the OECD. After several years of negotiation such an agreement was concluded in 1994 ([2]). Under that agreement all measures of support are prohibited except aid for research and development, social aid related to closures, and home and export credits complying with a revised understanding on export credits for ships (including aid in the form of development assistance to developing countries). The agreement, which also included an injurious pricing instrument, was due to enter into force on 1 January 1996, but has not yet done so because the United States has not yet ratified it.

Council Regulation 3094/95 ([3]) was intended to give effect to the State aid provisions of the OECD agreement. However pending entry into force of the agreement the Council decided to prolong the seventh directive until 31 December 1998 unless the agreement enters into force in the meantime.

In June 1998 the Council adopted a regulation ([4]) establishing new rules on aid to shipbuilding to succeed the seventh directive. The new regime is intended to help EU yards improve competitiveness and face the global challenges that lie ahead in the continued absence of US ratification of the OECD agreement. The new regulation will enter into force on 1 January 1999 and will apply until 31 December 2003. It will lead to a shift away from operating aid (which will be abolished at the end of 2000) to other types of aid such as closure aids, aids for R & D and environmental protection, restructuring aids, regional investment aid for improving the productivity of existing installations, and investment aids for innovation, thereby bringing the shipbuilding industry more into line with other industrial sectors as regards State aids. The current ceilings for operating aids (9 %; and 4.5 % for smaller vessels and conversions) will be maintained until the abolition of these aids on 31 December 2000.

The regulation provides for the Commission to undertake a regular review of the market situation. If it is established that EU industry is being caused injury by anti-competitive practices it may propose appropriate measures to the Council.

Synthetic fibres (1996)

Following a report by external consultants a revised code was adopted in 1996 ([5]). The new code introduces new criteria for assessing the compatibility of investment aid to this sector with the Treaty. The condition that aid is allowed only when there is a significant decrease in capacity was relaxed for subsectors with a structural shortage of supply. If this condition is met, 50 % and 75 % of the applicable regional aid ceiling can be given to large enterprises and SMEs respectively. An aid intensity of up to 100 % of the applicable aid ceiling can be accepted in cases where the beneficiary is an SME that can prove that the relevant products are innovative.

New steel aids code (1997-2002)

According to Article 4(c) of the ECSC Treaty, subsidies or aids granted by States are incompatible with the

([1]) Council Directive 90/684/EEC, OJ L 380, 31.12.1990, p. 27.
([2]) OJ C 375, 30.12.1994, p. 3.
([3]) OJ L 332, 30.12.1995, p. 1; subsequently amended by Council Regulation (EC) No 2600/97, OJ L 351, 23.12.1997, p. 18.
([4]) Not yet published.
([5]) OJ C 94, 30.3.1996.

common market for steel. However, Article 95 of the Treaty allows for derogations. On the basis of this article the Commission has, since 1980, enacted a series of decisions after having obtained the unanimous assent of the Council, referred to as the 'steel aids code' (SAC). The current sixth code allows for aid for research and development, environmental protection and aid for closures ([1]). The sixth SAC now bears a clear reference to the relevant Commission guidelines on R & D (Article 2) and environmental protection (Article 3), so that these horizontal guidelines apply to the steel industry as well. Rescue and restructuring aid and regional aid are in principal forbidden, with the exception of Greece where regional investment aid is deemed compatible under certain conditions up to the year 2000 (Article 5). Restructuring aid may be approved with the unanimous assent of the Council according to Article 95 of the ECSC Treaty.

Another novelty of the sixth code is the possibility of granting aid, under certain conditions, for the partial closure of an undertaking which is part of a larger group, while under the previous code aid could only be granted for total closure. All aid measures approved by the Commission under the SAC are subject to a yearly report. All restructuring cases approved under Article 95 are subject to a strict half-yearly monitoring report.

Coal ([2])

Today only four Member States produce coal: France, Germany, Spain and the UK. Despite considerable efforts made to improve productivity and reduce costs the average production cost of Community coal is still ECU 120 per tce compared to the price of imported coal of ECU 43 per tce. Only the production cost of the UK's privatised coal industry is close to world market prices. As a consequence, further restructuring and closure of mines is necessary in France, Germany and Spain.

State aids to the coal-mining sector have their legal framework in Commission Decision No 3632/93/ECSC ([3]). According to these rules the following types of aid can be permitted under certain conditions:

(1) Operating aid

(2) Aid for restructuring, modernisation and rationalisation

(3) Closure aid

(4) Aid to cover costs of laying off workers

(5) Aid for research and development

(6) Aid for the protection of the environment.

In 1996 the total aid granted by virtue of the above rules to the German coal mining industry was DEM 9.17 billion, to the French DEM 1.3 billion and to the Spanish DEM 1.67 billion. Since there is little hope for these three Member States to achieve competitive levels in production costs, and given the importance of coal mining for employment in the regions concerned in Germany and Spain these large subsidies will only gradually be reduced in the near future.

Car industry

Member States generally consider the car industry as a strategic industry in terms of employment, trade and technological development. Between 1977 and 1987 Member States aided their national car industry with ECU 26 billion, mostly through injecting capital or writing off debts. This subsidy race led to a number of distortions of competition and in turn to the introduction of a Community framework in 1989 in order to restrict these massive flows of aid. Between 1989 and July 1996, the approved aid amounted to only ECU 5.4 billion. However, the industry still had a low capacity utilisation rate of 71 % in 1995 ([4]).

Following an in-depth review the Commission adopted a revised framework in 1997, applicable since 1 January 1998 ([5]). The main novelties concern the definition of the sector, the thresholds for notification and the cost-benefit analysis. The new framework covers for the first time also first-tier suppliers, which are suppliers of subsystems and modules. This takes account of a change of the production process in the industry, which is best

([1]) Commission Decision No 2496/96/ECSC of 18 December 1996 (OJ L 338, 28.12.1996).
([2]) For more information see the ECSC's 'Investment in the Community coal mining and iron and steel industries. Report on the 1996 survey.' Luxembourg, 1997.
([3]) OJ L 329, 30.12.1993.
([4]) See Community framework, p. 2.
([5]) Community framework for State aid to the motor vehicle industry, OJ C 279, 15.9.1997.

illustrated in the case of the 'Smart' car, where first-tier suppliers have their own buildings as part of the assembly line ([1]). Projects have now to be notified if the project costs are above ECU 50 million, or more than ECU 5 million of aid are foreseen. The cost/benefit analysis for determining the amount of regional aid places more emphasis on the mobility of the investment. The aid recipient has to show that there is a viable alternative location in the EEA or the CEECs for his project in order to demonstrate geographic mobility. The cost/benefit analysis then calculates the additional costs for locating in the assisted region of the Community. Moreover, aid to innovation is now subject to a stricter definition and limited to 10 % of the eligible costs.

Shipping

EC shipping has been identified as vital for the European economy for two main reasons: independence from maritime services provided by its actual or potential competitors, and the contribution that shipping makes to the broader economy ([2]). The first reason is a strategic goal, whereas the second point, a high multiplier effect of shipping on-shore, is not related to the flag. Port handling, stevedoring, logistics, etc. are independent of the nationality of the ship. However, the threat of relocation of headquarters, loss of job opportunities, loss of maritime knowledge and safety concerns might be a justification for keeping ships under EU flags.

Today 53 % of the EU tonnage is flagged out, mainly because shipowners take advantage of cheaper manning costs, low taxes and, sometimes, substandard safety requirements in third countries. This trend could only be stopped by a framework for cost-effective support measures for EU shipping. Therefore, the Commission adopted a new maritime strategy in 1996 ([3]). The new strategy aims to enable Member States to maintain EC-flagged shipping through the introduction of a European ship register, safety requirements and State aids. As part of the new strategy the guidelines on State aid to maritime transport have been substantially revised ([4]). The aim is to enable Member States to better compete with flags of convenience which offer important cost savings.

The guidelines allow for fiscal incentives to the shipowning companies and seafarers. Previously, a hypothetical calculation of the cost difference was made between the cheapest EU flag (Portugal) and a ship flying the flag of Cyprus. The cost difference, expressed in percentage terms, could be subsidised by the Member State. However, this approach has proved to be too crude a method to be employed any longer. Moreover, it did not make a significant contribution to altering the trend of flagging out. Under the new guidelines Member States are allowed to reduce taxation and social charges for seafarers and corporate taxation of shipping activities to zero. Subsidising wages beyond waiving tax and social security contributions would be economically unsound, since aiding net wages would deprive poorer Member States with cheaper labour of their comparative advantage.

These aid measures normally require a link to a Community flag. However, under exceptional circumstances, they may be applied to ships entered in registers outside the Community where there is a link to a Member State such as the French Kerguelen or the Dutch Antilles' register. Moreover, aid may be approved to the entire fleet operated by a shipowning company established within a Member State's territory, even when some of the ships are registered under flags of convenience.

Also new is the clear reference to the rescue and restructuring guidelines, requiring shipping companies in difficulties to submit a restructuring plan, possibly including capacity reductions, and Member States to follow the 'one time last time' principle. Public service obligations are dealt with in a manner similar to that applied in the aviation sector.

Airlines

Air transport is perceived as a special economic sector by most of the governments because of the links to sovereignty (use of the airspace), defence, safety and prestige (flag carrier). Therefore, most European airlines have traditionally been State-owned and protected by national legislation and bilateral agreements. Following the example of the United States, which started liberalising the airline sector in 1979 the EU began opening up skies in 1987. The third package of liberalisation measures adopted in 1992 led to open skies on 1 April

([1]) Case N-933/95 *Micro Compact Car*, France, Press Release IP(96) 740.
([2]) COM(96) 81 final, 13 March 1996, paragraph A.II, p. 6.
([3]) Towards a new maritime strategy. COM(96) 81 final, 13 March 1996.
([4]) OJ C 205, 5 July 1997.

1997. As a consequence, competition has increased considerably since 1993, at a time when many airlines were recovering from the dramatic downturn following the Gulf War ([1]). As in the United States, several established airlines ran into difficulties. The Member States concerned provided large capital injections to their flag carriers to avoid bankruptcy and ease the adjustment to the new business environment. In an attempt to constrain these massive flows of State aids the Commission adopted guidelines on the application of Articles 87 and 88 in the aviation sector in 1994 ([2]).

The guidelines set out eight criteria for restructuring aid. First and foremost, the restructuring plan must lead to viability, so that no further aid will be necessary ('one time last time' principle). The government has to give a written assurance that the present aid will be the last unless exceptional circumstances, unforeseeable and external to the airline justify further aid. The aided carrier must not increase capacity (number of planes, seats available) beyond market growth and is not allowed to acquire shareholdings in other airlines for the period of restructuring.

Case: **IBERIA ([1])**

The Spanish flag carrier Iberia, controlled by the State-owned holding company Teneo, received State aid of ESP 120 billion in 1992. The aid measure was approved by the Commission. The Spanish Government gave an undertaking not to award any further aid during the execution of the restructuring programme 1992-96. After three years of negative net results Iberia was in a very delicate position at the end of 1994. The Spanish Government therefore proposed another capital injection of ESP 130 billion.

After lengthy negotiations and the help of an independent consultant the original restructuring plan was amended in such a way that the Commission could accept the purely commercial nature of this capital injection. A private investor would demand an annual rate of return of at least 30 % on an investment in such a risky company. Starting from a value of Iberia of zero in 1995 the value should reach the revised amount injected (ESP 87 billion), increased annually by the hurdle rate of 30 %, in 1999. Calculations made under this assumption showed that Iberia had a reasonable chance of arriving at that value. Therefore, the transaction did not constitute State aid in the sense of Article 87([1]).

([1]) Commission Decision 96/278/EC of 31 January 1996 (OJ L 104, 27.4.1996).

Agriculture

State aids directed towards producers in the agricultural sector are subject to a number of special rules. As a general principle, operating aids, even in very small amounts, are prohibited. Rules for agriculture are in that sense stricter than in other sectors where the *de minimis* provision allows the granting of aid up to ECU 100 000 without notification. However, this must be seen in the light of the CAP's comprehensive system of market and income support and the other possibilities for granting State aid to agricultural enterprises.

Regulation (EEC) No 2078/92 accompanying the 1992 CAP reform introduced for the first time the possibility of providing national income aids to farmers, under the condition that they voluntarily agree to engage in — or continue — certain specified farming practices beneficial to the environment. Such schemes are eligible for Community co-financing, but Member States may also finance similar schemes themselves. Member States also have the possibility to grant national aid in excess of the maximum amounts eligible for co-financing. Besides a payment to cover the farmers' costs it is possible to grant a financial incentive.

Member States may grant aid for a range of structural measures as long as these do not have a negative impact on the market situation or directly distort competition. These could, for instance, include investments to improve the production technology on agricultural

([1]) According to the Association of European Airlines (AEA) its 24 Members accumulated losses of USD 67 000 million between 1990 and 1993.
([2]) OJ C 350, 10.12.1994.

holdings, aid to environmental projects, rescue and restructuring aid, promotional activities for generic products, aid to combat certain diseases, or natural disaster relief. Specific rules determine in detail the conditions and maximum aid intensities to be respected for each of these purposes and the subsectors (commodity branches) for which aid is excluded. The selection criteria for investment aid in the processing and marketing sector were changed in 1994 to take account of the new market situation.

The Commission is pursuing a strict line in asking for recovery of State aid deemed to be illegal. The recovery aims to re-establish the situation that would have existed in the absence of illegal aid. Member States are requested to submit proof that the aid has been paid back with interest for the period between its payment and recovery.

The revised guidelines on aid to research and development, which came into force in 1996, now also cover agriculture. However, the Commission recently adopted a modification to these guidelines ([1]). Following this modification, aid can be given up to 100 % in well defined circumstances, if four conditions are met, in particular the requirement to disseminate the results of the research efforts. Research results should be published in journals — or by other means — for exploitation by interested parties in a non-discriminatory way. This should help improve access to — and the Europe-wide benefits of — government sponsored research.

As part of efforts to bring conditions for State aid to agriculture in line with the rules regulating aid in other sectors, the Commission has in cooperation with Member States reviewed its practice with respect to:

(a) Rescue and restructuring aid for agricultural enterprises.

(b) Subsidisation of interest on operating loans.

For (a) the revision has consisted in defining an appropriate counterpart that should be provided whenever restructuring schemes adversely distort markets for agricultural products. This modification, which means an irreversible reduction or closure of capacity as required in the manufacturing sector, is a substantive change of policy. However, the approach takes into account the specificity of small agricultural enterprises and the difficulties in requesting the counterpart on the level of individual beneficiaries of such schemes.

For (b) the aim was to establish rules in an area were hitherto no rules were enforced. In the guidelines adopted in 1995 ([2]) the Commission recognises that the agricultural sector may face a specific disadvantage in the form of higher interest rates on short-term loans. The general approach is that interest subsidies to farmers should be no higher than to reflect the objective disadvantage that farmers have for structural or other reasons. However, practical problems arose in establishing a method for calculating this specific disadvantage. As a consequence, application of the guidelines was suspended. A Commission communication adopted in 1997 ([3]) gives guidance on how to interpret the guidelines on that matter. The guidelines will apply again from 30 June 1998.

3.6. Procedural and technical matters

Reference rates

In order to evaluate the aid element of State subsidies the Commission applies a reference rate for each Member State. This rate reflects the interest rate differentials between the different currencies of the Member States. The rate is used for calculating the present value of State aids transferred in several instalments, for calculating the interest rate subsidy contained in soft loans, for implementing the *de minimis* rule and for the reimbursement of incompatible State aids.

For a long time the Commission had to rely on rates which were reported by the Member States individually, often late, and derived from differing methods. For instance, some Member States used averages of market rates, others the interest rates of government loans. From 1 August 1996 ([4]) the reference rate was based on the yield of government bonds and adjusted by a specific premium for each Member State. This new system had the advantage of a uniform method and timely delivery of the data. However, this method still yielded

([1]) OJ C 48, 13.2.1998.

([2]) OJ C 44, 16.2.1996.
([3]) Letter to the Member States, 19.12.1997.
([4]) OJ C 232, 10.8.1996, p. 10.

results that did not accurately reflect market rates. As a result of a survey in all Member States a new system was introduced as of 1 August 1997 ([1]). The reference rate is now based on the inter bank swap-rate for five-year loans plus a mark-up of between 75 and 200 base points. Where appropriate (e.g. for short-term loans, very long-term loans or when the risk of default is high), the Commission reserves the right to apply other reference rates. This new system is therefore a good approximation of the real market rate.

Transparency directive

In 1980 the Commission introduced a directive on the transparency of financial relations between Member States and public undertakings. The directive requires the public authorities to submit information on an annual basis for enterprises in the manufacturing sector and on request by the Commission for other enterprises.

The Commission has received an increasing number of complaints in recent times concerning mostly enterprises in service sectors. These enterprises have on the one hand become competitors to other undertakings in liberalised markets, but are on the other hand subject to public service obligations (PSO), for which they receive special compensation, sometimes even monopoly rights. There is, therefore, a danger of cross-subsidisation.

The Commission is now examining possible amendments of the transparency directive to address this problem.

([1]) OJ C 273, 9.9.1997, p. 3.

PART II

Expert studies

Chapter 4

Market definition and State aid control

by John Fingleton, Frances Ruane and Vivienne Ryan ([1])

4.1. Introduction

The granting of a State aid has important effects on output and market prices. The monitoring and control of State aid in the European Union (EU) requires an assessment of these effects and, in particular, their distribution across national boundaries. Determining the relevant market plays a vital role in tracing and assessing these effects, both in the markets where they occur and more generally across economies. This paper analyses the use of market definition in this context, starting with a survey of market definition procedures as developed for competition policy and going on to examine how this might be relevant to EU practice in monitoring State aids.

Existing European Commission practices for assessing and allowing State aids under Article 87 and in applying competition policy (Articles 85 and 86) share many jurisdictional and institutional features. However, they diverge sharply with regard to market definition. EU competition policy cases have adopted an increasingly systematic and explicit consideration of market definition as the first stage in any decision. The introduction of the merger regulation in 1989 consolidated this trend with a strong emphasis on the definition of the relevant market prior to any assessment of the effects on competition. The formalisation of a systematic approach was further heralded by the 1997 Commission notice on market definition ([2]). State aid cases on the other hand typically focus on the recipient(s) of the aid and the industry in which those firms operate ([3]). In general, State aid cases have not involved an evaluation of the relevant market that would enable an assessment to be made of who the competitors of the recipient(s) are and in what markets they compete.

It is not immediately obvious that this divergence is a problem. State aid control is fundamentally different from the analysis of other competition issues. In assessing a State aid, the Commission concentrates on the justification for that aid and, if certain criteria are met, grants approval. For example, aid that is introduced to 'make good the damage caused by natural disasters or exceptional occurrences' would be approved on the strength of that criterion. However, if the Commission's assessment requires that it measure the impact of the aid both on the country giving the aid and on other Member States, then it may be necessary to determine the relevant market(s) affected, if only to trace the impact.

We approach the issue of market definition for State aid cases in the following manner. First, we provide a summary of the literature in economics on market definition. This review examines both the literature and the practice in the EU and the United States that has developed alongside it, necessarily in the context of competition law. Second, we examine the question of State aids generally, with a view to developing a taxonomy to handle the different criteria according to which State aid might be approved and the market definition which might be relevant. Third, we examine the extent to which the market definition in State aid cases might differ from existing approaches in competition cases and conclude with a set of conceptual and procedural suggestions.

([1]) Department of Economics, Trinity College, Dublin 2. The authors would like to thank Holger Görg, Dermot McAleese, Paul Seabright, Georges Siotis and Jacques Zachmann for helpful comments, but retain responsibility for any errors.

([2]) The Commission notice on the definition of the relevant market for the purposes of Community competition law (OJ C 372, 9.12.1997) states: 'The objective of defining a market in both its product and geographic dimension is to identify those actual competitors of the undertakings involved that are capable of constraining their behaviour and of preventing them from behaving independently of an effective competitive pressure. It is from this perspective that the market definition makes it possible, *inter alia*, to calculate market shares that would convey meaningful information regarding market power for the purposes of assessing dominance or for the purposes of applying Article 81.'

([3]) The Commission notice also makes reference to State aids, viz: 'The focus of assessment in State aid cases is the aid recipient and the industry/sector concerned rather than identification of competitive constraints faced by the aid recipient. When consideration of market power and therefore of the relevant market are raised in any particular case, elements of the approach outlined (in the notice) might serve as a basis for the assessment of State aid cases.'

4.2. Market definition in antitrust policy

4.2.1. The economic and policy background

The starting point of any analysis of competition is the definition of that market in which competition takes place. This is especially true when the investigation of a particular market practice requires assessment of the degree of market power held by a firm or group of firms. Preoccupation with the ability of a firm or firms to influence the price of a product results from the adverse welfare consequences associated with the possession of market power.

The evaluation of market power, its extent and consequences, and the definition of the relevant market are inextricably linked. The question of definition of the relevant market requires the amalgamation of legal and economic issues, to arrive at a framework of analysis which is acceptable and operational for both disciplines. An attempt to build a consistent framework for relevant market definition would require:

- Identification of all those products which offer an alternative to consumers at the competitive price through an analysis of demand and supply-side issues;
- Identification of the geographic area of reference defined by specification of the boundaries of the market; and
- Determination of whether there are any temporal dimensions to the definition of the market.

The main focus of the economic literature is on the objectives of competition policy in different countries and how these coincide and vary. The majority of industrial economics textbooks ([1]) examine the situation in the American courts in some detail, as this was the first western country to formulate an explicit antitrust policy. Regarding the EU, the literature assesses the implications of Articles 81 and 82 of the Treaty of Rome and the manner in which the European Court of Justice views the issue of dominance and abuse of dominance in the Common Market or a substantial part thereof ([2]).

One reason why antitrust market definition is an issue of such importance in practice is that it may influence the ultimate direction a decision takes. For example, the more narrowly a market is defined the greater the probability that a firm will be seen as dominant. A more precise definition of the market would incorporate the smallest group of interchangeable products traded by a firm or group of firms within a specified geographic area.

4.2.2. The product market

Marshall (1920, p. 324) defined an 'economic' market as that area in which 'prices of the same goods tend to equality with due allowance for transportation costs'. While this early definition of a market focuses explicitly on geographic delineation, the use of the term 'same goods' suggests an implicit product market definition. Subsequent concepts of market definition have primarily developed both these ideas of product and geographic dimensions.

It is important at the outset to differentiate between the definition of a market from the perspective of competition and other descriptions of markets that rely on production technology. The latter, which include markets as described in the national statistics of many countries, delineate the market as consisting of firms with a common production technology. While this may be an important element of market definition, it bears little relation to the conditions of competition on any market.

Market definition for competition policy focuses on product substitutability, namely the ability of consumers or producers to react to price changes by buying alternative products or changing production or pricing decisions. Broadly speaking, where substitutability is high, the market will be defined more broadly. Substitutability on the demand side depends on the alternative products available in the market and can be measured formally either by the own-price elasticity of demand or the cross-price elasticity of demand. Less

([1]) For example: Carlton and Perloff (1992, Chapter 4), Martin (1994, Chapters 2-6, 10 and 18), Ferguson and Ferguson (1994, Chapters 7 and 8) and Shepherd (1997, Chapters 2-4, 13-17).

([2]) See Fishwick (1986), and Fishwick and Denison (1992) for an extensive analysis of prevailing trends in the literature on market definition and also Neven, Nuttall and Seabright (1993) who bring the strands of the literature together in an analysis of the European approach to mergers.

formally, substitutability can also be estimated by examining the characteristics of the product in order to see whether other products share characteristics that would make them substitutes. On the supply side, substitutability is determined to a large extent by the flexibility of firms' production processes. We examine these approaches in detail.

4.2.2.1. Own-price elasticity

A central question in competition policy analysis is whether a producer can raise the price of a particular product above the competitive level. This requires that customers have no or few alternative products available to which they can switch. This demand substitution can be measured by the elasticity of demand. However, even if consumers cannot easily switch, other producers might be able to react to the price rise by making alternatives available to consumers that were not previously available. This is usually called supply substitution.

The own-price elasticity of demand measures the responsiveness of the quantity of a product to changes in the price of that product. If the elasticity is low (inelastic), then price may be raised without losing large quantities of sales. Thus very inelastic demand would suggest that there are relatively few substitutes available. If on the other hand the demand is very elastic, this could indicate one of two things. First, there are available substitutes so that consumers, faced with a small rise in price, switch to these substitutes. Second, the price in the market has been set at or close to the monopoly price. It is a well known result that a monopolist sets the price on the elastic part of the demand curve. Thus elastic demand may not provided a conclusive indication of the existence of substitutes. These conflicting inferences can be distinguished if we know whether the price is at the competitive level or the monopoly level. Elastic demand at the competitive price level would suggest a broader definition of the market.

Theory in this area distinguishes between the structural and the residual demand elasticity ([1]). The structural elasticity measures the responsiveness of demand to a change in price, holding the prices of all other goods constant. This measures the ability of customers to switch from the product in question to other products given that there are no responses by the producers of other products. This thus corresponds to the demand substitutability side and is the elasticity discussed in the previous paragraph.

The residual elasticity measures the change in output, allowing the prices of other products to change in response to the original price change. The residual elasticity thus incorporates substitutability on the supply side as well as on the demand side. The distinction can be illustrated formally if we consider the demand for product 1, given by A, which depends on its own price P_1 and the prices of other goods P_2, P_3, ..., P_n.

$$Q_1 = Q_1 (P_1, P_2, P_3, \ldots P_n) \qquad (1)$$

The structural elasticity is:

$$\varepsilon_{structural} = \frac{\partial Q_1}{\partial P_1} \qquad (2)$$

and the residual elasticity is:

$$\varepsilon_{residual} = \frac{\partial Q_1}{\partial P_1} + \sum_{i=2}^{n} \frac{\partial Q_1}{\partial P_i} \frac{dP_i}{dP_1} \qquad (3)$$

The second term in Equation 3 measures the supply response of other firms ([2]).

It is often written that the demand response, substitution by consumers, is a short-run phenomenon, whereas the responses by other producers (including bringing forward new substitute products) takes place over a longer time horizon. Although this may be a common scenario, there is no reason in principle why consumers would always be the first to react to a price change. The fundamental point is that any comprehensive definition of the market should include both demand and supply substitutability, regardless of which is more responsive in the short run.

([1]) This follows the work of Baker and Bresnahan (1984, 1985, 1988, 1992). Neven et al. (1993) give a comprehensive overview in the context of European merger policy.

([2]) This distinction is important, not just conceptually, but also to understanding US practice with regard to mergers.

The elasticity of demand can also be related to an index of market performance called the Lerner index. For a monopolist, the Lerner index gives the relationship between the elasticity of demand and the price-cost margin.

$$\frac{P-C}{P}=\frac{1}{\varepsilon} \qquad (4)$$

where P is the price, C is the marginal cost and ε is the elasticity of demand. It can be seen immediately that the elasticity of demand must exceed one, illustrating that the monopolist will price on the elastic section of the demand. If the elasticity of demand (at the competitive price) is very high, then the price mark-up that can be extracted from the market will be low. A major reason for this is likely to be the availability of substitutes and, consequently, we would wish to include such substitutes in any definition of the market.

A modification of the Lerner index developed by Landes and Posner (1981) postulates that the price elasticity of a product is directly affected by the degree of market power (estimated in terms of shares of total market sales) when the set of all perfect substitutes can be defined. Given:

$$L_i=\frac{(P_i-C_i)}{P_i}=\frac{1}{\varepsilon_i^d} \qquad (5)$$

where L_i is the Lerner index for firm *i*; P_i and C_i are price and marginal cost, respectively, at the profit-maximising output for the firm; and ε_i^d is the elasticity of demand facing the firm. Landes and Posner build on this index to relate market power and market share and thereby derive a new index. Where the firm elasticity of demand is known, the power of the firm to raise its price above the competitive level can be accurately assessed using the Lerner index as in Equation 5.

However, where the firm elasticity remains unknown, an adjustment incorporating measures of market share into the calculation is required. This allows the derivation of a firm's elasticity of demand combining the firm's market share with other factors such as the market elasticity of demand. Assuming that both the relevant product and geographic markets may be adequately defined the link between firm i's market power and its market share is derived from Equation 6:

$$\varepsilon_i^d=\frac{\varepsilon_m^d}{S_i}+\frac{\varepsilon_j^s(1-S_i)}{S_i} \qquad (6)$$

which shows firm i's demand elasticity as a function of its market share (S_i), the market elasticity of demand (ε^d_m) and the elasticity of supply of competing or fringe firms (ε^s_j). There are two main implications of this equation. First, the higher the market elasticity of demand, ceteris paribus, the higher the elasticity of demand facing firm *i* and the more limited its power over price. Second, the higher the elasticity of supply of fringe firms, other things being equal, the higher the elasticity of demand facing firm i and the smaller its market power. A high supply elasticity implies that a small increase in price will cause a large increase in the output of the fringe firms. If all alternative sources of supply were infinitely elastic within the relevant range, then the elasticity of demand facing firm i would also be infinite, thus implying an absence of market power for the firm.

Given that the Lerner index reduces to $1/\varepsilon^d_i$, from Equation 5, rearranging in 6 yields an expression for firm *i*'s market power as a function of its own market share and relevant demand and supply elasticities:

$$L_i=\frac{S_i}{(\varepsilon_m{}^d+\varepsilon_j{}^s[1-S_i])} \qquad (7)$$

A final implication of Equations 6 and 7 together is that the greater the firm's individual market share (at its profit-maximising output) the smaller the demand elasticity facing the firm and the greater its market power (1).

Neven et al. (1993, pp. 25–28) developing the work of Landes and Posner (1981) and Shaked and Sutton (1982) on product differentiation and the price-cost margin, point out that the ability of a firm to differentiate its products is an important source of market power. Established firms with some element of market power can capitalise on their advantage and consolidate their position by differentiating their products significantly, effectively blocking entry to their narrow sphere of influence. In other words, by distinguishing its product(s) from available alternatives a firm can effectively diminish the extent of that market in which it competes (2). The firm can thereby influence the own-

(1) Interchangeability may be directly influenced by a firm with some market power by introducing switching costs or loyalty bonuses of some kind, which limit an individual's ability to alternate freely between the use of different firms' products.

(2) Market here in terms of the other firms or group(s) of firm who are vying for the same group of consumers.

price elasticity of demand for its product and this will be reflected in a higher price-cost margin for the firm. The greater the degree of heterogeneity among a group of products, the less interchangeable these are from a demand substitution point of view and the greater the price change required to incite a consumer to settle for a cheaper alternative.

4.2.2.2. Cross-price elasticity

Substitutability can also be measured by the cross-price elasticity of demand. This measures the responsiveness of the quantity of one product to the price of another. Suppose we are interested in the market for product X and we wish to determine whether X forms a distinct market or whether Y is a sufficiently close substitute that only X and Y together form a distinct market.

The cross-elasticity of demand of product Y with respect to the price of X would measure how sales of Y were increased if the price of X increased. Formally:

$$\varepsilon_{YX} = \frac{\partial Q_Y}{\partial P_X} \frac{P_X}{Q_Y} \qquad (8)$$

With a high elasticity, a small increase in the price of *X* will give a big increase in the sales of *Y* indicating that the products are close substitutes. An analogous concept exists on the supply side, where we can think of the responsiveness of output of *Y* to changes in the price of *X* as measuring the cross-elasticity of supply of *Y* to the price of *X*. It is important to note that we measure the cross-elasticity of the potential substitutes with regard to the price of the product of interest, and not the other way around.

A benchmark price against which to judge movements must be stipulated. The degree of substitution between products then depends on their prevailing prices. For example, when price is an endogenous variable but consumer tastes and preferences cannot be manipulated, two products *X* and *Y* might be rendered substitutable only when the price of *X* is high in comparison. Even a monopoly firm controlling market sales of a product with no close demand substitutes could manipulate its price to such an extent that consumers face a number of alternatives. The fact that at some price a firm has substitutes in demand for its products does not necessarily imply that it has no market power (although it may be unable to raise its price any further because it is currently exploiting its market power). This identification problem might be avoided if analysis of the market structure used a competitive price level as a starting point. At least some measures should be taken to identify properly the set of products for which the observation of a non-zero cross-price elasticity constitutes a demand substitution relationship between the two goods at all price levels; mis-specification could lead to a bias in the results of an antitrust action.

An illustration in point of just such a mis-specification is observed in the case of *United States v E. I. du Pont de Nemours and Co.* [1], an error in judgment referred to as the 'Cellophane fallacy'. In this case du Pont was found not to be in violation of Section 2 of the Sherman Act which prohibits attempts to monopolise and monopolisation. It was ruled that the company was not dominant as a result of the existence of substitute products.

E. I. du Pont de Nemours, producers of packaging materials, introduced a revolutionary product which is commonplace today, a clear wrapping known as cellophane. This product could keep foodstuffs fresher in comparison to the alternative materials available such as, brown paper, wax paper, etc. The court defined the relevant antitrust product market as that for packaging materials. Their decision was based on evidence that, at the prevailing price of cellophane, people regarded inferior packaging materials as viable alternatives. However, this view was misplaced, if not erroneous. A good may be priced at such a high level that consumers are presented with no real option but to settle for an inferior product. It was subsequently argued that such was the case with du Pont's product. The price level of cellophane had been pushed so high that vastly inferior products were used as substitutes by consumers. This suggests that the finding of high cross-price demand elasticities by competition authorities should not automatically be interpreted as indicative of a lack of monopoly power, without in-depth consideration of the next-best substitutes or the elasticity at the competitive price.

4.2.2.3. Problems with elasticity measurement

Both elasticities present measurement difficulties for legal evaluation. Each requires an assessment of the responsiveness of the demand for one product to a

[1] *United States v E. I. du Pont de Nemours and Co.*, 351 U.S. 377 (1956).

change in the price of another or others, which may be difficult to quantify. Furthermore, as mentioned above, this assessment must be carried out holding all other variables constant. With the cross-elasticity, a point of comparison needs to be established, as the cross-price elasticity of *X* with respect to *Y* and the same measure between *Y* and *X* will not be equal. Where substitutes for product *X* are being identified the movement of interest is the effect of a hypothetical price change in *X* on the demand for some other good *Y*. Ambiguity will arise in the definition of the relevant product market unless the product of interest is made explicit. Where the ratio of sales of *Y* to sales of *X* is initially small in magnitude any change in the price of *Y* will have only a negligible effect on the quantity of *X* demanded. The magnitude of the cross-price elasticity measured between these will be small. Thus, even though the demands of the two products are related they would not be regarded as substitutes in demand for the purposes of antitrust analysis.

The 'scientific' quality of the measure will be weakened by the difficulty of fulfilling the ceteris paribus condition. A feature typical of time series data is that it is difficult to isolate the effects of a price change in *X* relative to the price of *Y* and that the greater the cross-price relationship between the two the more likely it is that price changes will occur simultaneously (Fishwick, 1986, Chapter 2). How then can elasticities of demand be established given the likelihood that price changes will encounter defensive responses in the form of adjustment in the prices of substitutes? Isolation of demand-side effects of changes in the price of one good on the sales of another would require the use of regression analysis. However, this is not without methodological econometric problems (see Froeb and Werden, 1991 and 1993) which can compromise results. Indeed, it has been treated with some scepticism by courts over the years. An even more fundamental problem arises from the fact that cross-price elasticity calculations require that all possible substitutes for the good are identifiable, which is clearly not the case. Establishing whether a group of products is substitutable for another may require a process of trial and error whereby the effects of changes in the parameters determining the demand for one good on demand for the other are analysed for different sets of products.

4.2.2.4. Characteristics approach

Often it is not possible to calculate elasticities and a less data-intensive method of defining the market is based on comparing the characteristics of products that might be substitutes. For example, rather that considering the responsiveness of the quantity of oranges to the price of apples, one could compare the characteristics of an orange with those of an apple in order to examine qualitatively the level of substitutability between them.

This approach may be thought of as having its origins in the method developed by Lancaster (1966 and 1979) to the analysis of differentiated products. Lancaster suggests that every product may be defined in terms of a collection of characteristics. If a quantitative measure was assigned to each of these characteristics then a product can be described using a vector containing the values assigned to it. Thus any pair of goods can be compared by looking at the respective characteristics vectors. An example might be the comparison of the lists characteristics (fibre, protein, carbohydrates, etc.) on the side of breakfast cereal packets.

Where applied correctly a characteristics approach is especially relevant to cases concerning the behaviour of firms that compete in markets where brand names carry weight in consumers' minds, as the relative location of these products in characteristics space will help to determine whether or not they constitute substitutes for each other.

The intended use, for consumption or production, of different goods in a group of products should also be examined before deeming these to be substitutes. Where inputs to production are used in a manner unique to the production of a single good, dominance in that input supply market would not allow a firm to exercise leverage (in terms of influence on prices) downstream at the final product stage. In effect, the narrower the range of different uses to which a particular commodity can be put, the less elastic will be demand.

Furthermore, the structure of supply and demand on a market, i.e. the conditions under which a product is consumed and produced will also help to define it ([1]). The perception of consumers and producers ([2]) alike as

([1]) Case 322/81 *Michelin v Commission* [1983] ECR 3461, (1985) 1 CMLR 282. In this instance replacement tyres for heavy goods vehicles in Holland were seen to be in a separate market to tyres supplied on new heavy goods vehicles as the circumstances under which they are traded and fitted are totally different.

([2]) An example of where this was applied is BBI/Boosey and Hawkes OJ L 286, 9.10.1987, p. 36, (1988) 4 CMLR 67, where the Commission looked at internal documents from the company in which executives defined what they perceived as their (narrow) relevant market.

to the groups of products and firms included in their 'market' can also be taken into consideration.

4.2.2.5. Supply substitutability

Supply substitutability refers to the ability of existing producers to react and alter the choices facing consumers. While, as already discussed, the residual demand elasticity implicitly includes supply responses of competing firms, the analysis of supply substitutability merits explicit consideration. Given a price rise in respect of one product (by one firm or a group of firms), there are a number of possible reactions that we might consider.

First, firms producing products that are close or perfect substitutes might change their prices. If these price changes follow those of the market leader, then there is a compelling argument to say, for example, that the market leader faces the market demand and thus has a dominant position. Second, firms producing products that are not substitutes could switch from an existing product line into a product line that is a substitute in the market in question. An example of this might be the ability of a vegetable canning factory to switch to the canning of fish products. Even though fish and vegetables might not be substitutes, a price rise by all canned fish suppliers would likely elicit a supply response from producers of canned vegetables. This response depends on the cross-elasticity of supply between the two product lines: precisely, the percentage increase in the supply of canned fish from vegetable canners given a 1 % increase in the price of canned fish. Finally, a third possible source of producer reaction might come in the form of new entry to the market. It is argued by some theorists (Demsetz, 1982; Baumol, Panzar and Willig, 1982) that this possibility, if credible, would mean that an existing monopoly producer would have no market power (i.e. face a horizontal demand curve). This theory, known as contestability, relies on some strong assumptions. In particular, it requires that entry does not incur costs that cannot be recovered on leaving the market (known as sunk costs) and that the firm(s) in the market cannot change prices within the period of new entry. For this reason, the force of the contestability argument may be intellectual rather than practical in most situations. However, the general point that potential entry may affect market power is important and must be taken on board in any systematic analysis.

In defining markets, practitioners must make a choice about when to use supply substitutability. One option is to define the market solely in terms of the demand substitutability, that is, holding the reactions of suppliers constant. Using this (often narrower) definition of the market, the supply substitutability arguments are brought in 'below the line' in the analysis of competitive effects. If there is a high cross-price elasticity of supply or the market is considered contestable, then this would be a mitigating factor in determining whether a firm was dominant and could abuse that dominance, or whether a merger would adversely affect competition. The second option is to introduce supply substitutability above the line and use it explicitly in the definition of the relevant market. This is likely to result in a broader definition of markets at the outset, and hence a lower incidence of dominance. There is a conceptual problem associated with the practice in that one moves from defining a market using products to defining a market using both products and suppliers. This problem is most acute in the case of potential competition where, if a market is considered truly contestable, the relevant market would be without bound as it would, at least theoretically, embrace all existing and new firms. Most competent authorities would be reluctant to carry the principle this far.

4.2.3. The geographic market

A monopoly or market power exists not just with respect to a specific product but also with respect to an area of geographical space and a period of time. The primary, but not sole, determining factor in determining the geographic extent of a market is the level of transport costs. However, other factors such as regulatory barriers to trade and conditions of competition in upstream or downstream markets may also be relevant.

We first consider transport costs. High transport costs (relative to the price of the product) will, in general, mean that the geographic extent of a market will be narrow. As with product market definition, there is both a demand and a supply aspect. On the demand side, the transport costs refer to the ability of customers to switch and purchase from outside the geographic market in question. For many services markets and markets for cheap bulky goods, these transport costs will be high relative to the price and customers will have little choice but to shop locally. On the supply side, the transport cost is the cost that a supplier outside the region faces in switching sales into the region. This depends on the cost of bulk transportation and, in the case of services, the cost of setting up outlets in the region. Both

factors need to be taken into consideration in determining the geographic extent of the market.

The economics literature has also been concerned with the development of empirical tests that capture the level of transport costs. Elzinga and Hogarty (1973) propose analysing the volume of trade between areas using two criteria — 'little in from outside' (LIFO) and 'little out from inside' (LOFI) — based on shipping data as a means of market delimitation. Substantial shipments between areas ([1]), with respect to both destination and origin, will, according to the Elzinga-Hogarty test, place them in the same economic market. On the other hand, the lack of substantial shipments between regions does not necessarily imply the converse and might result from intense price rivalry.

Shrieves (1978), Horowitz (1981), Stigler and Sherwin (1985) propose tests, requiring econometric estimation of the relation between prices over time and across regions, to examine any price correlations and price trends between areas. The conceptual basis of these tests is that within a single (geographic) market prices of the same goods tend to equality easily and quickly over time. Therefore price uniformity indicates that two regions are in the same geographic market while any price differences between them imply separate and distinct markets. Price differentials may be the result of price discrimination, transportation difficulties, distribution costs, cultural differences or legal restrictions, etc. Elzinga and Hogarty (1973) point out that there are both practical and conceptual difficulties with any theory based on price comparisons (Froeb and Werden, 1993, pages 338-341)). The practical difficulty lies in determining the relative prices and costs of transportation between areas. Meanwhile, a conceptual problem arises because differing and uniform prices may be associated with market phenomena other than separate geographic market areas. Thus, the use of price data as the sole means of distinguishing geographic markets may indicate discrete regions which are too broad. Scheffman and Spiller (1987) develop the work of Landes and Posner (1981) on residual demand elasticities and formulate a model for geographic market delineation where the relevant antitrust market corresponds to the area for which the own-price residual elasticity facing producers is small.

Scheffman and Spiller (1987) criticise empirical tests for their bias towards economic markets rather than antitrust markets (based more generally on conditions of competition). They suggest a different method to overcome this bias that focuses less on arbitrage and more on the systematic definition of an antitrust market, with reference to both demand and supply substitutability.

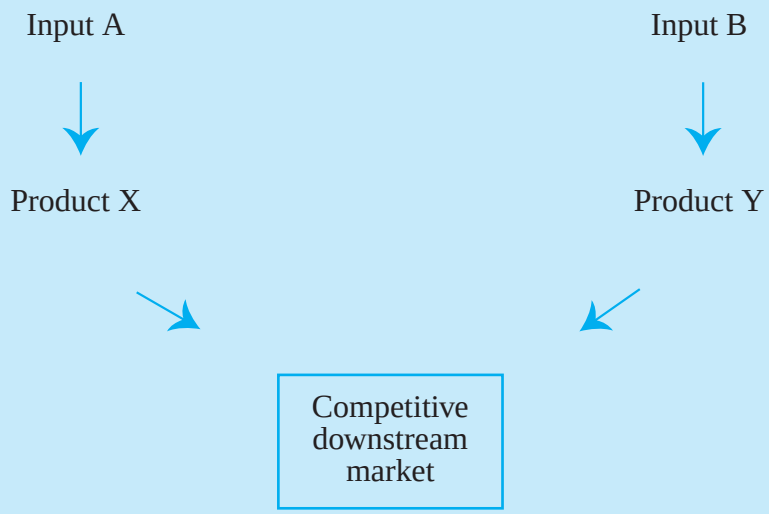
Transport costs are not the sole determinant of the geographic extent of the market. Regulatory barriers to trade are more clear-cut and these will generally have the effect of segmenting markets and creating local market power. These can also be thought of in terms of very high transport costs, where the cost is the cost of circumventing or contravening the law.

Even if transport costs are high, two upstream markets might be considered to be in the same market if the downstream markets into which they sell compete intensively if certain conditions are met. We illustrate using Graph 8 where *A* and *B* are two markets for an identical non-traded input. The markets for *A* and *B* are thus distinct from each other from the perspective of transport costs. We assume that *A* supplies to producer *X* and *B* to producer *Y* and that *X* and *Y* compete intensively. Suppose next that the producers in the market for input A decide collectively to increase the price of the input. Producer *X* faces an increase in its cost. This will tend to increase demand for producer *Y* with attendant increases in demand for input *B*. This mechanism will operate if *X* and *Y* compete intensively and if there are no capacity constraints in the markets *Y* or *B* that would prevent expansion of output in that part of the market. If these conditions hold, a price increase in market *A* would result in an increase in demand for and output by market *B* which would restrain any monopoly power in the non-traded input market *A*. In this manner, there is indirect competition between the two parts of the market.

Neven et al. (1993) argue that geographic and product markets should be simultaneously rather than sequentially defined as otherwise there is a bias towards defining the market too narrowly. Sequential definition implies first determining a product market such that substitution of alternative products alone is just insufficient to render a price increase unprofitable and then

([1]) Elzinga and Hogarty (1973) consider that shipments accounting for 75 % of the appropriate 'line of commerce' are substantial. However, this figure is an arbitrary measure. It represents a conservative estimate of the percentage of shipments which encapsulate the major demand and supply forces within a geographic market.

Graph 8: **Upstream-Downstream markets: Are non-traded inputs A and B in the same market?**



delimiting a geographic market such that switching to suppliers from other areas fulfils the same condition. However, it is obvious that a price rise for a given product in a given area would lead to simultaneous switching both to other products and to other locations. 'Unless by sheer coincidence the customers who would have substituted away towards other products were exactly the same as those who would have substituted away towards other locations, the total demand substitution towards both other products and other locations will exceed that in either dimension separately' (Neven et al., 1993, page 54). As a result of underestimating the range of substitution possibilities in this way, market boundaries could be tightened unnecessarily.

4.2.4. The temporal market

The scope of an antitrust market must also be defined for the purposes of analysis with reference to a specified time period. While this factor is likely to be a minor one in most cases, it will tend to be of particular importance in situations where product and consumption durability and timing of a service, for example, air flights, are issues in market delineation. Also, as is the case for many services, such as telephony, electricity, etc. time is an integral issue where the relevant antitrust product is perishable or is consumed at point-of-sale. A temporal qualification will therefore separate goods sold in one period of time from those sold at different times. In any analysis of the issue competition authorities should give weight to the ability of consumers to substitute between the purchase of identical goods in different time periods. For example, there would be little point in a household buying a real cut Christmas tree in July as it would no longer be of use to them in December. If, however, the supplier of a product can effortlessly store a tree produced in July to be used in December then, from a supply perspective, the two share the same market.

Coase (1972) argued that when a good has a long life span a monopoly producer will tend to have less market power, i.e. will be unable to charge a high price-cost margin. More generally, in any durable good industry even competition within oligopolies will be more intense than in a similarly structured non-durable good

industry. The degree of feasible inter-temporal substitution will be the noteworthy theoretical factor in determining the time element of relevant market delimitation. The more precisely an overseeing antitrust body can pin down the temporal span of a market, the more accurate the analysis will be. The reason for this is that shorter periods are seen to correspond to the economic operative time in which a dominant firm can exercise market power without risk of entry into the market. In Tetra Pak II (OJ L 72, 18.3.1992, p. 1), the Commission held that certain types of aseptic and non-aseptic cartons corresponded to separate markets as any movement between the two would involve a change in consumer tastes which could only happen in the long run and, therefore, is not relevant to the analysis.

4.2.5. The practice of market definition

The theory underlying market definition has developed alongside practice in the area. Theoretical debates and analyses have often been driven by perceived weaknesses in practice, and practice has frequently adjusted to take on board these theoretical points. For this reason, we observe a close correspondence between the theoretical approaches outlined above and competition policy in practice. We focus here on the approaches of the US authorities and those of the European Commission.

The US approach to market definition (for mergers) uses the concept of the SSNIP test. SSNIP is the acronym for a 'small but significant and non-transitory increase in price' ([1]). In practice, this has been defined as a 5 % increase in price maintained for a period of a year. If a hypothetical monopolist could find it profitable to raise the price by this amount, then the market would be defined to include just the product in question. If not, the next closest substitute would be added and the experiment repeated. That is, if a hypothetical monopolist could profitably increase the price of both products, then both products constitute the relevant market.

The SSNIP test incorporates simultaneously both product and geographic aspects of market definition as it does not distinguish between whether the hypothetical monopolist loses sales to competing producers or to other regions. It thus avoids the bias identified by Neven et al. (1993) of sequential estimation of the markets. By using a time frame of one year, the SSNIP test also, in principle, incorporates both the supply and demand aspects of market definition. It thus includes in a comprehensive manner most of the elements of market definition that were outlined above.

There has been a debate since 1992 concerning the incorporation of supply responses. Prior to 1992 (under the 1982 guidelines) the residual own-price elasticity was used as the means of evaluating the SSNIP test (see page 6 above). The 1992 guidelines specify the structural elasticity of demand, thereby excluding supply responses from the definition of the market. This has provoked considerable debate in the US literature on whether supply responses should be brought above or below the line and Simons and Williams (1993) have been highly critical of the 1992 guidelines in this regard.

Case law in the European Union has dealt with all aspects of market definition, and much has been written about the precedents established. Whish (1993) cites a non-exhaustive list of factors which may be considered relevant from a legal perspective in assessing demand substitutability for the specific purposes of applying Articles 81 and 82 of the Treaty of Rome.

The characteristics test is frequently used in European cases because of the lack of suitable quantitative data to estimate elasticities. The most celebrated, and widely criticised, example is the *United Brands* case in which the Court of Justice ruled that bananas were a product distinguished from other fruits by reason of their specific characteristics of 'seedlessness, softness, taste and handling quality' ([2]). This analysis is flawed, given that the sellers of bananas cannot distinguish high-demand from low-demand customers, and that the low-demand customers determine the demand at the margin. Thus it would not be possible to exploit market power in a niche of the market. This is cogently expressed by Korah (1990, page 59):

'The Commission was concerned about the needs of the young, the old and the infirm, but the interests of the toothless are sufficiently protected by the inability of

([1]) The Department of Justice merger guidelines (1992) define the geographic market in which a firm or group of firms operate(s) as the smallest 'region such that a hypothetical monopolist that was the only present or future producer of the relevant product at locations in that region would profitably impose at least a small but significant and non-transitory increase in price'.

([2]) Case 27/76 [1978] ECR 207, (1978) 1 CMLR 429.

the dominant firm to discriminate against them. It would lose so much market share from the rest of the population that it would not be worth raising prices to exploit the weak.'

Many of the finer points of market definition have been teased out by the Court of Justice, including supply substitutability. An example is the manner in which intended use may matter for the definition of the market. In the case of *Hugin v Commission* ([1]), for example, Hugin was dominant in the market for spare parts for its own cash machines. These spare parts were seen to constitute a separate product market due to the fact that design specifications meant that only Hugin replacement parts could be used in Hugin registers. Therefore, the limitations imposed on the intended use for these parts placed them in a market separate to that for spare parts in general.

Practice in the European Union has developed considerably in the last decade with the introduction of the 1989 merger regulation and the 1997 Commission notice on market definition which codifies in the Commission's approach to market definition. This makes clear that markets are defined with respect to both demand and supply substitutability, although the supply substitutability is that which may occur in the short term. The notice states:

'This requires that suppliers be able to switch production to the relevant products and market them in the short term without incurring significant additional costs or risks in response to small and permanent changes in relative prices.'

However, potential competition is not taken into account at the market definition stage but instead, below the line, in the analysis of competition.

'The third source of competitive constraint, potential competition, is not taken into account when defining markets, since the conditions under which potential competition will actually represent an effective competitive constraint depend on the analysis of specific factors and circumstances related to the conditions of entry. If required, this analysis is only carried out at a subsequent stage, in general once the position of the companies involved in the relevant market has already been ascertained, and such position is indicative of concerns from a competition point of view.'

Geographic market definition assumes much greater importance in European practice, given that one of the primary objectives of European Community competition law is to prevent the segmentation of markets along national lines. Over the last decade, the laws of Member States have converged with the provisions of the Treaty of Rome and enforcement has been improved ([2]). National competition agencies increasingly concern themselves with those markets where the geographic scope of the relevant market is national or sub-national, and the European Commission with cases where the market includes several Member States. However, it is possible that an anti-competitive action in a market that is geographically national could affect trade between Member States and, in this case, the Commission might intervene. Thus the geographic market definition is not the sole determinant of jurisdiction. This distinction will be relevant to our discussion of market definition in the context of State aids below.

Overall, the development of market definition in the merger regulation and in the 1997 Commission notice represents a movement towards a more systematic and transparent approach to market definition that incorporates much of the recent theoretical literature in a practical way.

4.2.6. Summary

The literature on market definition is well developed in the context of the analysis of competition and many of its main insights have already been incorporated into the practice in the area. The remaining issues of contention relate to method and to measurement.

With regard to method, there are differences between the US and EU practices in terms of:

— the approach to assessing demand substitutability; and,

— the general treatment of supply substitutability.

([1]) Case 22/78 *Hugin v Commission* [1979] ECR 1869, (1979) 3 CMLR 345.

([2]) Fingleton (1997) provides a detailed overview of Irish competition policy (including the approach to market definition) which outlines, not just how convergence may happen, but also the pitfalls that arise in improving the enforcement of competition policy.

As a result there may be inconsistencies or biases in decision making, both between and within each jurisdiction.

The problem of measurement is common to all jurisdictions, but is possibly more profound in the EU where data collection is less systematic across countries. In many landmark EU cases, it has been necessary to define markets with reference to a 'common sense' test rather than by quantitative measurement of the market.

Overall, however, the many developments in this area in the last decades mean that there is a clear body of theory and practice on which to base the extension of market definition into other areas. Before embarking on such an extension in the context of State aids, we examine some general analytical issues raised by State aids in a multi-country setting.

4.3. Taxonomy of State aids

In attempting to arrive at an approach to market definition which would be appropriate in evaluating the impact of State aids on competition, it is necessary first to define categories of aid and the context in which it is given. We introduce a general framework which allows consideration of the various types of State aids which are commonly given. We then review the fundamental rationale for State aid as an instrument of government intervention and go on to discuss the distributional and welfare consequences of State aid. To bring out similarities and differences in the contexts in which these aids are given, we first examine the case of State aids in autarky and then extend our analysis to a multi-country setting. This is of particular relevance to the EU where State aid is determined at the national level but where its effects may be international. We conclude that a supra-national system of State aid control might be appropriate in order to prevent countries giving aids that have strongly negative externalities on other countries without sufficient positive effects in the home country.

4.3.1. Industry and market

4.3.1.1. A proposed taxonomy

The distinction between the terms 'industry' and 'market' is central to the approach adopted in this document and we define the following terminology.

- Market describes the demand side of a product, i.e. the consumer perspective on the product; to a large extent this corresponds to the antitrust or competition policy usage.

- Industry refers to the supply side of a product, namely the firms that produce the product.

- Industry sector refers to those firms that supply to and buy from the industry generally. Thus industry sector includes both the industry and any upstream and downstream producers thereby capturing economy-wide effects.

An industry may supply several markets, either because it contains multi-product firms or because it supplies the same product to different geographic markets. Table 12 provides some examples, by way of illustration. For example, the airline industry supplies flights on different air routes which constitute different geographic markets but also supplies both freight and passenger services which are different product markets. The airline industry sector will include reservation systems, airport services and other firms that supply a high proportion of output to, or purchase a high proportion of their inputs from, the airline industry. An industry sector will generally include more firms than an industry, the number of firms depending on the degree of vertical integration. The greater the degree of vertical integration, the more the industry will tend to coincide with the industry sector.

Having made the distinction between industry, industry sector, and market, it is now possible to present a general categorisation of State aids, into one of the following four types ([1]).

- Activity-specific, i.e. a firm (or firms) is (are) provided with State support to carry out a certain activity. Eligibility for aid may require provision of a particular product or service in a given market or set of markets or, within a particular industry (as defined by the production technology associated with the activity).

- Firm-specific, i.e. a firm (or set of identified firms) is (are) given State support, which is unrelated to any specific product which they produce.

([1]) There may be some overlap between these cases as, for example, where the industry consists of just one firm.

Table 12

Examples of markets, industries and industry sectors

Industry sector	Industry	Markets
Aircraft manufacture	Airlines	Specific air routes
Aircraft maintenance		for people and freight
In-flight catering		
Reservation systems		
Components	Car assembly	A variety of car markets
Steel		
Cabling	Network provision	Local telephone calls
Satellites	Service provision	International calls
Computers	Instrument manufacture	Telephone instruments

- Industry sector-specific, i.e. any firm operating in a particular sector, at whatever tier, is eligible for State aid, assuming that it meets the relevant criteria.

- Region/area-specific, i.e. any firm (or subset of firms) operating in a particular region within a country is eligible for State aid.

If the State aid is paid towards a product or activity, then clearly there is a market issue from the outset. If, as is more commonly the case, State aid is paid to a firm or firms, the direct effect of the aid will be on the industry where it is paid. Indirect effects may occur downstream on the market(s) in which the firm sells its products and this will be measured by the effect on consumer surplus arising from any change in the market price or quantity. If the recipient is an intermediate producer, the welfare effect on the market is measured as the change in consumer surplus in the final goods markets. Indirect effects (on producer surplus) will also occur upstream if the recipient of the aid changes its purchases of inputs. The form of aid will depend on the mechanisms which the government has at its disposal ([1]).

4.3.1.2. Rationale for State aids

State aid is one of a number of general instruments which a government may use to achieve certain objectives. For some interventions, a State aid may be the most efficient instrument. Generally, the objective of a State aid is either to rectify a market failure caused by an externality or to redistribute resources. In the case of market failures, we assume that the government can calculate the net benefit associated with any intervention and that its objective is to grant aid where that net benefit is positive. In other words, the government gives State aids where the benefits exceed the cost. We give some examples of efficiency gains.

(1) Production externalities. Firms may not appropriate all of the benefit of their production, as is the case with R & D, leading to under-investment problems. One instrument of government intervention is the system of patents, but this is not adequate in all cases and State aid to R & D activity may be superior. Aid in this case is likely to be activity-specific, that is, available to all firms engaged in a particular production activity.

(2) Agglomeration externalities. In some industries, the profitability of a firm is greater if it is physically close to its horizontal competitors or to its suppliers. and clusters of producers are therefore more efficient. By aiding the first firms to commence production, a government may make a cluster sustainable that would not otherwise be. Aid in this case may be specific to the industry if the externalities are solely horizontal or to the industry sector generally if they are vertical and horizontal. If transport costs are important to the

([1]) We do not outline these mechanisms in detail. They include taxation, grant aid, implicit subsidies (e.g. training grants), etc. The range of instruments is also limited by national and EC legislation.

industry, regional specific aid could act as a proxy for industry sector aid.

(3) Intertemporal externalities. If firms operate in industries where long-term investments are required, existing managers may be myopic. In addition, there may be time inconsistency problems whereby the government cannot commit to future actions. This may result in underinvestment. State aid is one of a number of policies that could be used to enhance incentives to achieve optimal investment. Intertemporal externalities are more likely to induce activity-specific aids because the characteristics may be shared across the industry ([1]).

(4) Environmental externalities. If production imposes pollution costs on society, aid could be used to 'clean up' the firm. This aid could be specific to a sub-group of firms in an industry or to all firms in that industry and is likely to be activity-specific.

(5) Public goods. A public good is one whose full benefits cannot be priced in the market. For many public goods, such as street lighting, education, etc., the traditional model has consisted of State ownership and funding from taxation. Increasingly, however, the provision of such goods is left to the (often regulated) private sector with subsidies paid to producers if required. Such subsidies may take the form of direct grant aid to an existing firm (firm-specific aid) or the option to provide the service may be put out to tender. Activity-specific aid might be used to achieve certain types of public good objectives, but it might be difficult to distinguish this from firm-specific aid, especially if the firm is the sole producer.

In addition to the efficiency rationale for State aid, there may sometimes be distributional reasons for State aid. There are many instruments available to achieve redistribution and, in some instances, State aid may be preferred. We give two such examples.

(1) Universal service. For some essential services such as post, electricity or telecommunications, it is considered desirable that everybody in society should have access at the same price, regardless of whether the cost of supply varies ([2]). Provision of such a service may require that the price be lower than the cost for some consumers and direct aid to the supplier(s) may be used to cover the shortfall. Alternatively, the supplier(s) may be allowed to charge a margin above cost to some customers in order to cross-subsidise those for whom supply is costly. The latter is a form of indirect aid in the sense that the State is permitting funding of the service from monopoly profits in one part of the market rather than from taxation ([3]). Aid to achieve some universal service requirement(s) could be activity-specific, but as mentioned above, it may be difficult to distinguish this from firm-specific aid where the firm is the sole supplier. If the firm is a multi-product firm, the effects of the aid would depend on the extent of joint costs between products.

(2) Regional equality. State aid is often used to transfer resources from richer regions of the economy to poorer regions. Rather than make per capita payments in the poorer regions, the State may choose to grant aid to producers, in order to increase or maintain employment levels. A particular case in point is the question of restructuring. If a region has a predominant industry that goes into decline and if the labour is immobile geographically and in terms of skills, then the decline of the industry will have long-term repercussions on the wealth of the region that market forces will not quickly rectify. State intervention here may take the form of support to the declining industry as a short-term measure or retraining of the workforce and aid to new firms to encourage new employment in the region. Any of activity-specific, sector-specific and region-specific aid could achieve this objective. Again, the choice of State aid as the instrument of redistribution is often motivated by political factors and the creation of a perception (perhaps illusion) of equality.

It is often the case that both efficiency and equity considerations are simultaneously present in a State aid

([1]) We do not include here the possibility of aid to mitigate the effects of mistakes, but these could be firm-specific, especially if corporate governance was weak in one firm.

([2]) For example, provision of such services is more expensive in rural areas but connection charges are often the same for both rural and urban subscribers.

([3]) Whether direct aid or permitting cross-subsidisation is chosen depends on complex factors. The important point here is to recognise that both constitute aid.

decision. For example, granting an airline aid to provide a daily service to a regional airport may have an equity rationale, such as mitigating the higher transport costs and may also bring prices closer to marginal cost if there are economies of scale. Another example might be the granting of State aid to firms that invest in production facilities in regions where the previous industry declined. This might improve equity, but might also have the type of pump-priming rationale of agglomeration that was discussed above.

4.3.2. Context 1: State aids in full autarky

We consider first the situation of a completely closed economy that has no trade or financial interaction with any other economy. In such a setting, State aid is given to a commercial activity or activities on economic grounds if total social benefits exceed total social costs. As all social costs and benefits accrue to the economy in question, the government has the correct incentives to give State aid only when it is welfare enhancing ([1]).

In order to provide a comprehensive framework for measuring these effects, we develop a taxonomy of State aid according to whether aid is given to just one firm or to all firms in an industry ([2]).

4.3.2.1. Effects of aid to one firm

If aid is given to one firm, it is reasonable to suppose that firm's output (and hence its market share) will increase relative to the counterfactual. That is, the output of the firm either increases from its current level or falls by less than it would have done if the aid had not been given ([3]). Although the recipient's output may increase, this does not imply an increase in total industry output (again relative to the counterfactual).

Suppose that the total industry output remains unchanged. Then we have a case of pure 'crowding-out' or switching of output from one firm to another. Here there are no effects on the market variables (price and output do not change), i.e. no effect on consumers ([4]). However, there are both industry and industry sector effects, namely:

(a) Increased profits to the State-aided (SA) firm (positive industry effect).

(b) Reduced profit in non-SA firms (negative industry effect).

(c) Increased profits to the upstream suppliers of the SA firm. If the inputs are freely traded within the areas of the economy where production occurs, then this effect will be small. However, if internal trade is not possible or restricted in some ways and if the recipient of the aid has location-specific sunk costs, then the business of supplying inputs will move to the area of the recipient ([5]) (positive industry sector effect) ([6]).

(d) Reduced profit/extra losses to the upstream suppliers of the non-SA firms (negative industry sector effect).

Whether all of these industry and industry sector effects cancel each other out in aggregate depends on whether the aid has an efficiency effect. If the aid enables a firm to exploit economies of scale or scope that others in the market could not, then the average cost of output would fall and the net change in producer surplus would be positive and could outweigh the loss to the other firms ([7]). Otherwise, the question is one of distribution and not efficiency.

If total industry output increases as a result of the State aid, both (a) and (c) will continue to hold. However, the effects on other firms in the industry and sector, (b) and (d), will be lower, thus giving higher aggregate benefits to producers, as both (b) and (d) are negative. They will not reduce to zero, however, as the price would tend to fall. The increase in industry/industry sector output will

([1]) Even in an autarky, there might be reasons for the government to monitor State aid to avoid inefficient decision-making arising from capture, aggrandisement, corruption, etc. Such monitoring would simply represent a separation of functions. Within this we abstract from the question of the opportunity cost of public funds.
([2]) The case of aid given to more than one but not all firms raises identical issues to the case of aid to one firm, and we will not treat it separately.
([3]) For example, suppose aid is given to a steel producer to install a permanent facility to produce lower output. Here the counterfactual would presumably be the bankruptcy of the firm with zero output rather than the previous (loss-making) level of output.
([4]) There may be a transport cost effect if the recipient is located close to a major centre of population.
([5]) As we will see below, the question of the geographic upstream product market matters to the measurement of this effect.
([6]) See Graph 8.
([7]) The distribution of benefits between producers and consumers will depend on the extent of price rivalry between firms. Where the granting of such aid results in a positive consumer surplus effect this represents a secondary effect of the aid.

generate an additional market effect for each market in which the output increases. If output rises on a market, price will tend to fall, leading to:

(1) Higher consumer surplus benefiting consumers (positive market effect).

(2) Increased demand for inputs, benefiting upstream firms (positive industry sector effect).

In this case with increased industry output, there are clearly aggregate benefits within the market. In both cases, the benefits must be weighed against the cost of the aid. Unless the existing inefficiency in the market is significant, the cost could easily outweigh the benefit.

4.3.2.2. Effects of aid to all existing firms

When aid is given to all existing firms in an industry, industry output expands and there is both a market and an industry effect. We may thus characterise the effects as follows.

(a) Increased profits to all SA firms.

(b) On any markets in which output increases and/or price falls, there will be increased consumer surplus.

(c) As output increases, there is likely to be increased demand for inputs by all firms, impacting on locations within the economy positively but differently according to the level of intra-country trade in inputs and the location-specificity of the production by the SA firms.

(d) Deterred entry by potential new entrants that do not qualify for the aid as a result of not having been in the industry already ([1]).

Again, in this case we find that the benefits within the market are positive with gains for both consumers and producers ([2]).

The above analysis highlights how firm mobility in terms of geographical location, product space and barriers to entry influences the distribution of the effects of aid ([3]). Consider first region-specific aid. Suppose, there is one firm in region X and one in region Y, that initially they have equal market shares and that aid is given to any firms in region X. If the Y-firm cannot move, the X-firm will increase its market share (by an amount that will depend, among other things, on transport costs). If the Y-firm can move, there may be little or no change in the market shares, but all production will shift to region X. In the former scenario production in region X increases by a smaller amount. If upstream inputs are non-tradable, then there could be important positive industry effects on upstream suppliers in region X ([4]).

In the case of activity-specifIc aid, a similar argument applies according to how easy it is to convert production facilities to the product targeted by the aid. The mobility variable in question is thus the extent of barriers to that activity. This includes barriers to entry into the industry, i.e. how easily firms in other industries can produce products eligible for activity-specific aid, and barriers to mobility between activities within multi-product firms. These turn on the question of supply substitutability.

Where the firm is mobile, there are two differences. First, we are dealing with a situation where the aid is available to all firms rather than just one. This tends to increase the overall benefits of the aid in the market. Second, the distribution of the effects of the aid are amplified. Overall, therefore, if the category of State aid coincides with the dimension in which firms are most mobile, the positive effects within the market are likely to be greatest. This is because mobility permits the exploitation of more efficiency gains, as the most efficient firms can adapt to avail of the aid. In summary, the mobility of firms, the markets in which they operate, and the level of price rivalry all affect the distribution of benefits. The relevant market definition is central to these effects.

([1]) Stigler (1968) defined a barrier to entry as a cost that must be borne by a firm entering an industry that is not borne by firms within the industry.

([2]) The precise division of the gains between producers and consumers will depend on the level of product market competition.

([3]) A firm is mobile in geographic space if it does not have location-specific sunk costs. It is mobile in product space if it can easily switch from one product to another (high cross-elasticity of substitution). The extent of barriers to entry will also depend on sunk costs. Sunk costs also matter for the magnitude of the effects of aid. If the competitors that are adversely affected undertook investment involving sunk costs and are forced to exit the market, then the welfare costs may be greater. If the recipient has sunk costs, then these might have a greater value to society in a firm that is restructured.

([4]) See again Graph 8.

4.3.3. Context 2: State aid in an international setting

As noted above, a government typically gives State aid to commercial enterprises if total domestic benefits exceed total domestic costs. However, if there are several countries and strong trade and other links between them, then the consideration of State aid from the perspective of the countries as a group is very different from that of the individual country giving the State aid. Although each country's objective is to increase its economic welfare, this may be achieved at the expense of the other countries. For this reason, the distribution of costs and benefits across countries is central.

In a multi-country setting, the effects of a State aid will typically be spread across the countries in a pattern that will depend on the mobility of firms, the level of price rivalry and other factors. Where benefits are concentrated at home and costs are concentrated abroad, it is possible that a State aid could increase domestic welfare but reduce total international welfare. If the country giving aid ignores the net negative externalities on the economies with which it trades, then aid that is desirable for the aid-giving country may be sub-optimal and undesirable for the countries taken together ([1]). This means that the set of State aids might be larger than it would be in autarky ([2]), and that it could be desirable to control those aids that impose net negative results.

The effect of a State aid across national boundaries depends on its effect on the recipient(s) and this has several elements. The first is the effect on total output, and this determines the extent of any market effect. The second is the country's share of total output which determines the industry effect. The third is the country's share of total inputs and downstream products produced which determines the industry sector (or economy-wide) effect ([3]).

A recipient of aid is likely to increase output (always relative to the counterfactual) and this will tend to increase the country's share of international output. Whether this has any effects on other countries depends on the geographic extent of the market for outputs and inputs ([4]). There are four logical possibilities. As in the autarky case, if both output and input markets are geographically confined to national boundaries, then there can be no effect on other countries, although the country's share of total outputs and inputs has increased. An example of this might be aid to a non-traded service, e.g. theatre. Where the output market is international and the input market is national the increased share of total output imposes a negative industry effect on other countries as the recipient increases its market share. This negative effect is consolidated at the input level because any increase in domestic output must be met from domestically produced inputs. If, on the other hand, the input market is also international, the negative industry effect on other countries might be to some extent counterbalanced by a positive sector effect, because growth of domestic production could result in increased demand for inputs from abroad. Finally, the case where the output market is national and the input market international might actually have a positive effect on other countries. Domestic output increases but does not affect foreign producers. The corresponding increase in demand for inputs may, however, be met from abroad, conferring a positive benefit on the industry sector abroad, and therefore a net positive effect on other economies. These effects are summarised in Table 13.

In addition to these industry and industry sector effects, the market effect will depend on the extent to which the output market is international and on whether the

([1]) The effect is similar to tariffs in international trade, for which there is an extensive literature in economics.
([2]) On the other side of the equation, aids that benefit foreign countries more may not go ahead, even though the total international effect is positive.
([3]) We ignore the effects of State aid on the terms of trade, and thus abstract from many of the strategic trade implications of this discussion.
([4]) Competition here refers to the export of produce, acquisition of foreign firms and the establishment of foreign production facilities, all important elements of the EU single market agenda.

Table 13

Trans-frontier effects of State aid

	Input market	
Output market	National	International
National	no industry effect	no industry effect
	no sector effect	(+) sector effect
International	(–) industry effect	(–) industry effect
	(–) sector effect	unclear sector effect

increase in output by the domestic firm also increases total output.

Whether the aid is to a firm whose location is fixed or not matters only to the magnitude but not the direction of these effects. State aid to an existing firm causes its output to increase at the margin whereas aid to a newly established firm causes its output to increase discretely from zero. Thus the effects may be greater if the State aid is in respect of greenfield investment ([1]).

Consider the following example by way of illustration. A country gives aid to a soft drinks company that uses two inputs, bottles which are not transportable across country boundaries and concentrate which is freely traded on international markets. Suppose that the final bottled product is traded. The increase in output will have a market effect to the extent that it increases total output and a negative industry effect on drinks producers in other countries. At the upstream level, increased demand for bottles will be met solely by the domestic producers. This means that other economies suffer a reduction in their share of the input market. This is in contrast with the effect on concentrate where other countries may experience an increase in demand from the recipient.

In summary, the direction of any trans-frontier effects of State aid will depend on whether the upstream and downstream markets in which the aid recipient competes are national or international. The size of these effects will depend on whether total output increases and whether the firm is already located in the country. In order to measure these effects we require a formal definition of the relevant market.

4.3.4. Implications for the EU

Our discussion has several implications for the system of State aid control in the EU.

- It should distinguish between State aids that have a clear efficiency rationale and those that do not. In addition to the externalities that would be standard in autarky, Besley and Seabright (1997) specifically focus on the types of externality that may exist in a multi-country system where State aids to industry are given.

- The assessment of the externality should be at EU level rather than at the level of a single Member State or group of Member States. Otherwise, State aids might be approved although the benefits of the aid in the donor country were not sufficient to outweigh costs in other Member States.

- The Commission should be wary of arguments based on redistribution within or between Member States as providing rationale for State aids that have net negative effects across the Community ([2]).

- In order that it may assess these externalities, the Commission would need to measure all of the effects of a State aid and, in particular, its effect on competition within the EU. In order to do this effectively, it is necessary to identify the markets which are affected by any State aid.

4.4. Market definition and State aids

In the context of the EU, State aid control involves some combination of monitoring the distribution of costs and benefits across national boundaries and evaluating the overall costs and benefits of State aid as an autarkic government would need to do ([3]). Each of these components is essential, regardless of the precise criteria that are used to approve a State aid case. If, for example, a State aid is found to have negative effects on other Member States, the Commission would still need to measure any positive effects in order to apply a decision rule.

Without, however, presuming anything about the criteria used for approving State aids, we assume that the Commission's broad objectives are as follows:

- Preventing aids that have as their object or effect the distortion of trade within the EU.

([1]) We do not always distinguish between the cases where the firm is relocating from one country to another and setting up for the first time. In the latter case, there are effects on other countries relative to the counterfactual, which depends on the next alternative location for investment. For many purposes, the effect on the next available location is the same as that in the country where production was previously located.

([2]) This is particularly true as fairness across Member States is a different matter than fairness across income groups in an autarkic society.

([3]) If the Commission was concerned with fairness and distribution issues, it would engage in more of the former and if it is concerned with efficiency it would do more of the latter.

- Identifying those State aids which impose net negative costs on other Member States of the EU.

- Evaluating whether any such negative effects are compensated by aggregate welfare gains.

Regardless, therefore, of the criteria used to evaluate State aid cases, it would be necessary that the Commission examine all the possible costs and benefits of major State aid and in particular their distribution across Member States. As we have pointed out above, the incidence of such costs and benefits will depend on the mobility of firms, and price rivalry which, in turn requires identification of all possible markets on which effects are felt. This raises the question as to whether existing approaches to market definition in competition policy cases would be useful or appropriate in State aid cases ([1]).

4.4.1. Antitrust policy definition versus State aid definition

The approach to market definition used in antitrust policy cases is, we believe, generally relevant and useful for State aid cases. The effects of State aid, as we have seen above may be spread across markets and economies. Control of State aid requires an assessment of these effects. This in turn requires that they be traced, through the firms and markets. This highlights the major difference between the use of market definition for antitrust policy and for State aids. With antitrust policy, the market is delineated to see whether the market mechanism will ensure competition. With State aid control, the definition of the market is required to trace the effects of aid across markets.

This does not mean that State aids are concerned with fairness (the distributional consequences), but rather that measurement of the distribution of the gains and losses (at least conceptually) is required to assess the efficiency rationale of a State aid. This does raise an important question concerning the criterion that should be used for assessing which aid should be allowed, a question which is beyond the scope of this paper ([2]).

([1]) As pointed out in footnote 3 on page 82, the Commission says that the antitrust policy procedure will be used where necessary.

([2]) A system of control that allowed all aids with a net positive effect across the European Community as a whole would permit considerable redistribution. It might be important therefore that the justification for State aid be based not just on the positive net benefit, but also on the superiority of State aid as a policy instrument.

However, regardless of any such criterion, it is likely that measurement will be required and, for this, that the appropriate market definition will need to be determined.

Although the motivation for determining market definition is very different in both cases, the procedures are likely to be similar. However, there are some important divergences with respect to method. We therefore outline how different aspects of market definition, as discussed in Section 2 above, might operate.

- It appears to us that the market(s) should be defined, in the first instance, from the point of view of substitutability in demand before the question of cross-elasticity of supply is considered. In an antitrust policy case, we are interested in the relevant market after some change has occurred in the industry and, in particular, the ability of the market to respond to that change. The response of the market includes both the responses of buyers (demand substitutability) and of other producers (supply substitutability). In a State aid case, however, we are interested in tracing the distribution of gains and losses and, as such, it is appropriate that we be able to identify consumer and producer effects distinctly.

  Another way of expressing this point is that the reactions of competing producers to a State aid may conceal some of the effects of that aid which would be of interest to the monitoring authority. Even if the reactions of competitors meant that there were no market effect (i.e. the composition of total industry adjusts but output remains static), there may still be an industry effect as we have outlined above. For example, if the exit of some firms from the market occurred as a result of a State aid, and if these firms were located in specific countries, then the Commission would be interested in measuring this effect, even if the overall impact on market output was entirely neutral. This would mark a divergence from the integration of supply and demand aspects in antitrust policy procedures.

- Supply substitutability becomes relevant to the measurement of the effects of the aid, once the markets have been defined from a demand perspective. In particular, the ability of the recipient to switch production from one market to another

would mean that effects of firm-specific aid could be felt on both markets. Clearly in the case of multi-product firms this is a key issue where costs of production across products cannot readily be distinguished and consequently cross-subsidisation can occur. (If the intention of the aid was to provide support for one product but not the other, even activity-specific aid could lead to these effects.)

- All the input and output markets must be defined where the recipient has or might have a high market share. In competition policy cases, the input markets would only be defined where there is a possibility of monopsony power. However, in State aid cases, we need to include all those markets in which the recipient already operates, and those in which the recipient might potentially operate.

- The definition of the geographic market is central to the question of product/firm mobility and transfrontier effects and might be expected to assume a greater importance in State aid cases than in antitrust policy cases, because the impact of the State aid may be to alter the recipient's geographic market strategy.

- Although the techniques for identifying the relevant geographic market would be the same for both competition policy and State aid cases, greater emphasis may need to be placed on the question of potential competition at the market definition stage. It is standard, as noted above, in competition cases to bring in potential competition after the market has been defined. In State aid cases, the effect of the aid may be to prevent such competition from materialising and this may be of particular importance in the context of market integration. For example, the US approach of measuring shipments as a means to assessing the geographic market would be wholly inappropriate as this measures whether the market was in the past national or international whereas the Commission would be interested in whether the market could in the future be international ([1]).

- The definition of temporal aspects applied in competition policy would appear to be appropriate to State aid cases.

4.4.2. Some examples

To illustrate some of the issues which arise, we consider as examples two areas where State aids have been given in the recent past, namely airlines and steel. We also examine one area where governments in the EU, especially at regional levels, are becoming increasingly active, namely, the provision of State aid to encourage the location of foreign direct investment (FDI) projects.

Airlines

Suppose a national government wishes to give aid to its national carrier, that is, firm-specific aid. How should we go about measuring the effects on other countries? We should first identify the markets that might be affected. These would include:

— The air routes (passenger and freight) in which the airline currently operates;

— The air routes in which the airline might easily enter; and

— The input markets including those for aircraft leasing and maintenance, meals, reservation services, and labour.

The effects of the aid could be felt on any or all of these markets, depending on how the airline would react.

If the aid were activity-specific (instead of firm-specific), e.g. targeted at one specific air route, then it would be important to examine the cross-elasticity of supply between this activity (market) and other air routes (markets) and whether there are joint costs or economies of scope. If joint costs exist, a route-specific subsidy will reduce costs of other routes, i.e. there will be a spillover from one route into the other. In effect, where joint costs exist, the distinction between activity-specific and firm-specific aid becomes blurred. Although this is an efficiency enhancement, it also has implications for distribution and the Commission would need to examine such effects. This is similar to the argument about cross-subsidisation.

The effect of the aid would clearly have a positive effect on the ability of the airline to undercut others on

([1]) Geographic market definition implicitly contains a supply and demand aspect (as noted in Section 2 above). The point made above about examining and isolating the demand side first would also be relevant to the actual measurement of the geographic market.

international air routes and thus increase or maintain market share. For input markets that are national, this would represent a switch of input production to the country giving the aid.

Steel

Suppose aid is given to a steel producer to aid restructuring. The objective of the firm-specific aid might be to install new capacity or to downscale existing capacity in order to secure employment. In both cases, output would be greater than the relevant counterfactual (no growth or closure). To measure the effects of such aid on other Member States requires that we examine those markets in which this steel company sells or might potentially sell, and those markets in which it buys inputs.

If the firm only produced wire, and the cross-elasticity of supply between wire and other products was extremely low, then the effects would be confined to the wire market. Thus the effects on other Member States would depend solely on the extent to which wire, the inputs for wire, and the downstream products traded across national boundaries. If the cross-elasticity of supply were high, then other markets might need to be considered in the analysis of the likely effects.

Foreign direct investment

Governments, at regional or national level, are increasingly giving State aids to attract foreign direct investment. By and large such firms are producing internationally-traded products in global markets. Aid may be justified on the grounds that these firms will improve efficiency by locating in areas of high unemployment, low per capita income, etc. The question arises as to whether in such cases there are competition issues of concern to the Commission. To the extent that the potential benefits arising from the location are reflected in the aid given, there is an increase in efficiency, as location is taking place in the optimal location from the EU viewpoint. This may result in greater output and lower prices than would have occurred if the firm located elsewhere; thus overall welfare in the EU could be raised as a result. If the FDI firm comes from another EU country, there is clearly an issue of distribution within the EU. Assuming that the firm comes from outside the EU with the intention of establishing production in the EU to service the EU market, then there is not *ex ante* as great an effect on distribution.

Suppose that several welfare-maximising countries compete for a multinational, operating in international markets, to locate inside the EU. If the efficiency of the firm varies with its location within the EU we would expect that the successful bidder would be the country where the efficiency effect was strongest ([1]). If this was also a disadvantaged region, then the distribution effects and efficiency effects would both tend to be positive. However, even in this most favourable case, the Commission might be concerned that such an auction would bid away the rent associated with locating in the EU and being able to supply EU markets from within ([2]).

Assuming that the aid is broad based, say open to all manufacturing firms, i.e. the government offers State aid to any manufacturing firm meeting general criteria, is there any reason for the Commission to be concerned about the particular market in which any given aid recipient is operating ([3])?

For both firm-specific and region-specific aid, it may be necessary to examine the possibility that such State aids will generate anti-competitive effects depending on the type of market and the scale and type of aid given. Suppose, for example, that the aid given to a firm in a monopolised or concentrated market has the effect of increasing concentration or inhibiting entry. This would not necessarily be captured as an Article 81 or 82 case, but should be reviewed in the context of approving a State aid proposal ([4]).

4.4.3. Recommendations

Our recommendations are grouped under two headings. The first is a set of conceptual issues relating to the framework and taxonomy for evaluating State aids. The second is a set of procedural suggestions for the use of market definition in State aid cases. Our recommendations should be treated as proposals for discussion by

([1]) Besley and Seabright (1997) present a theoretical model which argues that permitting a broad range of State aids can be more efficient than preventing State aids.
([2]) There are two additional problems if all such aid is challenged. First, an evaluation has to be made for the successful State, then the next successful and so on until one is found that meets the criteria. This could be messy. Second, countries may attempt to find different, less observable, means of encouraging inward investment.
([3]) We abstract here from the question of whether aid tends to subsidise capital or labour.
([4]) This is particularly important in markets such as airlines where erstwhile dominant and publicly owned firms are facing increasing competition from privately owned entrants.

the relevant parties to decision-making in this policy area.

4.4.3.1. Conceptual ideas

We recommend that the Commission establish a common framework for looking at all applicants for State aids, which focuses especially on the competition effects of aid, in the context of appropriately defined markets.

In addition, we recommend that the Commission define an appropriate set of language to distinguish:

- Industrial sector versus industry versus market;
- State aid which is: activity-specific versus firm-specific versus sector-specific versus region-specific.

It may be that the taxonomy to be used would differ across cases. The fundamental point is that the issues raised should be evaluated in terms of an overall framework.

4.4.3.2. Procedural suggestions

With regard to the procedure in State aid cases, we recommend the following.

(1) Identify the recipient(s) and the State aid in question.

(2) Identify the product markets affected.

  (a) For each recipient of aid, all of the markets in which it sells output and purchases inputs should be identified.

  (b) An attempt should be made to identify markets into which the recipient could enter if granted aid.

  (c) For each of these markets, substitutability in demand should be used and substitutability in supply should be omitted until a later stage.

  (d) The input markets should be identified even if the recipient is a vertically integrated firm, and especially if its competitors are not vertically integrated.

  (e) If the aid is activity-specific, the ability of the recipient to substitute production of another product for the targeted product should be examined to ascertain whether this other product market might be affected ([1]). Similarly, joint costs or economies of scope should be identified.

(3) Identify the geographic extent of each of the product markets ([2]). Those factors which are used to identify geographic markets in antitrust cases should be examined, namely, existing trade flows, common prices across countries, barriers to trade between Member States, etc. However, given the importance of potential competition in State aid cases and the fact that State aid might distort the integration of the European market, attention should also focus on the potential future limits of the geographic market.

(4) Having identified the relevant markets affected by the aid, the next step would be to identify the participants in those markets and the level of competition.

  (a) For the participants in the market, it is necessary to examine how they are affected and how Member States are affected by the aid.

  (b) The level of price rivalry in the market may also be helpful in assessing the balance between gains in producer surplus versus gains in consumer surplus.

Such an approach would enable assessment of changes in both consumer surplus and producer surplus across EU Member States resulting from any State aid. Although, as noted above, the exact criterion by which these should be judged is a more general policy question and beyond the scope of this paper, it is likely that such an assessment will be required. Thus it is desirable that market definition be an integral component of State aid control.

([1]) This would include an examination of the possibilities for simple cross-subsidisation by the recipient.

([2]) Although the procedure for identifying the product and geographic markets sequentially raises bias problems of the type noted by Neven et al. (1993), this critique may not be so relevant in State aid cases where we are concerned with identifying the effects rather than with whether they are above a certain value.

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Chapter 5

State aids, restructuring and privatisation

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5.1. Introduction

During the 1980s and 1990s many EU Member States have undertaken privatisation programmes, transferring economic activities formerly undertaken in the public sector to the private sector. While, on the face of it, the privatisation of profitable enterprises at 'normal' market prices via, for instance, the sale of shares in equity markets, raises few distinctive policy concerns ([1]), most privatisations do not occur in this way. For example, it is relatively common for privatisation to be preceded by the financial or physical restructuring of the enterprise concerned, which immediately raises the question of whether or not such restructuring constitutes a State aid and, if so, whether or not it significantly distorts competition in the relevant market.

The objective of this report is to discuss and comment upon the policy issues raised by the sequence of restructuring followed by privatisation of public firms and, more specifically, to assist in the development of guidelines for the implementation of EU State aids policy in cases involving the restructuring and privatisation of such firms. This involves providing economic criteria for first evaluating, and then minimising, any negative impacts that might be associated with the restructuring and privatisation of public firms.

Throughout the discussion the following are taken as given:

- basic community law on State aids;
- community guidelines on State aids for the rescue and restructuring of firms in difficulty; and
- the role of the 'market economy investor principle' (MEIP) in EU State aids policy.

Whilst the central focus of the study is on the process of restructuring and privatisation, a number of the issues raised relate to State aids policy more generally. For example, the identification of State aids in the process of restructuring and privatisation requires an understanding of rational market investment behaviour, which the Commission currently embodies in the 'market economy investor principle' and which applies to practically all State aids cases. Before considering the specific problems associated with restructuring and privatisation, therefore, we will first consider a number of aspects of economic analysis that are directly relevant to State aids policy in general, and which provide the foundation for our subsequent discussion.

In the course of the discussion, reference will be made to a number of community State aids cases, which are used to illustrate specific points being made in the analysis. These references are not intended to be comprehensive evaluations of the cases selected, and the comments made in the relevant sections should be read in the context of the analysis that precedes them.

The report comprises five further sections, together with appendices that cover some of the more technical issues. Section 2 notes the basic Community articles concerning State aids and describes relevant Commission communications and guidelines. Section 3 considers the types of market analysis necessary to make informed decisions concerning State aids and discusses areas of economic analysis that are helpful in this exercise. Section 4 then examines questions concerning the implementation of the Commission's guidelines on the restructuring of public firms prior to privatisation. Section 5 is concerned with possible issues arising from the act of privatisation itself, and Section 6 concludes.

([1]) Competition policy issues will usually only arise if, as a result of the sale, there is a significant increase in market concentration, in which case a standard set of procedures can be applied.

5.2. The application of Community articles and guidelines with respect to State aid

The Commission takes decisions based on Articles 87 and 88 of the EC Treaty and Articles 4 and 95 of the ECSC Treaty in respect of aid paid by Member States' national or local governmental bodies to public and private enterprises. Article 87 lays down the general principle that aid which may distort competition between firms in different Member States is forbidden, but may be permitted in certain specified circumstances. Article 88 sets out procedures which the Commission must follow in exercising its powers and imposes obligations upon Member States to cooperate with the Commission ([1]).

5.2.1. Community guidelines on State aid for rescuing and restructuring firms in difficulty

In these guidelines the Commission states that it will take into account the special circumstances that characterise the rescue and restructuring of firms in difficulty, when it applies the rules on State aids to the firms concerned. Under certain circumstances this type of aid can be justified. Aid for rescue and restructuring may be considered as contributing to the 'development of certain economic activities' (Article 87(3)(c)), if the conditions set out in the guidelines are met. For those sectors that are subject to special rules ([2]), the guidelines apply only to the extent that they are consistent with those rules.

Although the Commission recognises that rescue and restructuring plans are often part of a single operation, it draws a clear distinction between them. Rescue is defined as providing 'a brief respite, generally for no more than six months, from a firm's financial problems while a long-term solution can be worked out'. In order to gain the approval of the Commission, rescue aid must:

- consist of liquidity help;
- be restricted to the amount needed to keep a firm in business;
- be paid only for the time needed;
- be warranted on the grounds of serious social difficulties; and
- have no undue adverse effect on the industrial situation in other Member States.

The Commission's approach to restructuring aid is more elaborate. The Commission is particularly concerned with this type of aid because 'it can shift an unfair share of the burden of structural adjustment and the attendant social and industrial problems on to other producers who are managing without aid and to other Member States'. In order to approve restructuring aid the Commission requires that three conditions are satisfied:

- The restructuring plan has to restore the firm's long term viability within a reasonable time frame and on the basis of realistic assumptions as to its business future.
- Possible adverse effect on competition should be minimised. Where, for instance, the relevant market displays structural excess of production capacity, 'the restructuring plan must make a contribution, proportionate to the amount of aid received, to the restructuring of the industry, (...) by irreversibly reducing or closing capacity'. This principle may be relaxed in cases where capacity reductions are likely to bring about 'a deterioration in the structure of the market'. ([3])
- In order to limit its distortive effects, aid should be proportionate to the restructuring costs and benefits. The Commission is concerned that the firm could use the surplus cash 'for aggressive, market distorting activities not linked to the restructuring process'. Moreover, if an aid is granted for financial restructuring, it should not unduly reduce the financial charges of the firm.

In the application of these guidelines the Commission will take into account the promotion of regional development in the assisted areas of the EU. Less restrictive application can also be expected when restructuring aid is granted to small and medium enterprises (SMEs),

([1]) See Lehner and Meiklejohn (1991), Chapter 5 for a detailed description of community State aids law; also Hancher (1994).

([2]) Such as agriculture, fisheries, steel, shipbuilding, textiles and clothing, synthetic fibres, the motor industry, transport and coal industry.

([3]) By this the Commission implies a monopoly or 'tight oligopoly' situation. When problems of excess capacity are not relevant, capacity reductions will not be required. However, the recipient of aid should not use the aid to expand production capacity, unless it is necessary in order to restore the firm's viability.

given the fact that SMEs are likely to affect competition to a lesser extent. Lastly, the Commission adopts a favourable view of all those aids that aim to cover the social costs emerging from restructuring.

5.2.2. Community guidelines on State aid for small and medium-sized enterprises (SMEs)

The Commission believes that SMEs play an essential role in the EU economy, on the basis that they assist in employment creation, are more flexible and adaptable than large firms, help keep markets 'contestable', and ease the shifts of economic resources from declining to expanding sectors. The Commission is also concerned that SMEs may face certain disadvantages vis-à-vis larger firms. Raising finance can be harder for SMEs, and they may face higher (proportionate) burdens of compliance with respect to government regulation, the tax system, and collection of social security. Therefore, the Commission takes the position that a degree of positive action by governments can be justified in creating an environment conducive to SMEs.

The Commission has therefore adopted a relatively benign attitude concerning State aids towards SMEs. First, a *de minimis* rule is applied whereby aid up to a certain amount will not be subject to notification. Second, State aids that have an impact on competition and interstate trade may be eligible for exemption. The eligibility depends upon the type and 'intensity' of the aid.

The Commission also engages in an analysis of the effects of different types of aid on trade and competition that takes into account the 'closeness' of the subsidised activities to the marketplace. The underlying assumption in favour of State aids to SMEs is that the latter affect trade less than is the case for larger firms. The reasons given by the Commission rely on the fact that sales of individual SMEs are less than those of larger firms, and that SMEs are often active in sectors in which there is relatively little intra-Community trade. In the case of SMEs, the guidelines allow aid for:

- general investment;
- environmental protection investment;
- consultancy help, training and dissemination of knowledge; and
- R & D up to predetermined ceilings.

5.2.3. The market economy investor principle

The first step taken by the Commission in a State aid investigation is to assess whether aid is present in the financial flow between the State and the firm. This analysis is based on the so-called 'market economy investor principle' (MEIP). This principle states that aid should be assessed as the difference between the terms on which the funds were made available by the State to the firm or enterprise and the terms which a private investor would find acceptable in providing funds to a comparable firm or enterprise when the private investor is operating under 'normal market economy conditions'. Any public funds provided on terms more favourable than those which would be acceptable to a private investor operating in a comparable financial and competitive position are treated as aid.

The MEIP is used as a benchmark to determine (i) whether aid is present and (ii) to quantify it. The Commission's approach in applying the MEIP is to attempt to place itself in the position of the investor at the time the financing or investment decision was made. In particular, in the Commission's approach:

- The analysis of risk requires public undertakings, like private ones, to exercise entrepreneurial skills which, by the very nature of the problem, implies a considerable degree of judgment and, consequently, a significant margin of error. Within that margin of error the investment cannot be regarded as involving State aid. Only where there are no objective grounds reasonably to expect that an investment will give an adequate rate of return acceptable to a private investor in a comparable situation is State aid involved.
- The principle is not be applied with hindsight. Only where there were no objective grounds reasonably to expect an adequate rate of return in a comparable private undertaking at the moment the investment or financing decision is made can State aid be presumed to be involved. This approach does not discriminate between projects with shorter or longer pay-back periods, so long as risks are adequately and objectively assessed, and financial flows appropriately discounted in the manner of a private investor.
- Account will be taken of the nature of the public authorities' holding in the undertaking (as this effects whether it has a long-term interest or a

short-term speculative motive, in particular where additional finance is necessary to protect the value of previous investments ([1]), and of the past performance of the undertaking in respect of profitability and dividends, etc., as these would normally influence the response of a private investor to a call for new finance.

- The amount of financial and other information which a private investor would normally require in deciding upon an investment will also be taken into account.

Although we are not concerned specifically with the detail of the MEIP in this report, the third of the above points indicates some ambiguities in the general approach. Specifically, it draws attention to the fact that private investors are not homogeneous; for example, there can be conflicts of interest between equity holders and bondholders which can complicate the assessments. For current purposes these difficulties will be ignored by assuming that the relevant private investor is concerned with maximising the market value of the firm as a whole.

5.3. Economic analysis and State aids policy

The primary aim of the Commission in the application of Articles 87 and 88 is to ensure that aid does not distort competition in the common market and trade between Member States. The two initial pieces of analysis that are required are:

- an assessment of whether a particular transaction constitutes State aid, and

- an assessment of whether any State aid that does exist has a distorting effect on trade and competition.

The former exercise is conducted using the MEIP, while the latter has, to date, tended to rest upon discussions of firm size, the extent to which the firm 'exports' to other Member States, and the extent to which it is in competition with firms in other Member States ([2]).

The objective of ensuring that State aid does not distort competition — which in practice may mean the imposition of measures designed to offset, so far as is possible, any adverse effects of the aid on competitors — implies that an assessment of the effect of the aid on the state of competition in the market is also necessary. The Commission's approach to this issue has tended to be based on the view that aids have a more direct and immediate impact upon competition between Member States than do more general measures ([3]), but thus far only limited attempts appear to have been made to differentiate the various forms of 'State aid' according to their potential economic consequences.

However, whilst some types of benefits conferred by the State on public or private enterprises may have substantial effects upon a firm's viability in the market — and upon investment, pricing, employment and output decisions — other types of aid may have few or no such effects. Hence, if the basic task of policy towards State aid is to minimise distortions to competition — and in particular to prevent the use of aid to support or ensure the survival of enterprises which would otherwise be unviable — the task of seeking to distinguish the different consequences of various forms of aid is clearly an important one. In this context, economic assessments should include consideration of the following:

- the nature of economic decision-making within the firm and how it is influenced by various incentive structures; and

- the nature of market competition in general, and how a firm's financial position might affect this competition in particular.

These are issues that have been extensively addressed in research on the economics of the firm, industrial organisation, and corporate finance in recent years. Our purpose in the remainder of this section is to indicate where the results of this research bear directly upon the implementation of State aids policy.

([1]) This is a point that must be handled with great care if mistakes of economic analysis are to be avoided, as will be apparent from the discussions below concerning the distinction between avoidable and non-avoidable costs and the IOR State aids case.

([2]) Evans and Martin (1991).

([3]) Hanger, Ottovanger and Slot (1993), p 27–28.

5.3.1. Economic decision-making and the form of aid

A natural starting point for a general discussion of the economics of State aids is the elementary theory of the firm, as found in most introductory and intermediate economics textbooks. Since this theory assumes that the objective of the firm is to maximise profits, it cannot necessarily be applied directly, or with any degree of generality, to the behaviour of public enterprises. Although such enterprises will frequently behave in similar ways to their privately owned counterparts, they may also be entrusted with non-profit objectives that lead to different forms of market conduct. Nevertheless, even though it also ignores possible capital market imperfections associated with asymmetric information, the elementary theory of the firm remains a useful first reference point for at least two reasons:

- its analysis of cost conditions is of more general validity than the theory as a whole; and
- when public firms are being prepared for privatisation, their objectives and incentive structures tend to become increasingly aligned with those of the private sector.

We will, therefore, start with a relatively simple analysis, and only later will we add complexity by relaxing assumptions. In consequence, it should be borne in mind throughout this section that some of the initial conclusions will be potentially subject to quite radical revisions when assumptions of profit maximisation and perfect capital markets are later relaxed (see, for example, Section 3.3 and Appendix 1 below).

5.3.1.1. Cost structures

Two standard and important distinctions relating to cost conditions are those between:

- variable and fixed costs (depending upon whether the individual cost component does or does not vary with output); and
- short- and long-run costs (depending upon whether capital is fixed or variable).

One of the most basic propositions to be found in introductory economics textbooks is that changes in fixed costs have no effect on a firm's decisions and behaviour. This proposition implies that State aid granted to a firm in the form of a one-off reduction in fixed costs, which is not made contingent upon other actions of the firm, will have no effect on the firm's conduct. It follows immediately that such aid will also have no effect on competitive conditions in the relevant market ([1]).

5.3.1.2. Sunk costs

In recent years however, economic analysis has tended to stress a further cost distinction of particular relevance for the assessment of State aids policy. This is the distinction between fixed costs and sunk costs. A fixed cost is a cost that is incurred by a firm in producing a given product or products, but that has the characteristic of not varying with the level of output. A sunk cost (or benefit), on the other hand, is a cost that, once incurred, cannot be recouped by reversing the decision that led to it. Sunk costs, by definition, have no bearing on economic decisions ([2]). As a recent text has put it:

'The portion of fixed costs that is not recoverable (upon exit from the industry) is a sunk cost. A sunk cost is like spilt milk: once it is sunk, there is no use worrying about it, and it should not affect any subsequent decisions.' ([3])

The distinction between sunk and fixed costs introduces a subtle change in the definition of fixed costs. Whereas all sunk costs are fixed by definition, not all fixed costs are sunk. In effect, the theory now recognises that some fixed costs may be recoverable upon exit from the market or industry, and such costs are therefore no longer completely independent of the decisions of the firm. In particular, costs that are fixed but not sunk will typically influence exit decisions taken by profit-maximising firms.

([1]) It might reasonably be asked why a Member State would grant aid in the first place if it had absolutely no effect on economic behaviour. A possible answer is that the aid might represent a redistribution of income to a favoured interest group (i.e. employees of the firm).

([2]) The recent industrial organisation literature has rightly placed a great deal of emphasis on the importance of sunk costs to entry and exit decisions, and to strategic entry-deterrence behaviour (see London Economics, 1994, for a discussion). The literature focuses chiefly on the timing of decisions, and on the cost asymmetries created between incumbents and entrants. The point being made in the text is that ex post, i.e. after the expenditures have been made, sunk costs no longer play a part in rational economic calculations.

([3]) Carlton and Perloff (1994).

5.3.1.3. Firm-specific, market-specific, and industry-specific costs

Sunk costs arise because assets may be specific to a particular set of activities and therefore have lower value if transferred to other activities. Assets, however, may be specific to the firm, to the market, or to the industry. To illustrate, consider the case of an aeroplane operated by a particular firm on a particular long-haul route (which, for current purposes, we can assume to be the relevant market). Firm-specific sunk costs in such a case will tend to be low, and may amount only to the costs of changing the livery of the plane. Market-specific sunk costs will also tend to be low — i.e. planes can be redeployed to other routes — but typically higher than firm-specific costs. Thus, the aeroplane's operating characteristics may have been determined by their appropriateness for the initial route (market) but may be less efficiently adapted to other routes (markets). On the other hand, a high proportion of capital costs will be industry-specific: aeroplanes have little economic value outside of the air transport industry.

What is and what is not a specific-asset/sunk-cost depends, therefore, on whether we are concerned with firms, markets, or industries; and, hence, on how firms, markets, and industries are defined for the purposes at hand. This can be important in State aids cases, since it is linked closely to the issue of exit and capacity reductions. There are, in particular, several conceptually distinct types of exit, including:

- exit of a firm from a particular market;
- exit of a firm from an industry;
- exit of capacity from a market; and
- exit of capacity from an industry.

The level at which costs are sunk (firm, market or industry) may, and typically will, influence the analysis of the way in which different forms of State aid affect market behaviour, and in particular the analysis of exit or capacity reduction decisions. An example of this is given below.

5.3.1.4. Avoidable and non-avoidable costs

A distinction that helps to avoid confusion between seemingly overlapping cost concepts, and which also has the merit of helping bridge the gap between economic and accounting cost concepts, is the distinction between avoidable and non-avoidable costs. In respect of fixed costs:

- an avoidable (fixed) cost is a cost that does not vary with the level of output of the firm, but that can be eliminated (i.e. avoided or recovered) if the firm exits the market or industry;
- an unavoidable (fixed) cost is one that cannot be eliminated (or recovered) by exiting the market or industry, and is therefore sunk.

Variable costs are always avoidable. Fixed costs may or may not be avoidable depending, for example, upon the time period under consideration.

5.3.1.5. Effects of State aid

On the basis of the cost concepts identified above, it is possible to broadly classify State aids according to their effects upon a firm's cost structure, as follows:

Aid that affects variable costs: For example, aid that takes the form of a subsidised input price for a variable input, such as a lower price for electricity that is used as an input in the production process. In general profit maximising production and pricing decisions will be influenced by such costs.

Aid that affects (fixed) avoidable costs: This might include subsidised rental of (non-specific) capital equipment and/or subsidised financing arrangements for the acquisition or rental of such equipment (such as subsidised interest payments or loans below market rates of interest). Profit maximising capacity expansion and reduction decisions (e.g. entry and exit decisions) will normally be affected by such aid.

Aid that affects unavoidable (sunk) costs: Within the framework of the elementary theory of the firm, such aid does not influence profit-maximising decisions. This type of aid might comprise transfers to the firm that are independent of the particular business decisions of the firm, for example privatisation by a trade sale at a price which is less than the value of the firm, provided that the sale is not tied to any specific commitments made by the purchaser ([1]) (but see Section 5.2 for a

([1]) The privatisation of a firm at less than its full value is equivalent to a sale at full value plus a lump-sum transfer of resources to the purchaser(s). Under the assumptions made thus far, lump-sum transfers do not affect economic behaviour.

wider discussion of the implications of the terms of such sales). In contrast, a payment to a firm to assist in the acquisition of assets, even of specific assets, does not fall under this heading. At the time of acquisition the relevant capital costs are obviously variable costs, so that the aid would be of the first type discussed here.

Whilst this classification is too simple to form, on its own, a basis for policy towards State aids, and while other factors such as capital market imperfections need to be brought into the analysis, it nevertheless suggests that a first step in any State aid investigation should be a consideration of the cost structure of the firm or firms in question, and of the degree to which the aid may affect different types of costs. This, then, is an important first step in the analysis of how State aid may affect firm behaviour and decisions, and hence of how State aid may distort trade and competition in the relevant market.

An illustrative example of effects on the exit decision

A profit maximising firm will, within the simple framework developed so far, find it optimal to continue to operate a business unit (which may be the whole firm or only part of it) if it can find a position where the revenues from so doing are at least as great as the unit's avoidable costs; or, in the case of a single product business, where the price of the product is not lower than average avoidable cost. A State aid that changes the firm's variable costs will, by affecting marginal cost, practically always influence production decisions. A subsidy to avoidable (fixed) costs will, however, only tend to influence behaviour when the firm would otherwise have ceased to operate the business and when the aid is sufficient to reverse that exit decision. Thus, if price is below average avoidable cost, the firm will cease operations either by disposing of the business as a going concern or by liquidation. If State aid then reduces fixed avoidable costs to a level where price exceeds average avoidable cost, the firm will find it optimal to continue to operate the business.

A transfer to the firm which affects only non-avoidable (i.e. sunk) costs however (e.g. by paying off past debts or by covering past operating losses), should not affect the firm's decision. The firm's optimal exit decision depends only upon costs which are avoided when it ceases operation, and if these are independent of past debt or losses a subsidy to these will not change its optimal decision.

Note that there is no automatic link between the two exit options referred to above (i.e. disposal as a going concern and liquidation) and the issue of what happens to capacity in the market. Much depends upon the extent to which assets are specific to firms, markets and industries.

Example: Rover/British Aerospace ([1])

In 1988 (Decision 89/58/EEC) the Commission approved a GBP 469 million capital contribution from the British Government to the Rover Group in the form of a debt write-off, as part of the framework of the acquisition by British Aerospace (BAe), as compatible with the common market. The Commission specified that, among other conditions, the acquisition price of GBP 150 million must not be altered, that the aid be used exclusively to repay the financial debts of the Rover Group, and that the UK Government refrain from making any further capital contributions or other forms of discretionary aid to the Rover Group. The Commission subsequently found that the British Government had granted BAe and Rover a number of financial concessions not agreed to in the 1988 decision, in particular:

- GBP 9.5 million paid to BAe for the acquisition of part of the 0.2 % minority shares held in Rover;
- GBP 1.5 million to cover costs of legal and economic advice in connection with the sale;
- a financial benefit calculated as GBP 33.4 million by the deferment of the payment of the sale price from 12 August 1988 to 30 March 1990.

The Commission therefore decided in July 1990 that the amount of GBP 44.4 million should be recovered by the UK Government from BAe and Rover. BAe and Rover appealed the decision on a number of grounds. One of these was that the Commission had erroneously characterised the aid as being incompatible with the common market, because:

'None of the benefits reduced the operating costs of any of BAe's businesses so as to give those businesses an advantage over competing undertakings....The

([1]) Case C-294/90, *British Aerospace and Rover Group Holdings v Commission*, [1992] ECR I-493.

Commission has failed to identify the markets, if any, in which BAe's position was improved by the benefits and to demonstrate to what extent those benefits are incompatible with the common market ... With respect to the reimbursement of certain consultation costs ... the amount in question ... relates to expense already incurred and in no way represents a gratuitous advantage reducing Rover's operating costs.'

The Advocate General in his opinion did not feel it necessary to respond to these points, and argued that the Commission's previous decision of 1988 was sufficient to assess the compatibility of the subsequent aid with the common market ([1]). However BAe/Rover was clearly arguing that since the financial benefits received were merely lump-sum contributions to cover already incurred expenditures, they would have no effect upon any relevant costs, and hence no effect upon its market decisions ([2]). As such, they would not distort competition or trade in the common market. Whilst these claims may be disputed, it is clear from the type of aid in question that a reasonably cogent argument was being made. Our preceding discussion suggests that this argument was, within the framework developed so far, broadly correct, and hence that any valid counter-arguments would need to challenge that framework (for example, by establishing significant, relevant imperfections in capital markets).

Example: Industrie Ottiche Riunite (IOR) ([3])

IOR, an Italian manufacturer of ophthalmic products was owned from 1983 to 1986 by Sofin, a subsidiary of the public holding company IRI (previously it was owned by another IRI subsidiary). It was partly privatised in October 1986 by sale of 50 % of shares to Finalp at nominal value. The remaining 50 % were sold to Finalp in March 1989 when the company was fully privatised.

IOR made persistent losses before privatisation at a rate that averaged over 20 % of turnover per annum. In relation to the partial privatisation, Sofin made advances to IOR to cover losses in 1985 and the expected loss in 1986, and waived its claim to any part of this advance. Later, the new private investor, Finalp, itself contributed additional finance on a similar scale, and the financial performance of IOR improved significantly.

The Italian Government claimed that the capital injection did not qualify as State aid, arguing, among other things, that:

- Sofin had made considerable investments between 1983 and 1986 in improving productivity and efficiency;
- Finalp had proved willing to provide significant finance; and
- Since, as the sole shareholder, Sofin was liable under Italian law for IOR's debts, it was rational for Sofin to continue to support IOR in that liquidation would have entailed even higher costs.

The Commission rejected the last of these arguments on the grounds that a private investor would not have been willing in the first place to become the sole shareholder of a company such as IOR if it meant bearing unlimited liability. A better argument, however, would have been that, for Sofin, the debts represented a non-avoidable cost, and they should not have therefore have had any effect on the decisions of a rational private investor.

Similarly, the level of investments between 1983 and 1986 is an irrelevant consideration, although the effects of that investment on performance in 1986 are a relevant factor.

Finally, the relevance of the finance later provided by Finalp hinges on whether it was guaranteed as part of the privatisation transaction or was a subsequent, discretionary decision made in the light of economic circumstances that could not be known with certainty at the time of (partial) privatisation.

5.3.2. The objectives of public enterprise

As noted earlier, when public firms are being prepared for privatisation their objectives and incentive structures tend to become increasingly aligned with those of the private sector. Nevertheless, this alignment will tend to be incomplete for so long as enterprises are not pri-

([1]) The Court annulled the Commission decision on the grounds that the Commission had not followed proper procedures, and did not consider any other arguments.
([2]) The argument is only slightly less clear with respect to the deferred payment of the sale price. If BAe/Rover paid today they would incur interest costs with a net present value of X. Deferring the payment is equivalent to a lump-sum contribution today of X.
([3]) Commission Decision 92/329/EEC; OJ 1992 L 183.

vatised and, when considering issues of restructuring prior to privatisation, it is necessary to take account of the different incentive structures of the public sector.

There is, unfortunately, no generally accepted theory of public enterprise to compare with the models of the profit-seeking firm that are generally used by economists to analyse private-sector behaviour: both the objectives of and the constraints facing public enterprises tend to show marked variations from industry to industry and from Member State to Member State. Nevertheless, most approaches to the analysis of public enterprises tend to assume that profit is a constraint on behaviour rather than an objective (e.g. the firm may be constrained to cover its costs of production, or achieve a given target rate of return). It therefore appears to be reasonable to assume that public enterprises pursue their chosen objectives subject to constraints on financial flows. For example, a public enterprise in the manufacturing sector might seek to maximise output and employment subject to financial constraints imposed by the government, such as constraints on dividends paid, cash flows between government and the firm, or returns on assets.

In a number of sectors, particularly utility industries, public enterprises very frequently have public service objectives, often expressed in terms of universal service obligations which require the enterprise to ensure that its outputs are available on similar terms to all customers. Typically, such obligations are financed by cross-subsidies whereby some customers are charged in excess of their cost to supply in order to finance supply at below cost to other customers. It may also be the case, however, that direct financial transfers from the State are used to support the relevant social obligations, as tends to happen in railways, for example.

To the extent that the financial transfers from the State are a payment for a specific service that is provided by the public firm but that is not provided by a competing company, it can be argued that the transfers will not constitute State aid. In assessing such transfers, therefore, one of the relevant issues will concern proportionality: is the scale of the finance proportionate to the cost of efficiently providing the relevant services? In general, the situation will be more transparent, and proportionality will therefore be easier to assess, where the relationship between services and finance is expressed in the form of an explicit contract.

A second major issue concerns discrimination. If, in effect, the financial transfer is a payment for a very specific set of services, implying that the State is acting as a purchaser rather than a financier, it can be asked whether other firms are able to compete on a level playing field for contracts to provide the relevant services. If not, then even though there may be a direct link between financial transfers and the supply of particular services, it might still be concluded that the finance is a form of State aid by virtue of being available to the public enterprise but not to its actual and potential competitors.

Returning to cases where there is not an explicit provision of some or other public service, it can be noted that non-profit maximising behaviour by public enterprises can radically affect the implications of additional financial support from government. In the first place, as noted, such aid is more likely to fail the MEIP test, since private investors are, other things being equal, less likely to be willing to provide finance to firms pursuing objectives other than profit maximisation ([1]). Secondly, whereas financial transfers which affect only unavoidable costs will have — at least within the framework developed so far — no effect upon the behaviour of a profit-maximising firm, they will affect the behaviour of a financially constrained public firm. For instance, additional finance may feed directly into additional capacity investments in circumstances where a privately owned firm would not have made the additional expenditure.

The conclusion that such additional finance constitutes a State aid is not altered if, subsequently, the public enterprise in question is sold to the private sector and the additional capacity remains in the industry. At the time of acquisition of the additional assets — i.e. when the firm is still in the public sector — the capital expenditure is clearly an avoidable cost. However, once the new capacity is added, it may well be the case that the investment costs become sunk at the industry level, in which case the (industry) average avoidable cost falls. That is, it may be optimal not to add the new capacity in the first place, but be optimal to keep the capacity operating once it is constructed. Indeed, there may be incentives for Member States to provide State aids to restruc-

([1]) Of course private investors do provide finance to regulated privately owned firms which are obliged to pursue certain 'social' objectives such as universal service. Hence this distinction is one of degree.

ture firms in ways that enhance their potential competitive advantages in the post-privatisation period by, for example, acquiring specific assets prior to privatisation.

For the reasons just outlined, the treatment of publicly owned firms in State aids policy raises some difficult issues that it is not within the remit of this study to attempt to resolve. Nevertheless it seems clear that within the context of restructuring prior to privatisation two issues need to be addressed:

— first, whether allowance is to be made for non-profit maximising objectives in determining what is and is not a State aid; and

— second, how the differing objectives of publicly owned firms may affect their economic behaviour when receiving financial transfers from government.

We only raise these issues in passing here, and for the remainder of this paper we assume that the relevant benchmark for State aids policy is the behaviour of privately owned firms, unconstrained by objectives imposed by governments or other public authorities.

5.3.3. Financial structure, incentives and market behaviour

The sharp contrast between the effects of financial transfers on public sector and private sector company behaviour diminishes considerably once the assumption that private firms maximise profits is relaxed, as it is in many modern analyses of corporate behaviour that allow (realistically) for the existence of asymmetric information between owners and decision-makers, and for the monitoring and incentive problems to which this gives rise. That is, the differing objectives of firm owners and managers, the incentives problems to which these give rise, and the effects of asymmetric information and capital market imperfections in creating financial constraints for private firms together mean that the stark contrast between the pure profit-maximising behaviour of privately owned firms and the behaviour of financially constrained publicly owned firms, is in any case, not strictly accurate. Once this is taken into account, the simple characterisation of the effects of State aids policy on firm behaviour and decisions, given in Section 3.1.5 above, needs to be revised.

The modern theory of corporate finance and capital markets has been much concerned with the effects of financial structure, asymmetric information and incentives problems on firm behaviour, and we can do no more than summarise some of the relevant points here. A fuller discussion of relevant literature and some possible implications for State aids policy in general, and for the MEIP in particular, is set out in Appendix 1.

Given that (i) informal observation and some empirical evidence indicate that the financial structure and cash flow positions of firms have significant effects on their behaviour and (ii) recent empirical studies of investment behaviour have demonstrated the importance of financial variables ([1]), the traditional theory of corporate decision-making that emphasised the independence of financial and real (e.g. investment) decisions has now been largely discarded. Indeed, an important and surprising result has been the discovery of the diversity of ways in which interdependence can arise. Underlying most of the analyses, however, is the notion of a conflict of interest between borrowers and lenders or between firm managers and owners, which amounts to abandonment of the profit-maximisation hypothesis in its conventional textbook form.

A number of potentially important implications can be drawn from the financial literature, which is based upon analysis of privately owned firms:

(1) The financial structure of the firm and its cash flow position will typically affect the incentive structures faced by management, and hence management decisions. For instance, when managers own shares in the firm, the higher the debt-to-equity ratio the more sensitive the valuation of those shares (and hence managers' wealth) is to managerial decisions. Furthermore, managers will typically have less discretion over the allocation of cash flows (and hence less ability to pursue their own agendas) when debt-to-equity ratios are high. Debt, in other words, may be employed as a 'high-powered' incentive device, affecting the behaviour and performance of managers.

(2) When information is asymmetrically distributed between managers and investors or owners, the financial position of the firm can itself act as a

([1]) See Fazzari et al. (1988), Hubbard (1990) and Greenwald and Stiglitz (1990) on this.

signal to the market concerning the objectives and behaviour of decision-takers. Decisions therefore affect market values via this signalling mechanism, and hence the signalling mechanism will itself affect corporate decisions.

(3) Certain financial markets — such as equity and credit markets — may be affected by a 'lemons problem' (Akerlof, 1970) in which low-quality firms (or high-risk borrowers) constrain the ability of high-quality firms (or low-risk borrowers) to raise finance. This may lead to such phenomena as:

- share purchasers demanding a premium on (high-quality) shares to compensate for the risk of investing in low-quality shares, and thus increase the costs of equity finance, and;
- credit rationing in financial markets, whereby banks lend at interest rates which do not 'clear' the market for loans, and borrowers are rationed.

(4) The financial position of the firm may affect its ability to engage in 'anticompetitive' or 'predatory' practices, particularly when its competitors operate subject to tighter financial constraints. Hence a change in the firm's financial position or obligations may affect the nature of competition in the product market via its effect on the 'aggressiveness' of the firm's market behaviour.

None of these propositions were part of the traditional theory of the firm or corporate finance. Indeed, in that theory, either there was no divergence between the objectives of firm owners and managers, or managerial efforts were perfectly observable so any incentives problems could be easily overcome. Equally, information was assumed to be complete and symmetrically distributed between agents, so efficient contracting between borrowers and lenders and managers and owners posed no problems for the theory. When these assumptions are relaxed, the simple characterisation of firm behaviour based upon a sharp distinction between the effects of real versus financial variables, as described above, must be revised to allow for a richer set of possibilities.

The theory has a number of potentially significant implications for State aids policy which we only sketch here ([1]):

- First, financial structure, through its effects on managerial incentives, may affect both managerial and investor behaviour, and hence aid which affects only non-avoidable costs, e.g. a lump-sum transfer to the firm, may influence decisions and hence market behaviour.
- Second, the existence of financial constraints and credit rationing means that aid that affects non-avoidable costs may not only affect firm decisions, but that one possible justification for granting such aid is that, by alleviating credit market failures, it helps to promote economic efficiency ([2]).
- Third, by creating an informational wedge between firm 'insiders' and 'outsiders' the theory implies that the evaluation of when State aid is present will depend upon whether a given financial transfer is provided by an 'insider' or an 'outsider'.

Indeed, one of the most significant implications of the modern theory of corporate finance for State aids policy is the result that asymmetric information and the associated incentives problems mean that the internal costs of funds may be less than the outside costs of funds, leading to a strong preference to provide funds from internal financing. That is, current insiders will be willing to provide funds under conditions not acceptable to outsiders; similarly existing shareholders may be willing to subscribe capital on favourable conditions because attempts to raise funds by issuing new equity may lower the value of the firm for all shareholders.

This leads to an awkward, but potentially important, problem for the implementation of State aids policy. When, for example, a government is the owner of the firm, in applying the MEIP it is appropriate to judge its actions against the likely conduct of a private owner of

([1]) See Appendix 1 for a fuller discussion.
([2]) The amelioration of a market failure is not, however, necessarily a strong argument for a specific State aid. Aid granted to a particular enterprise or set of enterprises but not to other firms that face similar capital market imperfections is discriminatory, and it may, therefore, cause a distortion of competition by virtue of its specificity. Hence, non-discriminatory approaches to the correction of market failure are generally to be preferred.

the firm. On the other hand, when the firm is privately owned, government finance is similar to finance from a new ('outside') investor. On this basis, to the extent that owners are insiders, the criteria for assessing whether or not a particular transaction constitutes State aid would tend to be more stringent for a privately owned firm than for a publicly owned firm, a differential which itself might be considered unsatisfactory from a policy viewpoint. Put simply, when insider/outsider distinctions are of economic significance, there is ambiguity in the application of the MEIP, and it is necessary to choose which type of private investor is to be used as the benchmark ([1]).

To summarise, the fact that financial structure and the sources of finance matter to managerial behaviour and economic decisions, means that the simple classification of costs which do or do not affect particular types of economic decisions as set out above, needs to be qualified to take account of these factors. Doing so is not necessarily a simple task however, and arguments based on financial factors may lead towards different policy conclusions. For instance, the existence of financial constraints and credit rationing could be used to argue that a government's financing of a firm's activities was doing no more than alleviating credit market failures, and as such should be viewed leniently. On the other hand, government grants or transfers which affect the firm's financial structure may influence managerial incentives and firm behaviour in the market in ways which are potentially harmful, and in any case difficult to predict. Choosing the appropriate policy balance between these various considerations remains a complex task ([2]).

5.3.4. Exit and capacity reduction

A basic proposition from the elementary theory of the firm is that profit maximisation implies that firms will exit from particular business activities when revenues fail to cover avoidable costs. However this proposition is based upon an overly static view of the nature of firm decisions, and it is contradicted by numerous examples of businesses continuing to operate for lengthy periods whilst failing to recover avoidable costs. Put another way, private market investors appear frequently to provide additional finance for businesses that are making avoidable losses, and clearly a more complete theory is necessary to account for such a phenomenon.

Once the dynamics of investment decisions are taken into account however, such behaviour is fairly straightforwardly explained. Where there are exit and entry costs (i.e. if it is costly to first close down production and then start it up again at a later date), and where market conditions are such that there are prospects of improved profitability in the future, then it may be optimal to continue to operate a business even though it is making avoidable losses. This fairly simple idea has recently been formalised in the so-called 'options' theory of investment due to Dixit and Pindyck (1994) and others ([3]). The options theory both identifies flaws in the traditional analysis of investment decisions, based upon 'net present value' rules, and elucidates the nature of entry (or investment) and exit (or disinvestment) decisions by firms under uncertainty. In so doing it has greatly contributed to thinking in this area, and has obtained new characterisations of market investment behaviour under uncertainty with rather important policy implications.

One significant result of the 'options theory' of investment has been to identify a form of hysteresis, or path dependence, in firm and market investment (and disinvestment) behaviour, based upon rational profit-maximising calculations, which provides an explanation for much of the observed 'anomalous' real-world behaviour of firms in industries with high sunk costs. In particular it has shown why firms in such industries will have high 'hurdle' rates of return applying to their investment or entry decisions, and equally high negative 'hurdle' rates of return applying to their disinvestment or exit decisions. Such high hurdle rates explain both why firms may not immediately — or even quickly — exit industries subject to severe downturns in profitability, and equally why they may not immediately re-enter once conditions become more favourable. This implies that the 'equilibrium' evolution of such industries may entail long periods of high profitability followed by potentially long periods of negative prof-

([1]) Put another way, since 'insiders' will, at least in certain cases, provide additional finance on terms which are unattractive to 'outsiders', a transaction which would be correctly considered 'State aid' if granted by a government 'outsider' may not be 'State aid' where the government is the majority shareholder, or owner-operator, of the firm in question.

([2]) Appendix 1 discusses these issues and the Commission's current approach to them in greater detail.

([3]) In addition to the book by Dixit and Pindyck, the recent article of Hubbard (1994) is a useful survey.

itability, without inducing either entry or exit. It also explains why firms may continue to invest capital under conditions which, from the point of view of an outside observer, might at first sight appear extremely unfavourable, and why rational investors may continue to support firms in such circumstances.

Since an understanding of the behaviour of a 'rational' investor lies at the heart of the 'market economy investor principle', and hence at the heart of Commission policy towards State aids, this new theory of investment clearly has potentially important implications. It therefore merits some further elucidation and a detailed example, together with a discussion of its implications for State aids policy, is provided in Appendix 2. The following subsections briefly treat these issues.

5.3.4.1. Understanding the 'options' theory of investment

The 'options' theory of investment, although complex in detail, is fundamentally an elaboration of the simple insight outlined above. Where investment and disinvestment decisions entail sunk costs, and where the future evolution of the industry (i.e. the price path or the evolution of demand) is uncertain, firms typically retain an option to 'wait and see' rather than immediately investing or disinvesting, and this option is valuable. Hence calculations of the 'net present value' of an investment or disinvestment opportunity which do not take account of this option — and decisions based upon them — will frequently be wrong.

As Dixit and Pindyck (1994) — and Hubbard (1994) — recognise, in principle the standard theory based on the present value rule can take account of this effect; nevertheless it is somewhat inaccurate to suggest that the options approach is nothing more than a simple extension of the basic theory. As generally taught and practised the NPV approach has typically ignored options issues, and has failed to explain much observed investment behaviour as a result. As Hubbard (1994) describes the theory:

'Variants of the neo-classical model (of investment) rely upon the net present value rule. A firm should undertake investment projects with positive net present value. They make two subtle assumptions as well: First, invested capital can be sold easily to other users (that is, it is reversible). Second, each investment opportunity facing the firm is a once-and-for-all opportunity; if the firm declines the project, it will never have the choice to reconsider.

The starting point for the "new view"... is that many real-world investment decisions violate these subtle assumptions, and irreversibility and a chance for delay are important considerations. This importance is reflected in the observation that the possibility of delay gives rise to a call option: the firm has the right, though not the obligation, to buy an asset (the investment project) at some future time... To the extent that the investment is irreversible, making an investment extinguishes the value of the call option, or "real option"....The value of the lost option is a component of the opportunity cost of investment.

An easy, though not satisfying, response to this argument is that the neo-classical model could be modified to incorporate the real option component. Even with this semantic change, it is still necessary, to the extent that the real option is valuable, to analyse how it might be priced in firms' decisions.'

As noted above, Dixit and Pindyck's (1994) theory appears to be capable of explaining a number of features of observed firm investment and disinvestment behaviour which until recently had been considered to be anomalies. In particular it has been commonly observed that firms do not exit industries quickly in the face of poor performance, and in addition they do not re-enter when conditions correct themselves. This is explained by the fact that once options are taken into account, the 'thresholds' for investing and disinvesting are higher and lower respectively than those implied by the traditional theory.

In a study of copper mines in the United States, Dixit and Pindyck (1994) note two particularly important features of industry evolution:

- Price-cost margins exceed 'competitive' levels for long periods of time (approximately 60 % of the time in their example) without implying long-run excessive profits, or the abuse of market power.

- Firms remain in the market for long periods of time (approximately 30 % of the time in their example), whilst incurring operating losses by selling at prices below short-run variable costs, without implying 'dumping' or 'predatory behaviour'.

The Dixit and Pindyck (1994) analysis thus has important implications for competition policy generally. However for our purposes these features are important because they imply that it can be rational for firms to sustain losses for long periods of time without reducing capacity or exiting the market, and that rational shareholders may willingly subscribe additional capital to cover such losses. This observation makes it a particularly delicate task to identify when a government institution as owner/principal shareholder is providing funds which a private investor would be willing to subscribe, or when it is providing 'aid'. Procedures followed by the Commission up to the present have probably not been adequate to this task.

5.3.4.2. Exit of capacity: firms and industries

Whereas the static theory of the firm implies that a firm will reduce capacity in a market by, say, closing a plant or a business, if

$$P<AAC.$$

That is, if price is less than average avoidable cost at all output levels. The options theory implies that the exit will occur only when:

$$P<AAC — V,$$

where V reflects the 'option value' of the capacity and will depend upon factors such as the prospects for recovery in expected price/costs, and upon the volatility of demand ([1]). The options theory of investment tells us that V will be positive whenever irreversibility and uncertainty are important features of real-life investment or disinvestment decisions.

The options theory of investment thus implies that to the extent that uncertainty and irreversibility are important, the MEIP, based on traditional NPV calculations, is unlikely to provide an accurate characterisation of the behaviour of a rational private investor. Translating these ideas into policy practice however, is not straightforward. In particular, some care has to be exercised in distinguishing between the exit of a firm or business from a particular activity and the exit of capacity from the market. The following hypothetical example illustrates this issue.

([1]) A more detailed discussion of these factors, and approaches to assessing them, may be found in Section 4.2.

Consider a Member State with a publicly owned firm (or firms) operating in a Community-wide industry that is also populated with private firms (and possibly with other public firms in other Member States), and suppose that the public enterprise in question is making avoidable losses, and the Member State government provides finance to cover those losses. The question is: how should the Commission determine whether or not the finance constitutes State aid?

The important point is that the question can only be answered on the basis of an assessment of economic conditions in the industry as a whole: it is not sufficient to look at the average avoidable costs of the public firm and then to make some adjustment to reflect the prospects of higher price/demand in the future. For example, it may be that the firm is simply inefficient in the way that it uses its assets and that this is why it is making losses. The economically optimal solution might then be for the assets to be transferred to another firm operating in the industry, which involves no exit of capacity from the industry at all. In that case, exit and possible re-entry costs are zero, and there is no need to correct the 'price less than average avoidable cost rule' to incorporate the options value of the capacity.

5.4. State aids and the restructuring of public enterprises

The previous section described the various pieces of economic analysis which are relevant to the application of State aids policy in general. In light of this, this section discusses a number of issues relating to policy towards State aids when firms are being restructured in advance of privatisation. The general features of the Commission's guidelines on State aids for rescuing and restructuring firms in difficulty have been summarised in Section 2. In this section we consider these guidelines in more detail, with specific reference to problems surrounding implementation of the guidelines in cases involving the restructuring of a public firms which are later privatised. The issues are addressed under a number of headings as follows.

5.4.1. Physical versus financial restructuring

Aid relates to the physical restructuring of an enterprise when it is used to cover the costs of capacity reductions, changes in the number of employees, etc. Financial restructuring, on the other hand, refers to balance-sheet

adjustments such as the injection of more equity capital, debt write-offs, soft loans, loan guarantees, etc.

The current approach adopted by the Commission distinguishes explicitly between physical and financial restructuring. Aid for either purpose is regarded as problematic: for example, even if aid is given only for financial restructuring, the Commission's guidelines indicate that an acceptable restructuring plan must normally include some physical restructuring and that the rules relating to production capacity (see further below) apply.

Nevertheless, the Commission views aid for physical restructuring as raising particular competition policy concerns, among other things because of its potential for placing the burden of restructuring on to other unaided firms. As detailed in 'Community guidelines on State aid for rescuing and restructuring firms in difficulty', the Commission will approve aid for physical restructuring only under certain conditions. In particular the Commission attempts to ensure that such aid will not unduly distort competition, and that measures are taken to offset, so far as possible, adverse effects on competitors. This entails that ([1]):

'Where there is a "structural" excess capacity in the relevant market in the EU, the restructuring plan must make a contribution, proportionate to the amount of aid received, to the restructuring of the industry, by irreversibly reducing or closing capacity. The sale of capacity to competitors will not normally suffice for this, unless the capacity is to used to serve another world market, and without having significant effects on the EU market.'

Where there is no 'structural excess of production capacity' in the relevant EU market, the Commission does not impose capacity reductions as a condition of aid, but:

- it requires that capacity not be increased except in so far as an increase is essential for restoring viability and does not unduly distort competition;
- it may impose any conditions or obligations deemed necessary to ensure that aid does not distort competition to an extent contrary to the common interest.

In addition (see Section 3.2(iii)), the form of aid granted must be such as to limit the distortive effect, and to avoid providing the company with surplus cash which could be used for aggressive, market-distorting activities not linked to the restructuring process. Aid for financial restructuring should not unduly reduce the firm's financial charges.

The following sections consider in more detail issues raised by the Commission's approach.

5.4.2. The analysis of the market: Demand and technology

Analysis of the market and industry is a crucial first step in State aids cases. In particular it is necessary to:

(1) Assess the factors which may help to determine whether or not aid is being given, and, if so, the extent of the aid.

(2) Assess the economic consequences of the aid, including in particular its effects on competition in the market.

(3) Assess whether or not the same objectives could be achieved by alternative means that have a less distorting impact on the market.

This section will discuss issues relevant to the assessment of when State aid is being granted. Subsequent sections will address the latter two issues.

A useful starting point is the options theory of investment described above (see also Appendix 2). More specifically, one key element in determining whether or not State aid is being granted, and if so, its extent, is the 'option' value to the firm of maintaining operations, which determines the degree to which a private investor would be willing to finance avoidable losses (as opposed to exiting the market or industry). The theory points to a number of relevant factors, on both the demand and supply sides of markets, which can aid in an assessment of this element.

5.4.2.1. Prospects for expected demand

Where demand is expected to be only temporarily depressed the 'options value' of maintaining operations

([1]) Section 3.2 (ii).

is clearly higher than when demand is expected to be permanently static or declining. In growing markets it is more likely that capacity which is surplus to requirements in the short term will in the future produce economic returns (i.e. revenues above avoidable costs) ([1]). Such capacity therefore may retain a higher value in its current use than in any alternative use, and expenditures to maintain it in its current use economically justified. Hence policy towards State aids should distinguish between growing and declining markets, and attempt to take into the account the expectations of firms and market participants with respect to the prospects for demand recovery. This needs to be coupled with an understanding of the nature of capacity investments, including, for example, the extent to which they represent sunk expenditures (see further below).

5.4.2.2. Demand uncertainty

Even if demand is static or declining on average (i.e. in expected terms), uncertainty about its future level remains a source of positive options values. Thus, if demand is expected to fall, but may recover with some probability, there will be a case for financing at least some losses so as to avoid exit, and possible re-entry costs, in the event that (an unexpected) recovery does in fact take place. One way of viewing this is to recognise that, in conditions of dynamic uncertainty, there will be an economic value attached to 'waiting'. By delaying a decision, additional information can be obtained and, if demand recovers, costly exit can be avoided. There is, of course, also a cost of waiting, which is the additional, avoidable loss that is incurred as a result of the delay. Rational investment decisions must attempt to achieve the correct balance between these two types of costs ([2]).

In general, the greater the uncertainty surrounding future demand the greater the options value of maintaining operations (or, equivalently, of waiting before making an exit decision). It follows immediately that, in assessing whether or not financial support to sustain a firm in difficulties is or is not State aid, the Commission should pay careful attention to the degree of uncertainty concerning the future evolution of prices or demand in the relevant market. Simulations by Dixit and Pindyck (1994) indicate that the level of uncertainty can, in fact, have a substantial influence on the rational behaviour of market investors, and the frameworks developed for those simulations could provide a useful starting point for quantifying the potential effects.

5.4.2.3. Exit and entry costs

The economic value of waiting arises because investment decisions, including decisions to exit from particular activities, involve an element of cost irreversibility. That is, costs are incurred that cannot be recovered if the decision is reversed. The greater the level of these non-recoverable costs the greater will be the value of waiting, which may entail continuing activities that make avoidable losses. Again, therefore, assessment of entry and exit costs should be an integral part of Commission determinations of the existence of and the extent of State aid. Where exit and (re-)entry costs are high, and/or involve a substantial degree of irreversibility, we would expect to observe private investors financing avoidable losses for considerable periods of time before incurring irrecoverable costs.

5.4.2.4. Non-recoverable (sunk) investment costs

Entry and exit costs can be regarded as special cases of the more general phenomenon of non-recoverable costs associated with investment (or disinvestment) decisions. In State aids cases, for example, the firm under investigation might operate several different production facilities and overall losses might arise as a result of the continuing operation of only some of those facilities. For example, the overall loss of publicly owned coal mining firms may result from the operation of a number of 'inefficient' mines. In such cases the issue is not whether or not the firm should exit the industry but rather how many mines should be closed down (i.e. what capacity should be eliminated).

The situation is further complicated by other possible alternatives which include:

- the 'mothballing' of production facilities, whereby expenditures are made to maintain production facilities that are not actually used, with the possible payoff that such facilities can be used

([1]) By capacity we here mean the ability to produce goods, which will in turn depend upon the inputs available to the firm, and which is normally measured in terms of the number of units of output (and not, for example, the number of units of capital) that can feasibly be produced. Various ambiguities can arise because it may be possible to produce more or less from a given set of assets depending upon the level of expenditure on other inputs. For current purposes, 'capacity' may be defined as an output level beyond which unit costs rise sharply and irreversibly. That is, they do not rise with output only to fall back again to similar levels at higher output, as might occur, say, when a factory moves from two shift to three shift operation.

([2]) A simple example of how this is done is given in Appendix 2.

again (i.e. re-activated) in the event that demand recovers; and

- capacity non-utilisation, as occurs, for example, when machinery that is capable of continuous operation is used for only part of the day (e.g. single- and double-shift operation rather than continuous operation).

The key questions relate to the levels of irrecoverable costs associated with each option. Where there are reasonable prospects of demand or cost recovery, and mothballing or capacity non-utilisation have lower irrecoverable costs than the closure of capacity (followed by construction of new plant if demand does recover), then these will tend to be preferred by a private investor. In these circumstances financial support to cover avoidable losses would not constitute State aid.

On the other hand, it should be noted that where 'mothballing' or capacity non-utilisation options are available and have relatively low non-recoverable costs, the underlying economic analysis indicates that, other things equal, the cost of waiting will also be lower. That is, the amount of financial support that can be justified by the options theory is also lower.

5.4.2.5. Technical progress, asset lives and economic obsolescence

The value of waiting arises from the fact that assets that are currently surplus to requirements may, if demand and prices are higher at some future date, have a positive economic value. And the greater that potential economic value, the higher the value of waiting, and hence the greater the extent to which a rational private investor would be willing to finance shorter-term avoidable losses.

The state of future demand is not, however, the only factor that influences whether or not the relevant assets have future economic value. For example, physical depreciation of plant may mean that, if it is brought back into use at some future date, the length of time for which it could be feasibly operated would be relatively limited. In this case the options value of keeping the plant open would be less than if a longer asset life were anticipated. Perhaps more significant than physical depreciation is depreciation of asset values as a result of economic obsolescence due to technological progress.

In an homogeneous good industry, technological progress embodied in newer vintages of capital tends to reduce the economic returns (or 'quasi rents') generated by the older vintages. Where products are differentiated, technological progress may take the form of changes in product quality such that older plant is either not capable of producing the new product or can only do so at greatly increased cost. In both cases, therefore, the falling economic value of existing plant will mean that the value of waiting will be correspondingly reduced.

The effects here are particularly important since it is older and less efficient plant that will most likely be at the margin of closure. Where technological progress is relatively rapid, therefore, the prospects of ever profitably using such plant again might be expected to be highly limited, unless a rapid reversal in demand prospects is considered likely. In such cases a rational private investor is unlikely for long to tolerate significant avoidable losses, and implementation of the Commission's guidelines on restructuring should adopt an equally stringent approach ([1]).

5.4.2.6. Summary

To summarise, whether or not State aid is involved in maintaining (apparently) surplus capacity in the market or industry, depends upon a number of factors highlighted by Dixit and Pindyck's 'options' theory of investment. Such factors include both the level of expected demand (or costs) and the degree of uncertainty surrounding demand forecasts. They also include the nature of entry and exit costs (i.e. the degree to which they are sunk or irrecoverable), and the options available for maintaining capacity available in its current use via 'mothballing' or non-utilisation. Other factors of importance are depreciation, economic obsolescence, and the rate of technological change or progress in the industry. In general, greater uncertainty increases the option value of waiting and justifies greater expenditure to cover operating losses and non-utilisation costs, etc. However non-utilisation options may lower the amount of expenditure that can be economically justified to maintain capacity in its current use, and obsolescence and rapid technological change tend to reduce the value of doing so.

([1]) We should stress that we are here considering reductions in physical assets (e.g. plant closures). Where technological progress is rapid and uncertain there is often a good case for maintenance of production 'capabilities' in the form of capital (often human) required to develop and exploit future technologies.

5.4.3. Competition and State aids: Welfare implications

Under current Commission policy, State aid by a Member State to a particular firm is assumed to constitute a prima facie distortion of competition in the single market ([1]). The preceding section has argued that certain financial transfers to firms from the State that appear to constitute State aid may actually satisfy the MEIP when the appropriate analysis is conducted. Such transfers should not, therefore, be treated as distortions of competition.

When, however, the transfers do not satisfy the MEIP, there is, in our view, at least a broad justification for the Commission's current approach, which is based upon a presumption that such aid is usually discriminatory in that it favours a particular firm or group of firms relative to others that may be operating in the same market or in the same region. Since in granting aid to a particular firm, a government is unlikely to have appropriately weighed the Community-wide concern for economic efficiency and welfare, it is likely that aid granted to a particular firm or firms, which affects subsequent economic behaviour, will distort trade and competition in ways that do not maximise economic welfare. For example, if there is excess capacity in the market, any efficient policy response should take account of possible adjustments throughout the market as a whole, whereas State aids granted by Member States tend to be concerned with geographically restricted effects. And where a general, regional problem justifies State support for industry, that support is normally best provided by means that do not discriminate between firms and between sectors or industries in the way that many State aids do in practice.

However the Commission frequently has to trade off possible distortions to competition caused by State aid against other potential (or claimed) benefits, and it is therefore important to assess the likely magnitudes of the distortions of competition and their welfare consequences. Where the latter are small, other factors may become decisive in the State aids decision. Much of the preceding section was devoted to a discussion of the effects of State aid on firms' cost and financial structures, and hence upon economic decisions. A consideration of these factors is, we believe, essential if the effects of State aids on the firm or industry, and hence its potential for distorting competition in the market, are to be understood and properly evaluated.

In this section we are concerned more broadly with the effects of State aid on competition and welfare, taking it as a given that aid has some effect upon firms' output, capacity, or exit and entry decisions. A particularly important additional factor to be taken into account when assessing the impact of State aid on market competitiveness, at least where the aid effects firms' capacity reduction or exit decisions, is what might be called the competition externality. The remainder of this subsection discusses this issue.

The competition externality

The competition externality can be defined as the difference between the social benefit which derives from the existence of an additional firm in the market, and the private benefit appropriated by the marginal firm. These may, and typically will, differ because of the effect the entry of a new firm (or the non-exit of an existing firm) has on market prices and the outputs (and hence profits) of other firms. The standard way of measuring this effect is in terms of changes to consumer and producer surplus. In these terms, the competition externality can be defined as:

Competition externality = The increase in consumer surplus minus the loss in producer surplus by incumbent firms (i.e. firms other than the one whose entry/exit is being contemplated) brought about by the entry (or non-exit) of an additional firm.

In general the competition externality can be either positive or negative. Where it is negative, this reinforces the prima facie competition case against State aids, arising from their presumed discriminatory effects. In this case therefore, State aid has unequivocal negative welfare consequences via its effects upon market competition, and should be proscribed. Where the competition externality is positive however, i.e. the marginal firm is able to capture less than 100 % of the benefits of its presence in the market, then provided the State aid is accurately targeted and proportionate (i.e. it does no more than correct the externality) the effect of keeping marginal firms in the market via State aids may be to increase overall economic welfare. In such cases there is a potential case for allowing the aid on economic efficiency grounds.

([1]) See Section 2 above.

On the other hand, it is possible that, by supporting a particular firm in the market, the effect of the State aid might be to lead to the exit of other firms, whose withdrawal will have damaging consequences for competition and efficiency. In particular, where there is more than one marginal firm in the industry or market, State aid should be targeted at the most efficient first, and this will not be true in all cases. This danger is particularly acute because of the incentives of individual Member States to be influenced by local considerations rather than market-wide effects. Thus, Member State A will be unlikely to attach proper weight to the effects of the exit of firms located in Member State B. The existence of a positive competition externality does not, therefore, mean that discriminatory interventions to support marginal firms should necessarily be encouraged or tolerated. Rather, where a significant competition externality does exist, the possible benefits arising from it should be evaluated alongside the potential negative effects of discriminatory policies. Only when the overall balance is positive is there a case for approving the aid on grounds of improved competitive conditions and efficiency.

It is therefore useful to consider further the following question: under what types of circumstances is there likely to be a substantial, positive competition externality? Given the diverse variety of circumstances to be found in different markets, it is impossible to offer an exhaustive classification. There are, however, a few general considerations that are useful in addressing the question.

Homogeneous goods

In the case of a market for a homogeneous good, consumer benefits from entry or the support of a marginal firm arise purely from price effects, while the impact on other firms in the market can be a mixture of price and quantity effects (i.e. other firms can suffer as a result of loss of volume, even if the additional firm does not have the effect of reducing prices in the market). There is a general result in this case to the effect that, if the effect of the additional firm is to lead to a reduction in output per firm then, at a zero profit market equilibrium, the competition externality will be negative or zero: in effect the losses inflicted on competing firms exceed the benefits conferred on consumers ([1]). Since it will normally be the case that State aid to one particular firm will have negative effects on the outputs of competing firms, this result suggests an initial presumption, in the case of homogenous goods, against arguments that State aid, by reducing market concentration, contributes to increased economic welfare or efficiency ([2]).

Where firms in the industry earn supernormal profits however, for example where market power problems are important, the prospect of a positive competition externality becomes much more significant. There can then be competition advantages in providing selective support to marginal firms. However even if competition in the relevant market is weak, it is by no means guaranteed that preventing further concentration would increase economic efficiency or welfare. A positive competition externality still has to be weighed against the distorting effects of discriminatory interventions (the support of inefficient competitors for instance) as noted above.

Differentiated goods

In markets for differentiated goods, the position is even less clear cut. In such cases consumers may gain directly from the additional goods available in the market, and so consumers surplus benefits can be positive even where prices do not fall as a result of entry (or non-exit). The results of economic analysis are more ambiguous in this case, and they do not lead to a clear presumption as to whether there are too many or too few firms or products in the market. The existence of a significant competition externality is, correspondingly, more difficult to evaluate.

Conclusions

There is an analogy between our discussion of the competition externality and the policy of some utilities regulators to promote new challengers to dominant, incumbent firms by 'biasing' regulatory decisions in favour of new entrants. Such policies are justified by a desire to

([1]) See Mankiw and Whinston (1986) or Varian (1994).

([2]) As always, however, it is possible to come up with exceptional circumstances. One possibility is that, for whatever reason, consumer effects are weighted more highly by policy makers than effects on other producers. This is a question of intra-EC distributional politics, and therefore not one on which we can usefully comment here. A second is that the industry in question is one in which non-EC firms account for a substantial market share. If the effects on non-EC firms are weighted less heavily than those on Community consumers and businesses, then again it might be possible to find examples of positive externalities. This second possibility raises issues of international commercial policy that are again beyond the scope of this paper.

encourage more effective competition in the market, and thus realise a 'competition externality', even though in pure cost terms such competition may be inefficient (i.e. optimal regulation of incumbent firms would be a better solution in theory). It is, however, extremely difficult to determine what is an optimal industrial structure in practice, and hence to correctly balance the relevant costs and benefits. And individual governments supporting firms operating in European or international markets are also unlikely to consider the problem within the appropriate Europe-wide context. Where there are failures of competition sufficient to give rise to significant competition externalities therefore, the appropriate policy responses are more likely to be via EC-wide competition and regulatory policies, rather than by discriminatory aid granted at the Member State level. Nevertheless the potential effects of State aid on promoting competition in the market, where it serves to preserve a less concentrated market structure, may need to be considered in State aid decisions; especially since a key criterion for proscribing aid is that it has a (negative) distorting effect upon competition in the relevant market.

5.4.4. The costs of restructuring

The costs of capacity reductions, or reducing the scale of operations of a particular activity, play a vital role in the evaluation of State aids. To repeat the conclusion of our earlier discussion of the options theory of investment, other things being equal, the greater the restructuring costs, the greater will be the willingness of a rational private investor to finance short-term avoidable losses.

It is therefore important to specify precisely what these costs refer to. The relevant costs are those that are incurred at the time of the investment or disinvestment decision, and which are subsequently non-recoverable. They do not, therefore, necessarily correspond with the costs of restructuring as they might be measured by conventional accounting systems. An example which illustrates this point is depreciation cost.

Depreciation 'costs'

As conventionally charged in accounting procedures, depreciation is a notional entry in the accounts that does not correspond to any actual transaction or expenditure which is made in the period. If a company decides to shut down a production facility that is only partially written-off in the books, there will be a notional charge made in the accounts, but this does not reflect any transaction and does not in any way affect the cash-flow position of the firm. Depreciation is not, therefore, a 'cost' that should be taken into account when assessing State aid.

Where depreciation can be relevant is in gauging levels of sunk costs, an exercise that is required both to estimate the level of avoidable losses that a firm is making and to evaluate the extent to which a rational private investor would be willing to finance those losses. Sunk or non-recoverable investment costs can be estimated as the difference between depreciated replacement cost and the value that a firm can realise by disposal of the asset. The avoidable capital costs associated with the asset can then be obtained by applying the appropriate cost of capital to its disposal value.

To illustrate, suppose a firm has assets of ECU 500 million, a depreciation charge of ECU 50 million (assets are depreciated on a straight line basis over a 10 year period), a 'normal' return on capital of 5 % (i.e. ECU 25 million), and makes a loss after providing for depreciation of ECU 12.5 million. At first sight such a firm might be deemed to require State aid to survive.

If, however, 50 % of capital costs are sunk, so that the sale value of the assets is only ECU 250 million, the depreciation associated with avoidable capital costs would be only ECU 25 million, implying that the firm's revenues exceeded its avoidable costs by ECU 12.5 million, or 5 % of the disposal value of capital. Not only is this firm not a loss-maker in economic terms, it is actually making a normal rate of return on capital.

In implementing its restructuring guidelines, therefore, attention must be paid to cash flows and to the transactions that give rise to them, rather than to notional costs as determined by particular accounting systems. What matters are the incremental expenditures incurred as a direct result of restructuring decisions, rather than items in a balance sheet.

An example of such incremental expenditures — which has arisen in a number of State aids cases — concerns any redundancy payments that the firm is obliged to pay either by statute or by contract. Such payments are frequently associated with plant closures and restructuring ([1]), in

([1]) Although they may also arise from improvements in the productivity of labour operating with plant of given capacity.

which case they can be viewed as non-recoverable exit costs. As indicated by the options theory of investment, the existence of such costs gives rise to a certain stickiness of capacity in the market in that, provided there is at least some chance of demand prospects improving, rational private investors would be willing to finance at least some level of avoidable losses for some period. Since this decision is made in full knowledge of the exit costs involved, it is rational for private investors to provide the requisite amount of finance. To the extent that Member States are doing likewise, therefore, the implication of our reasoning is that financing of operating losses would not be State aid at all.

An exception occurs however, when the firm is bankrupt and private investors default on their obligations to workers. Then, to the extent that financial assistance is provided by the State that would not be so provided by the private sector, a State aid will have been paid. The economic effect of the State aid on the market is, however, almost zero. Whether it is paid or not, the firm will disinvest in the same way, the only economic difference between the two cases being one of distribution: State aid constitutes a transfer payment to redundant workers who might otherwise have lost out as a result of the bankruptcy.

5.4.5. Finance and restructuring

As explained above, public enterprises can be expected to have a variety of non-profit objectives that they pursue subject to various financial constraints. A loosening of those financial constraints can therefore be expected to affect enterprise behaviour — most frequently it will have the effect of increasing the scale of operations of the firm (i.e. its capacity) by allowing the maintenance of employment levels or by permitting increased investment — whatever the form of the financial relaxation. The precise effects of State aid on behaviour may, however, be affected by the form of the aid; for example, whether the aid takes the form of a direct capital injection, a loan, a loan guarantee, a debt write-off, a grant, a tax holiday, etc. It is possible that a given amount of resources granted to the enterprise by one financial mechanism should not be regarded as State aid, whilst the same amount of resources delivered in an alternative way should be viewed as State aid. The form of finance therefore, and not just its quantity, is a potentially important factor in State aids decisions.

A reasonable benchmark for making such distinctions is — but see the discussion in Section 3.2 above — the behaviour of a rational private investor. An important, general consideration is the fact that a rational private investor may be expected to view the provision of additional funds for the restructuring of a firm in financial difficulties with some caution. While the firm may be in difficulty because of some adverse, exogenous change in market conditions, the poor performance may also be attributable to poor management decisions. Because of limited (asymmetric) information, it will typically be difficult for (outside) investors to determine the precise contribution of the two factors to overall performance. Poor performance will, therefore, at least to some degree, tend to convey a negative signal concerning the management capabilities of those responsible for the operations of the enterprise.

In cases of restructuring prior to privatisation this line of argument is potentially even more cogent. One of the key economic arguments for privatisation is that public sector management tends to be poorer than private sector management because it is not subjected to the full disciplines of market competition. The argument is strongest where the public firm is a monopoly, but it also applies to public firms operating in more competitive product markets to the extent that the latter are not tightly constrained by capital market disciplines such as the threats of takeover and bankruptcy. This may lead to two countervailing effects:

(1) To the extent that impending privatisation can be interpreted as a government commitment that, in future, management will be exposed to greater market disciplines, a private investor might infer that the quality of management will improve over time. Thus, even if the investor believes that a substantial fraction of today's poor financial performance is attributable to managerial weaknesses, the prospect of improvement in this dimension will be a factor making the investor more willing than otherwise to supply additional finance.

(2) On the other hand, the prospect of privatisation can also have negative effects on a private investor's willingness to provide finance. In many privatisations the senior managers responsible for decision making in the public sector are retained as the senior managers in the post-privatisation period. When, therefore, the transfer to the private sector involves a fairly radical change in the market environment of the firm, there can be a question mark

against the ability of the old management to perform effectively in the new conditions ([1]).

In considering the supply of finance for restructuring, therefore, a private investor would be concerned not only with questions such as plant closures and redundancies but also with managerial restructuring. In particular, the investor would be concerned to assess the capabilities of management in the changing circumstances associated with privatisation, and in general would tend to be more sceptical where the particular privatisation could be expected to lead to a major change in the operating environment but where managerial restructuring was limited in scope.

This discussion suggests that, to the extent that a case for additional support can be made, a rational private investor would tend to favour arrangements which gave less discretion to managers in respect of their future conduct. Since the level of managerial discretion will be affected by the existing balance sheet as well as by additional sources of finance, the latter two influences on behaviour need to be considered together.

To illustrate, consider a firm that is in financial difficulties and is embarking on a restructuring programme intended to restore viability. Assume initially that the firm is largely equity-financed, but that there is also a modest level of debt. Consider three alternative ways of providing extra cash flow:

- additional equity capital;
- a debt write-off;
- a loan.

The private investor will only provide the additional finance if there is an expectation that it will in turn yield further incremental cash flows sufficient to give a normal return on capital. The equity capital route, however, leaves management with discretion as to how the incremental cash flows (if they materialise) should be used. Where there is a question mark against managerial performance, therefore, the investor will be concerned that the extra cash flow will be used unprofitably.

A debt write-off would have similar consequences in that it would provide extra resources to management without any increase in future obligations to the investor (specific obligations, in the form of promises to pay interest and ultimately to redeem the debt are, in fact, being reduced). Moreover, a debt write-off in effect provides the firm with additional cash flows over an extended period of time — the firm benefits in the initial period only to the extent of the reduction in interest that it needs to pay — and these may not at all correspond closely with the cash flow profile generated by a restructuring programme. Thus, in providing the necessary funds for restructuring, a debt write-off may have the side-effect of producing surplus cash in future periods. Again given the context of concerns about managerial performance, the latter will not be attractive to the private investor.

In contrast, a loan matches the provision of cash today with obligations on the firm to pay back predetermined amounts of cash in the future. Provided that the loan terms are enforced ([2]), therefore, management will be left with less discretion in respect of the uses of the future, incremental cash flows generated by today's investment in restructuring. This may, of course, leave the firm short of funds for future investment programmes, but the managers can then come back to investors for further funds. In assessing such appeals, the investor will have the benefit of the additional information that will have become available about the management's performance record in the restructuring and (possibly) post-restructuring phases. The loan therefore has an options value for the investor and it will also tend to give managers stronger incentives to perform ([3]).

More generally, it is to be expected that rational private investors would seek to ensure that there is significant conditionality in the granting of extra finance for restructuring for firms in difficulties ([4]). That is, there will tend to be a preference for types of financial assistance that do not give managers a relatively free hand in

([1]) A good illustration of the issue is the propensity for unsuccessful diversification by public monopolies and by newly privatised firms when internal cash flows are more than sufficient to finance existing businesses — that is, the firms have significant 'free cash flows' — and investors either are not in a position to insist on distribution of surplus cash or simply fail to do so.

([2]) Enforcement often involves policy credibility problems when lending is by the State, and the incentive effects of debt are undermined if the firm believes that it will be able to default without managers having to face substantial negative effects.

([3]) A countervailing consideration is the effect of increasing debt upon the probability of the firm going bankrupt, which may mean that for firms with initially high levels of debt to equity, a combination of equity and debt finance may be more appropriate.

([4]) There is an analogy here with the conditionality imposed by world financial institutions (IMF, EBRD, World Bank, etc.) when lending to governments engaged in stabilisation exercises.

the use of funds and in the use of future, incremental cash flows that result from any performance improvements. At issue in State aids decisions, therefore, is not simply the question of whether private investors would provide additional financing for restructuring, but also the question in what form? Finance granted in one form may satisfy the MEIP test, whilst finance granted in another form may not.

Example: Heracles cement company

The decision of interest is that set out in a ministerial decree of 7 August 1986 applying the provisions of Greek Law 1386/1983 to Heracles cement company. Law 1386/1983 established a body called the Business Reconstruction Organisation SA (BRO) which had extensive powers *inter alia* to assist in the recapitalisation of Greek companies which were in severe financial difficulties. The decree of 7 August 1986 had the effect of converting GRD 27 billion (approximately ECU 175 million) of Heracles' commercial debts owed to various public institutions and utilities into share capital (i.e. into equity). Partly as a result of the recapitalisation, Heracles was restored to profitability and later privatised.

In this case, the company was running a significant financial deficit in 1985 which was partly attributable to (i) a high level of borrowing to finance modern plant, (ii) price controls in the domestic market, and (iii) a collapse in demand for cement in Middle Eastern markets to which Greek producers had exported in large volumes. Given the modernity and efficiency of the plant, on the basis of the options theory of investment there does not appear to have been any doubt that the plant should be kept open (i.e. physical restructuring was not required). The significant issues in the case therefore relate to financial restructuring and its implications for the subsequent behaviour of the firm.

Given that Heracles was running a deficit in 1985, the question of interest here is whether the form of the financial restructuring was appropriate on the basis of the MEIP. A debt-to-equity conversion has the effect of easing financial outflows not only immediately but also in later periods, and would therefore likely be considered inappropriate by a private investor if the cash flow position was thought likely to improve (a reasonable expectation for plant that is more efficient than most in the market, although the position in this case is complicated by the existence of price controls).

The cash flows of Heracles are indicated by the Table 14 (where profit is before any allowance for depreciation), and show that, as might have been expected, profitability did recover strongly in the late 1980s.

The figures indicate that the debt conversion in 1986 was of a scale that enabled Heracles to move immediately, in 1986, to a position in which its profit flow was in excess the sum of its finance costs and its investment requirements. Moreover the financial position improved rapidly in 1987, 1988 and 1989, so that by the latter year gross profit exceeded finance costs and investment by around GRD 5.75 billion (and no dividends were paid over this period). The effects of the debt reduction in reducing cash outflows not only in 1986 and 1987 when Heracles was in difficulties but also in the later years when profitably was growing strongly again are apparent from the figures. Prima facie, then, it is likely that private investors as a whole would have preferred a temporary and smaller scale injection of extra cash.

Table 14

Heracles' financial performance (million GRD)

Year	Profit	Finance costs	Surplus	Investment
1984	5 689	4 467	1 222	349
1985	5 699	6 712	– 1 013	425
1986	6 090	4 590	1 500	605
1987	6 222	2 752	3 470	469
1988	7 434	2 383	5 051	822
1989	9 455	2 525	6 930	1 173

5.5. Privatisation

Privatisation is usually preceded by financial restructuring of some form, and is sometimes also preceded by physical restructuring. In a number of recent decisions the Commission has permitted certain aids to be granted to facilitate privatisation and various forms of associated financial restructuring.

5.5.1. The Commission's approach

The Commission has set out its approach to privatisation cases in the XXIst Report on Competition Policy (1992). The first principle is that EC Community law is neutral with respect to the private or public ownership of firms, and hence that firms in either sphere must satisfy the same general principles with respect to State aid, as laid down in Article 87(1) and elsewhere (see Section 2 above). However the Commission has developed some rules or guidelines by which to judge whether State aid is involved. Since privatisation may occur in a number of ways (e.g. public share offerings of all or part of enterprise, public tender or auction of all or part of enterprise, private sale, take-over), and since the different methods can have different economic consequences, the guidelines are (correctly) to some extent contingent on methods.

For example:

(1) Where privatisation is effected via the sale of shares on the stock exchange, State aid is presumed not to be involved.

(2) If privatisation is effected by the sale in whole or in part of the company to another company or companies, then the following conditions must be observed to avoid the presumption that State aid may be involved:

- a transparent and open tender process must be held imposing no abnormal conditions concerning the acquisition of other assets or the continued operation of other businesses;
- the company must be sold to the highest bidder;
- bidders must be given enough time and information to carry out a proper evaluation of the assets as the basis for their bid.

Where these conditions are observed the sale of assets need not be notified to the Commission. In other cases notification to the Commission must be made, and in particular where:

- sale occurs after negotiation with a single prospective purchaser or a number of selected bidders;
- sale is preceded by the writing-off of debt by the State or other public bodies;
- sale is preceded by the conversion of debt to equity or capital increases;
- sale occurs under conditions not customary in comparable transactions between private parties.

Any sale under abnormal commercial conditions must be preceded by a valuation carried out by independent consultants, and privatisations in certain 'sensitive' sectors ([1]) must all be notified to the Commission. The following sections comment on some of these issues.

5.5.2. Selling prices

Where companies are sold to individuals, rather than to other commercial institutions, it is generally right to presume that no State aid is involved, irrespective of the price charged. If, after flotation, share prices jump sharply upwards, the beneficiaries are individual investors. There will then have been a transfer of wealth in the economy, but markets will not be distorted by the transaction, and this is so even if, prior to the flotation, there has been a debt write-off which exceeds the sales proceeds from privatisation ([2]).

Cases where the selling price is likely to matter are those in which the public enterprise is sold to another commercial enterprise or enterprises, whether industrial or financial. For then the sale of assets at less than their true market value constitutes a transfer of wealth to commercial organisations, and such transfers are no different in principle from other forms of State aid. That is, they assist the purchasing institutions and may distort competition between those institutions and their rivals in the markets in which they operate. This includes cases where shares in industrial enterprises are

([1]) Synthetic fibres, textiles, the motor industry, etc.
([2]) Which is not to say that financial restructuring can be ignored, as will be explained below.

sold to financial institutions at excessively discounted prices in that such transactions may strengthen the competitive positions of those financial institutions (e.g. by improving their balance sheets).

Where shares are sold to other commercial organisations, therefore, it is appropriate for the Commission to pay attention to the price, even if the privatisation has occurred via the stock market. If the method of privatisation is an open tender process with allocations of shares to the highest bidders, it might normally be assumed that no aid is involved (although see the comments below on the distinction between private and social values). On the other hand, an offer for sale at a low price and with an allocation system that places blocks of shares in institutional hands may constitute aid to those institutions. Whether or not such aid has a material effect on the behaviour of the firms benefiting from it is, of course, another matter.

To advance the discussion it is useful to distinguish between two distinct but closely related issues. These are:

(1) The difference between the private value of the enterprise and its social value.

(2) The difference between the private value of the enterprise and the price paid for the enterprise by private purchasers.

In general the private and social value of the enterprise will differ for a number of reasons (see Jones, Tandon and Vogelsang, 1990, Chapter 2 for a discussion), and privatisation decisions need to take this into account. This comparison should influence not only the decision to sell a public enterprise, but also the decision of how, or to whom to sell it. It is not the case that social welfare will always be maximised by selling a firm, or its assets, to the highest bidder, i.e. the private purchaser for whom the public enterprise has the greatest private value. The private value of the firm, i.e. the expected profit stream to be earned from its assets, will depend upon a number of factors, including post-sale market structure and the ability of the privatised firm to earn supernormal profits. The value of the firm might easily be highest for the purchaser upon whom it confers the greatest post-privatisation market power. Moreover, if, as a result of the effects on market power, one buyer places a much higher valuation on an enterprise than anyone else, and if, as a result of this disparity, it is able to buy the firm at a price substantially below its own private valuation (but higher than the private valuations of other bidders), sale to highest bidder could arguably be held to be a form of aid.

Thus, selling the firm to the highest bidder may conflict with public policy goals of protecting consumers, and encouraging competition and diversified ownership. A possible rule to follow in privatising State enterprises is:

(1) Sell the enterprise only if the social value of the enterprise is greater in the private sector than in the public sector;

(2) Sell the firm to the purchaser(s) which maximises the social value of the enterprise, taking into account market structure effects, etc.;

(3) Extract the highest possible sale price from the purchaser which maximises social welfare, or where there is more than one, to the highest bidder.

Following this rule, State aid should in principle only be said to be involved where the government sells the enterprise at less than 'market' value, or a substantially reduced price, to a selected firm which maximises social value.

5.5.3. Continuing State regulation

Public enterprise can be regarded as a form of regulation in that it provides a mechanism whereby public policy objectives can be translated relatively directly into economic decisions. When enterprises are privatised the transfer of ownership may be accompanied by deregulation, in the sense that the State abandons its earlier regulatory objectives concerning the relevant economic activities. This is by no means always the case, however, and in many cases of privatisation public policy objectives continue to be pursued by means of alternative regulatory instruments.

Continuing regulation is most conspicuous when privatisation occurs in parts of the public sector such as energy, communications, and transport (the 'network' industries). It may, however, also occur in other cases, for example when the State retains a substantial shareholding in the company concerned or when there is an explicit or implicit contract between the State and the newly privatised enterprise.

One of the advantages of privatisation is that it tends to make relationships between the State and the enterprise more transparent, and monitoring of State aids should therefore in principle be somewhat easier. To the extent that the post-privatisation regulatory regime and/or obligations are transparent to investors, they can be expected to affect the amount that investors are willing to pay for the firm. The more burdensome are the State's continuing interests the lower will tend to be the sale price of the company. In these cases State aid can occur when the reduction in the sale price more than compensates for the restrictions imposed on the firm. As explained above, this is chiefly an issue when the enterprise concerned is sold to another commercial organisation, rather than to small private investors, although the specificity of any post-privatisation 'contracts' is problematic in all cases. That is, competition may be distorted in the event that rival firms are not given the opportunity to establish similar relationships with the State.

The continuing relationships between State and firm need not, of course, involve the imposition of burdensome restrictions on the latter: they may instead be characterised by the granting of special favours to the firm. In these cases the important question is not whether or not the enterprise is correctly priced but rather whether or not such special favours lead to a distortion of competition in the market. More generally, it is appropriate for the Commission to check whether any other firms are receiving indirect State aid as a result of explicit or implicit obligations imposed at privatisation.

A useful framework for approaching such post-privatisation issues is to examine the nature of the vertical relationships between the newly privatised firms and its buyers and suppliers, since privatisation arrangements could potentially involve State aid to any of the vertical stages. That is, depending upon the arrangements made, privatisation can be used to favour:

- buyers;
- the privatised enterprise itself; and
- suppliers.

Examples of each type of outcome are:

- price regulation that leads to below-cost supplies to commercial customers, motivated by the desire to assist domestic firms in the downstream industry ([1]);
- favoured status for the enterprise in public procurement (in those cases where the State itself is a buyer), which may be connected, for example, with the retention of a significant State shareholding in the firm; and
- obligations that require the newly privatised firm to favour domestic suppliers in its own purchases of inputs from upstream industries.

Particularly since it has been a characteristic feature of many larger public sector firms in the EU that they have been used to favour domestic upstream and downstream industries, it is appropriate for the Commission to be especially vigilant in this area.

Example: UK telecommunications

In the 1970s agreement was reached between the UK Post Office (which was then responsible for telecommunications as well as for postal services), GEC, Plessey, and STC (who later withdrew) to develop a new digital switching system called System X. There was therefore collaboration between the downstream buyer (the Post Office, later British Telecommunications (BT)) and major domestic upstream equipment suppliers. Following privatisation, BT, pursuing a more aggressive commercial strategy of its own, placed orders in 1985 for the rival 'System Y' of Thorn Ericsson ([2]). The industry regulatory body, Oftel, then intervened to try limit BT's purchases from sources other than System X for a period of three years.

The purpose of the regulatory intervention was to give the domestic UK equipment suppliers 'some time to adjust to the more competitive market situation' that had emerged at privatisation. Although strictly limited in duration, it is a good illustration of how a government or government agency might seek to use a newly privatised firm to continue to favour an upstream sector.

([1]) Cross-subsidisation is a common feature of systems of price regulation, including when regulated firms are privately owned.
([2]) System Y was produced in the UK, but using Swedish technology.

5.5.4. Types of privatisation

Discussion of vertical relationships serves as a reminder that public ownership of an enterprise can serve many functions: in the above examples the beneficiaries of public ownership may be attached to the public firm itself (e.g. employees) or may be in upstream or downstream industries. And, although State aid is generally viewed as being of detriment to competitors of the recipient firm, it can sometimes also be the case that other interests in the horizontal dimension are themselves beneficiaries: for example, a publicly owned firm might be charged with the duty of promoting the domestic industry as a whole, or it may be prohibited from entering certain sections of the market that are reserved for its domestic competitors.

In assessing cases of restructuring and privatisation of public firms, we would suggest that a good starting point for classifying the different cases is to examine first what public policy objectives the firm in question has been used to fulfil, and second whether those objectives continue to remain valid. This will then lead to some grouping of cases by, for example, industry or market structure and size, since there are clearly different public policy purposes at work as between, say, a national telecoms network and a textile firm of modest size.

Such an approach would be consistent with much recent economics research on privatisation which stresses the importance for economic behaviour of the influences of competition/market structure and regulation (or the conduct of public policy) as well as of ownership transfer per se. For example, in the context of a discussion of the network industries, Peltzman (1988) points out that:

'There is no simple dichotomy between State-owned enterprises and privately owned firms.... What is globally important about these distinctions is less a matter of who owns what than what the government is trying to accomplish and what constraints it faces in the process.'

An initial check list of questions might be structured as follows:

How large is the enterprise concerned in relation to the relevant market? The relevance of size in the context of the Commission's tasks in State aids cases is obvious and requires no further elaboration here.

What government objectives have most influenced the conduct of the firm in the public sector? The list of possible policy goals is a long one, containing elements such as:

— to take account of deviations between private and social costs/benefits (i.e. to correct externalities);

— to appropriate profits from scarce resources or commodities made artificially scarce (fiscal monopolies); to redistribute wealth (e.g. by cross-subsidisation);

— to protect employment;

— to secure the provision of valuable industry information to government;

— to protect declining industries; to promote exports and/or curtail imports;

— to control 'strategic' industries; to support infant industries;

— to promote or protect upstream or downstream industries; to encourage regional development;

— to encourage industrial development;

— to control inflation;

— to reduce foreign influence in the domestic economy;

— to promote prestige projects; and

— to encourage high risk or high technology industries.

Objectives can, however, be grouped under broad headings such as those relating to the construction and operation of monopolistic networks, national security, industrial strategy, and support for declining industries and failing firms. Together with a breakdown by broad sector, such groupings can lead to an initial, broad classification of public firms. An earlier example of such a classification for the UK public sector at the beginning of that Member State's privatisation programme is shown in Table 15.

Table 15

Nationalised industries and firms in 1979

	Monopoly networks	National security	Industrial strategy	Decline/Failure
Energy	Electricity Boards	British Petroleum	British National Oil Corporation	British Coal
	British Gas			
Communications	Postal Service	Cable and Wireless		
	Telecoms			
Transport	British Rail		National Freight	
	National Bus		British Airways	
	Airports			
Water	Water authorities			
Other		British Sugar	National Enterprise Board	British Leyland (vehicles)
			British Aerospace	British Shipbuilders
			British Steel	Rolls-Royce

Have these objectives changed recently?

This is a crucial question in that, if policy objectives are a key influence on enterprise behaviour, any shift in those objectives can be expected to have important economic effects. To illustrate, in many cases privatisation has been accompanied by deregulation, and such an outcome is most common for smaller enterprises and for enterprises operating in competitive product markets. On the other hand, many other privatisations are accompanied by continuing regulation of one kind or another, and here the issues are more complex. At one extreme, regulatory objectives for the firm in question may remain relatively unchanged, in which case behaviour may be largely unaffected by privatisation. At the other extreme, although some regulation may continue, its form and content could be radically changed as a consequence of a policy shift.

Illustration: Utility privatisation

A monopolistic State utility can be used to achieve a variety of public policy goals, including providing support to domestic upstream and downstream industries. However, a characteristic common to most such utilities is that they engage in systematic cross-subsidisation, favouring one group of consumers over another. In respect of household supplies, for example, a typical pattern is that high cost households (e.g. with small loads and/or in rural areas) are cross-subsidised by lower cost households.

Cross-subsidisation objectives can be maintained after privatisation, but they require a particular type of regulation to be imposed. Thus, not only must the regulated firm be told not to pursue cost-based pricing but also it will be necessary to suppress any forms of competition that threaten to undermine the desired price structure. This is the traditional form of utility regulation that has been practised in the United States, for example, where utilities have been granted monopoly franchises (i.e. protected from competition) and subject to detailed price regulation that is concerned with price structures as well as price levels. In the context of privatisation, the retention of cross-subsidisation as a major policy objective will tend to be associated with policies that transform public monopolies into private monopolies.

If, on the other hand, there is a shift in policy objectives, such that the weight given to cross-subsidisation is reduced and the weights given to considerations such as the promotion of efficiency or of competition are increased, utility privatisation can be a quite different affair. Ownership transfer will tend to be accompanied by regulatory reforms, and possibly also by industrial restructuring that is designed to create more competitive markets. And the behavioural effects of such changes can be expected to be much greater than in the public-monopoly-to-private-monopoly cases.

5.5.5. Methods of privatisation

The method chosen for any particular privatisation will depend in part upon the government's goals concerning the specific industry or market in question. Thus, as stated above, where goals shift towards the promotion of competition, a monopolistic enterprise may be restructured in ways that are designed to introduce more competitive market structures. Methods of privatisation can also be influenced by more general macroeconomic considerations that may have relatively little influence on market behaviour. Such objectives include the raising of finance for government and the redistribution of wealth towards particular groups of voters.

The issues surrounding physical restructuring are particularly important for competition given that many large public firms have traditionally enjoyed monopolistic positions. While the general trend of economic research has been to indicate that, on efficiency criteria, monopoly rights in sectors such as communications, energy, and transport would be better reduced, in the case of public firms the monopoly problem was in principle attenuated by the non-profit objectives of the enterprises concerned (embodied in some cases, for example, in the notion of 'public service') ([1]). The greater priority given to profit objectives when a firm is transferred to the private sector can, therefore, introduce a risk that, following privatisation, the firm may become more aggressive in seeking to exploit its market power.

This raises an awkward question for State aids policy. To the extent that financial support for physical restructuring, or financial restructuring itself, has the effect of potentially strengthening the market position of the firm, it is more likely that a rational private investor would be willing to provide that finance. Put another way, private investors will welcome greater market power for the financial returns that it will bring, a point that indicates that the MEIP has some limitations in guiding State aids policy decisions.

In those cases where, as a consequence of significantly increased market power, the MEIP implies that no State aid is involved, there appear to be three major policy approaches:

(1) Recognise that no State aid is involved but apply general Community competition law (Articles 81, Article 82 and the merger regulation) to the restructuring/privatisation process.

(2) Modify the MEIP by making it conditional upon there being no significant increase in market power (i.e. in the assessments, adjust projected returns by subtracting effects that might be attributable either to greater monopolisation or to greater exploitation of market power).

(3) Treat restructuring and privatisation measures that lead to significantly increased market power as State aids in and of themselves (i.e. even if no financial aid is involved).

It is, however, beyond the scope of this paper to examine the relative merits of these three options.

Many of the above remarks apply to financial restructuring — which is very common for firms about to be privatised — as well as to physical restructuring. As we have explained above, and as is illustrated in more depth in Appendix 1, the financial structure of the firm can have consequences for its market behaviour. Of particular significance is the debt-to-equity (or gearing) ratio of the firm, and it is appropriate for the Commission to pay some attention to this aspect of the balance sheet in cases where the activities of the firm are large enough for the behavioural consequences to have non-trivial effects on the market.

This is not just a matter of checking cases where there are major write-offs of debt. In some cases leading to privatisation the public firm concerned has had very little debt in its balance sheet and, from the perspective of a rational private investor, the gearing ratio has been too low. In such cases, it might actually be the absence of financial restructuring that constitutes a State aid. Thus, low gearing could provide a post-privatised management team with substantial free cash flow which, among other things, might be used to:

- finance predatory behaviour aimed at establishing dominance in part or the whole of the relevant market, and/or

- finance unprofitable diversification into related or unrelated markets which, via cross-subsidisation, might have the effect of distorting competition in those target markets.

([1]) The extent to which this argument accords with practice is a controversial issue, and there are certainly several examples where major, public monopolies have sought to exploit their monopoly positions to the detriment of other firms.

In response to these points it might be argued that the initial financial structure of the firm is of little relevance since, once it is privatised, gearing will be adjusted if it is profitable to do so. The counter-argument here has merit if capital markets are functioning reasonably effectively, but in a number of major privatisations governments have sought to modify the operation of capital markets by devices such as 'golden shares', limits on the size of shareholdings, and the creation of 'core' groups of shareholders. The financial structure of firms about to be privatised is therefore potentially a matter of some concern in such cases.

5.6. Conclusions

State aids cases involving the physical and/or financial restructuring of firms prior to privatisation raise a number of difficult issues for the conduct of public policy. Perhaps the most difficult aspect of the question is the problem of assessing the combined economic effects of the various factors that may be at work. That is, the behavioural effects (and hence the consequences for market functioning) of the various measures taken by Member States can depend in quite complex ways upon the particular combination of measures implemented in a given case and upon the market and regulatory environments in which the firm operates and will operate in the future. To illustrate, as just shown, whether or not restructuring of the firm's balance sheet at privatisation matters very much for market behaviour depends upon the post-privatisation intensity of capital market pressures, which in turn depends upon the structure of the capital market and upon any ancillary measures taken by a government to modify the operation of the capital market in the case in question.

An implication of the analysis is that, while is relatively straightforward to provide a check-list of factors that are relevant for assessing State aids in cases of restructuring followed by privatisation, the implementation of policy necessarily requires a careful assessment of each specific combination of circumstances. Because of this, and because of the inherent difficulty of determining what a rational private investor would or would not do in particular situations, there is inevitably a limit to what can be accomplished by means of State aids policy.

With these general points in mind, we can summarise a number of the specific points that might usefully be born in mind in implementing the Commission's guidelines on restructuring:

(1) It is important to understand the cost structure of the firm, and assess precisely the ways in which any government support affects firms' costs. That is, aid may affect variable or fixed costs, and in the latter case the impact may fall on avoidable or non-avoidable (sunk) costs. In each case the behavioural implications of the intervention, and hence the intervention's impact on the market will tend to differ.

(2) With respect to aid granted for restructuring purposes, it is crucial to base assessments on a realistic view of the exit decisions of private firms (whether these decisions relate to whole businesses or to particular production facilities). In particular, where there exist exit and (re-)entry costs, private investors will rationally take account of the 'options' value of existing facilities.

(3) In addition to current levels of prices, costs and profits, the following factors should be assessed when evaluating exit of capacity and enterprises:

- the prospects for future demand;
- the level of uncertainty concerning demand or costs;
- exit and entry costs, or more generally non-recoverable sunk costs;
- the rate of technical progress, the length of asset lives and the rate of economic obsolescence of capital.

(4) Financial restructuring can have significant behavioural effects as a consequence of features of markets such as asymmetric information and transactions costs. The behaviour of publicly owned enterprises is likely to be particularly sensitive to financial restructuring as a consequence of the objectives and the sources of finance of such enterprises. In cases involving privatisation, State aids policy therefore needs to pay careful attention to financial restructuring as well as physical restructuring.

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Appendix 1

Financial structure, incentives and firm behaviour

As explained in the text, in elementary economic theory sunk (or windfall) costs or benefits, i.e. aid which in effect merely transfers a lump-sum payment to the firm in question, independent of any subsequent actions, should not affect its decisions. This observation forms the basis of much of optimal tax and regulation theory. However it is subject to an important qualification. In particular such aid may affect:

- Firms' capital structure and hence the incentives of managers.
- Firms' decisions via 'income' or 'wealth' effects.
- The financial position of the firm and hence its ability to engage in anticompetitive or 'predatory' practices, particularly when its competitors operate subject to financial constraints ([1]).

Whilst the traditional, or neo-classical, theory of the firm did not recognise such effects, it is now well known that financial structure and position may have important effects upon managerial incentives and firms' decisions. There is also literature to suggest that the firms' financial position may effect its strategic market behaviour. These issues are the subject of this appendix.

Financial structure, investment and asymmetric information

One way in which State aid may affect firm behaviour, and hence competition, is via its effects upon the firm's capital structure and financial position. Since the seminal work of Modigliani and Miller (1958), the neo-classical theory of the firm, and in particular neo-classical investment and finance theory, assumed that the firm's optimal financial structure was indeterminate, and that financial structure was irrelevant for investment decisions. The Modigliani/Miller theorem implied that, in a world of complete information and 'perfect' capital markets, the firm's debt-to-equity ratio and its choice of financial (debt) instruments made no difference to any firm decisions, and this provided a stimulus for subsequent empirical work ([2]). Informal observation and some empirical evidence however suggested that financial structure and position are of considerable importance to firm behaviour, and recent empirical studies of investment behaviour have demonstrated the importance of financial variables ([3]).

Modern theories of investment behaviour and financial markets have attempted to reconcile this divergence between theory and observation by devising models in which informational asymmetries between borrowers and lenders introduce incentives problems in financial relationships, making finance and investment decisions interdependent. In particular, models of imperfect information in financial markets have altered the conclusions of the neo-classical theory in two important ways.

First, if information is asymmetrically distributed between borrowers and lenders then certain financial markets — such as equity and credit markets — may be affected by a 'lemons problem' (Akerlof, 1970), in

([1]) This is recognised in Community guidelines on State aid for rescuing and restructuring firms in difficulty, OJ C 368, 23.12.94, p. 16: 'To limit the distortive effect, the form in which the aid is granted must be such as to avoid providing the company with surplus cash which could be used for aggressive market-distorting activities....'

([2]) 'Most research since the mid-1960s has isolated real firm decisions from purely financial factors. Franco Modigliani and Merton Miller provided the theoretical basis for that approach by demonstrating the irrelevance of financial structure and financial policy for real investment decisions under certain conditions. Their key insight was that a firm's financial structure will not affect its market value in perfect capital markets.' Fazzari et al. (1988), pp. 143–44.

([3]) See Fazzari et al. (1988), Hubbard (1990) and Greenwald and Stiglitz (1990) on this.

which low-quality firms (or high-risk borrowers), constrain the ability of high-quality firms (or low-risk borrowers) to raise finance. This may lead to:

- share purchasers demanding a premium on (high-quality) shares to compensate for the risk of investing in low-quality shares, and thus increase the costs of equity finance, and;

- credit rationing in credit markets, whereby banks lend at interest rates which do not 'clear' the market for loans, and borrowers are rationed.

Second, when information is asymmetrically distributed between those who make the firm's decisions (managers or agents) and the owners of the firm (shareholders or principals), then managerial goals and incentives may not be the same as those of the firm's owners. Managers' compensation will then typically depend upon various measures of firm performance and financial structure, and financial structure may effect managerial decisions; for example, debt may serve as a 'high-powered' incentive device. Not only will the firm's financial structure affect its performance — via its effects upon managerial incentives — it may also signal something about the quality of the firm and its management to potential investors and lenders, thus affecting the firm's value.

In these cases financial structure and position matter, and affect firm behaviour.

Asymmetric information, credit rationing and incentives

'Credit rationing' means that not all borrowers wishing to borrow at the market rate of interest are able to, and thus borrowers are rationed. Credit rationing is common, although until recently it remained largely unexplained in the economics literature. Jaffee and Stiglitz (1990) point to key features of credit markets which differentiate them from the markets normally studied in economic theory:

> 'Credit markets differ from standard markets in two important respects. First, standard markets...involve a number of agents who are buying and selling a homogeneous commodity. Second, in standard markets, the delivery of a commodity by a seller and the payment for the commodity by the buyer occur simultaneously.... In contrast, credit received today by an individual or firm is exchanged for a promise of repayment in the future.... If credit markets were like standard markets then interest rates would be the 'prices' that equate the demand and supply for credit. However an excess demand for credit is common.... Credit markets differ from standard markets because the interest rate only indicates what the individual promises to repay, not what he actually will repay (which means that the interest rate is not the only dimension of a credit contract).'

How is credit rationing explained by these features? Stiglitz and Weiss (1981)(1983) provided an explanation which rested upon adverse selection in credit markets. We only sketch the basic ideas here. Consider a lender facing two types of potential borrowers which are, *ex ante*, indistinguishable from each other: low-risk borrowers and high-risk borrowers. Low-risk borrowers have relatively safe investment projects which yield a (relatively low) rate of return r, but with low risk of default 1-p. High-risk borrowers have high-risk projects with relatively high rates of return R but high risk of default 1-P. Each borrower's project requires an investment of I. In the event of default we assume that either borrower repays an amount X<I to the lender ([1]). Suppose the lender can finance only one project, and that his opportunity costs of funds is zero up to I (and infinite thereafter). If he sets interest rate r then he lends to either borrower with equal probability (and one is rationed); whereas if he sets interest rate R only the high-risk borrower will apply for a loan. Denote by $E\pi(\rho)$ the expected profits of the (risk neutral) lender from setting interest rate ρ=r or R. Then:

$$E\pi(r) = \frac{1}{2}\{p(1+r)I + (1-p)X\} + \frac{1}{2}\{P(1+r)I + (1-P)X\}$$

$$E\pi(R) = P(1+R)I + (1-P)X$$

Under not very stringent conditions, the lender's optimal policy is to set ρ=r and choose one borrower at random to lend to. Raising the interest rate to 'clear the market' has the effect of excluding the lower risk bor-

([1]) Thus we are assuming that in the case of default each borrower pays the lender the same amount. This assumption may clearly be relaxed. The important point is that uncertainty of returns and limited liability mean that the actual repayment to the lender will be less than (1+□)I in at least some 'States of the world', where □ is the interest rate. See Jaffee and Stiglitz (1990) for a discussion.

rower from the market, leaving only high-risk borrowers and decreasing the lenders' expected profits. This example is only illustrative, and ignores a number of interesting aspects of the problem, but it does capture the essential logic behind the adverse selection argument. Stiglitz and Weiss (1981)(1983) identify another factor which reinforces the adverse selection effect, which they term the adverse incentive effect. Note that the expected repayment for either type of borrower increases as ρ increases, but falls as the probability of default increases. In particular, the low-risk borrower's expected return decreases more rapidly as the interest rate rises than the high-risk borrower's. This implies that as the interest rate rises borrowers may switch from lower risk to higher risk projects. Hence the lender's expected return again falls.

Thus Stiglitz and Weiss (1981)(1983) identify two basic reasons for there to be an inverse relationship between interest rates and lenders' profits, leading lenders to choose interest rates at which some potential borrowers are rationed:

(1) The adverse selection effect: a higher interest rate can increase the average riskiness of those applying for loans, or reduce average borrower quality, thus lowering expected profits.

(2) The adverse incentive effect: a higher interest rate may induce borrowers to switch from safer to riskier projects, because the probability of having to pay the higher interest rate is lower for riskier projects.

As Greenwald, Stiglitz and Weiss (1984) summarised the results:

> 'The main informational problem facing banks is that they do not know how the money they lend is being invested....An increase in the interest rate charged borrowers will, in general, increase the average riskiness of the projects a bank is financing. This is either because borrowers switch to riskier projects, or because safer projects become relatively less attractive and so investors with safe projects do not apply for loans. The effect on the riskiness of loans may outweigh the direct gain to the bank from increasing its interest rate. Thus the bank's profits may be maximised at an interest rate at which there is an excess demand for loanable funds.'

Welfare properties

There are three basic results concerning the welfare aspects of equilibrium with credit rationing:

(1) Market equilibrium is not in general Pareto efficient;

(2) Pareto efficiency may entail credit rationing;

(3) With credit rationing, there are systematic biases against undertaking projects which maximise expected returns.

Thus although economic efficiency under informational constraints may require that credit be rationed, in general even competitive markets will not allocate credit efficiently.

Informational constraints in equity markets

In addition to credit markets, firms may be constrained in their ability to raise capital in equity markets for a number of reasons. First, as noted above, if investors cannot tell, *ex ante*, the value of the firm, then the existence of low-quality firms may reduce the price which high-quality firms can sell their shares. In effect the internal value of the firm (i.e. its value to insiders) may be higher than the external value of the firm (its value to outsiders). Attempting to raise funds by equity financing may force the firms owners to sell the firm at a discount ([1]).

Second, managerial incentives to perform in the interests of owners/shareholders may depend upon the firm's debt-to-equity ratio, and a low level of debt relative to equity may act as a signal of poor managerial incentives, making shareholders less willing to provide additional equity finance. This is because managers who receive only a small fraction of any additional profits earned by the firm, will likely have poor incentives to maximise the firm's profits. One response to this is to impose large bankruptcy costs on managers. Bankruptcy is less likely — for any given level of managerial effort — the lower the debt-to-equity ratio, hence high levels of debt may signal strong incentives for managerial performance. Conversely high levels of equity leave considerable

([1]) See Hubbard (1990).

room for managerial discretion in disposing of the firm's profits, which may be diverted to the benefit of managers. And the ability of lenders to withdraw funds gives lenders a strong incentive to monitor managerial performance which serves to discipline managers and improve performance. General discussions of these effects may be found in Hart (1995) and Greenwald, Stiglitz and Weiss (1984).

Thirdly, managers of good firms may be willing to assume more debt than managers of poor firms. Attempts to raise equity may therefore signal low quality. Greater reliance on debt by high-quality firms means that equity will predominantly be sold by low-quality ones. Thus attempting to sell equity may convey a negative signal about the firm's quality and lower its value accordingly. This may make the cost of issuing equity prohibitive for many firms ([1]).

Financing constraints, incentives and firm behaviour

The preceding sections have discussed a number of the reasons, identified in the recent theoretical literature, why the ability of firms to raise funds in both debt and equity markets may be constrained by different types of informational asymmetries and incentives effects. In attempting to address the implications of this work for policy towards State aids, what matter are the ways in which real behaviour is affected by financial factors.

One important implication of the results cited above is that they imply that, in general, funds 'inside' the firm will be less expensive than 'outside' funds, whether obtained in the form of equity or debt. Raising funds provides a 'signal' and outsiders views concerning the firm's prospects may be more pessimistic than insiders. Thus informational asymmetries introduce a divergence between the costs of internal versus external finance. This makes a firm's ability to raise finance — and also their investment decisions — dependent upon the internal net worth of the firm. It also suggests that some classes of borrowers may find it prohibitively expensive to raise funds in credit or equity markets.

([1]) See Hubbard (1980) and Greenwald, Stiglitz and Weiss (1984).

Greenwald and Stiglitz (1990a)(1990b) have analysed the effects of equity and credit rationing on firms' attitudes towards risk and investment behaviour, and demonstrate two results which are not a feature of neo-classical theory:

- Constrained ability to raise funds via the issuing of equity, and bankruptcy risks associated with debt financing, can lead to increased 'risk aversion' on the part of firms since it interferes with their ability to diversify risk.

- Firm investment behaviour may depend upon the firm's financial strength or its owners' net wealth, and hence firms' actions are subject to 'wealth effects'.

For instance, in Greenwald and Stiglitz (1990a), an unexpected increase in the wealth of firm owners will increase R & D expenditures. And in Greenwald and Stiglitz (1990b), high profitability in any period, by generating increased equity levels for non-credit-constrained firms, and increased cash flow for credit-constrained firms, increases investment expenditures.

Government intervention to ease financing constraints

The possibility that credit rationing and financial constraints may lead to an inefficient allocation of resources and have real effects upon firm's investment decisions, raises the question of whether direct government intervention to ease financial constraints would increase efficiency and welfare. The literature is inconclusive on this subject, and considerable caution needs to be employed before coming to the conclusion that government policies to subsidise firm's investments will — or even can — improve the overall allocation of resources.

One paper which examines this issue is Gale (1990). He considers a model in which borrowers have private information about their risk characteristics, and the costs of using collateral as a sorting device are higher for borrowers than for lenders (i.e. collateral is imperfect). In his model high-risk borrowers signal their type by choosing a contract with low collateral requirements but a high interest rate, while low-risk borrowers put up substantial collateral in exchange for a lower interest rate. So long as low-risk types are not 'collateral constrained' rationing does not occur, although the use of

collateral creates an efficiency loss. In this case a guarantee to low-risk borrowers worsens efficiency by lowering their interest rate but increasing their collateral requirement, in order to preserve incentive compatibility. A guarantee to high-risk borrowers on the other hand reduces the collateral requirement of the low-risk borrowers and improves efficiency.

When low-risk borrowers are 'collateral constrained', the low-risk contract involves a probability of not receiving a loan, or credit rationing. Now a subsidy to low-risk borrowers results in a lower probability of low-risk borrowers receiving a loan, or increased credit rationing, again because of the incentive-compatibility constraint ([1]). In contrast a subsidy to high-risk borrowers again loosens incentive compatibility constraints and reduces the extent of rationing of low-risk borrowers, thus improving efficiency.

Gale's (1990) results are of significance because they show — at least in a simple equilibrium model with self-selection — that subsidies or guarantees aimed at those borrowers who cannot get financing in private markets, i.e. those who are credit rationed, may worsen efficiency, and that it may be better to subsidise unrationed (and higher-risk) borrowers. Thus government policies which do not take account of the incentive structure of equilibrium in credit markets may — by choosing the apparently obvious policy — only succeed in increasing the extent of rationing and worsening efficiency.

Summary and conclusions

In summary, recent literature — both theoretical and empirical — has demonstrated that asymmetric information and incentives problems may lead to a number of effects upon market and firm behaviour which are of potential importance for policy. First, firms may be constrained in obtaining outside sources of finance because of (i) adverse selection and adverse incentives effects in loan markets leading to credit rationing, (ii) the incentives effects of financial structure on management and (iii) the signalling effects of attempts to obtain equity financing on the value of the firm. These in turn lead to real effects upon firm investment behaviour and may increase firms' risk aversion.

Greenwald and Stiglitz (1990a) summarise the effects thus:

> 'Imperfect information affects both the internal organisation of firms and their external relations with labour, capital and product markets. ... As a result firms may act in a risk averse manner. Several consequences follow: (i) the firm will be concerned with financial structure and financial structure affects behaviour, (ii) changes in financial structure (the firm's net worth) have real consequences, (iii) mean-preserving changes in distributions of prices and sales have real effects.'

It has also been demonstrated that these effects of asymmetric information may have real welfare consequences. Credit-rationing is in general not Pareto efficient, and leads to systematic biases against maximising the expected value of investments. However government policies to alleviate these effects require sophistication and in particular an understanding of the incentive structure of market equilibrium, which makes identifying general welfare-improving policies difficult.

Financial constraints, predation and asymmetric information ([2])

Predatory pricing behaviour — an important problem in competition policy — is notoriously difficult to define. Tirole (1988) emphasises that it involves a short-run cost or investment to achieve a longer term gain, by inducing the exit, or deterring the entry, of rivals:

> 'Predatory pricing behaviour involved a reduction of price in the short run so as to drive competing firms out of the market or to discourage entry of new firms in an effort to gain larger profits via higher prices in the long run than would have been earned if the price reduction had not occurred.'

However it has been questioned whether predatory price cutting could be a rational course of action. In the first place it is costly to the incumbent as well as to rivals, and more so if the incumbent is larger than the rivals and unable to price discriminate by cutting price only where challenged (or where the price cut will have

([1]) Although subsidies have the effect of increasing the *ex ante* expected utility of low-risk borrowers. See Gale (1990), p. 45.

([2]) See London Economics (1994), *Barriers to entry and exit in UK competition policy*, OFT Report 2, London.

the greatest effect upon rivals, while doing the minimum damage to the incumbent). And second, if the 'preyed upon' firms understand that the price cut is only temporary, they should not be 'fooled' into exiting the market. Thus any coherent theory of predatory pricing must overcome these fundamental criticisms. However, there are reasons to think that predatory pricing can be entirely rational, and the threat of it credible, in a number of circumstances.

One possibility is the 'long purse' story originally due to Telser (1966). The idea, in its simplest form, is that an incumbent firm with large financial resources can credibly threaten to drive out of business a financially constrained rival, by engaging in price cutting for a long enough period of time. Once convinced of the threat, the rival will exit before the price war has become to prolonged. In the basic model of Benoit (1984), the threat to engage in predatory pricing is credible provided only that:

(i) the incumbent has a larger 'war chest' than the rival, and

(ii) the incumbent prefers one period of fighting followed by monopoly thereafter to perpetual duopoly.

No fighting will actually occur if the rival is fully aware of the situation, because it will exit immediately ([1]). The introduction of information asymmetries however make this result less stark. This version of the 'long purse' story however assumes that the rival is financially constrained, and to explain this it is necessary to consider the question of optimal debt contracts and capital market imperfections.

Specifically, the problem is to explain why the 'prey' should have limited access to capital. Presumably if bankers understood the nature of the prey's problem they would be willing to lend money against the future profits earned by not exiting the market. And 'predators' would then realise that they could not gain from predation and so would not attempt it in the first place. Thus the deep pocket story depends upon there being limited, or asymmetric, access to capital markets in the face of positive expected profits.

Fudenberg and Tirole (1986a) provided the start of a justification, building upon the work of Gale and Hellwig (1985) on capital markets with asymmetric information. In their model a firm requires a minimum amount of financial resources in order to obtain financing at all. This is to overcome the moral hazard problem in writing a debt contract. Predation, by depleting the prey's own resources, may prevent the prey from receiving further financing, and hence force it to exit. This story however depends upon the debt contracts being written for a single period only, and it is not clear what the outcome would be with multiple period debt contracts (see Roberts, 1987) ([2]).

Similarly Tirole (1988) models the idea that: (i) capital market imperfections mean that firms with lower equity face higher interest rates because bankruptcy risk is greater; and (ii) predatory price cutting can therefore raise rivals' costs by reducing their equity and hence raise their capital costs. Predation is successful if it raises the prey's capital costs to the point where the prey is better off exiting, and the costs of doing so are recompensed by the monopoly profits gained.

Another link between predatory pricing and imperfect capital markets is analysed by Bolton and Scharfstein (1990). In the presence of information asymmetries, the optimal financial arrangement between investors and a firm might involve the termination of funding if its profit performance is poor. But a 'predator' may be able to exploit that situation by strategically inducing poor performance. The predatory threat, which is credible, creates a trade-off between deterring predation and mitigating incentive problems, and hence interferes with incentive arrangements between investors and the firm. In some circumstances the optimal debt contract may not deter predation.

In summary the presumption that predation is not a rational strategy has been shown to be false in the recent literature, at least if one believes that the sorts of informational asymmetries modelled there are present in real markets. Rather, predatory behaviour can be part of a rational strategy under conditions in which there is

([1]) Exit may take the form of acquisition by the incumbent. Merger policy is generally more tolerant towards acquisitions of 'failing firms' than towards acquisitions of firms in robust health. Insofar as predatory behaviour is a cause of rivals' failure, it may be encouraged by this approach.

([2]) Roberts (1987) suggests that these contracting problems provide a potential role for venture capitalists, who overcome the moral hazard problem by becoming closely involved in the day to day activities of the firm.

no differential access to financial resources and each firm understands perfectly the incentives in the situation at hand. This may impinge upon State aids policy in the following ways:

- First, firms that are financially constrained may be more liable to the threat of predation than other firms.

- Second, firms that are not financially constrained may be more likely and more able to engage in aggressive or predatory market behaviour, to the detriment of rivals and market competition.

The latter point has been explicitly recognised by the Commission. As stated in Community guidelines on State aid for rescuing and restructuring firms in difficulty, OJ C 368, 23.12.1994 (Section 3.2.(iii)), the form of aid granted must be such so as to limit the distortive effect, and as such avoid providing the company with surplus cash which could be used for aggressive, market-distorting activities not linked to the restructuring process. Aid for financial restructuring should not unduly reduce the firm's financial charges.

Aid directed at market failure in credit markets

In OJ C 22, 1992, p. 6 (Netherlands-Regeling Bijzondere Financiering) the Commission rejected arguments that State guarantees may serve to deal with imperfections in national capital markets. However government aid for 'high-risk' industries, particularly those engaged in the development of new technologies and products is common, and may be justified by the unwillingness of private financial institutions to lend to new firms in such industries and markets. The purpose of State aid regulation is to prevent the distortion of competition through government subsidy or aid, but it might be argued that some forms of 'market failure' themselves represent a market distortion, and hence that aid that alleviates the effects of these market failures may be justified.

Perhaps the key issue here is the specificity of the aid. If aid is given to only one firm or to a restricted group of firms competing in the market, the result will be a distortion of competition. On the other hand, if assistance is available to all firms on similar terms, market failures might be ameliorated without such a distortion. Other things equal, the latter outcome is generally to be preferred.

Particularly difficult cases arise where there exist possible arguments to the effect that specificity is itself necessary to correct or counteract existing distortions of competition. Where, for example, industries are characterised by significant — and not easily removed — entry barriers, entry assistance of one form or another may be an optimal policy to achieve a more competitive market structure. This line of reasoning has been used to justify the provision of entry assistance to promote competition in newly liberalised sectors such as telecoms, although the distortionary effects of this type of policy are generally recognised and, at least in principle, the relevant aid is usually intended to be for a temporary period.

Appendix 2

The 'options' theory of investment

This appendix explains in more detail the economic logic underlying the 'options' theory of investment, initially by considering a simple example. We take for simplicity a 'two-period' example, in the sense that all uncertainty is resolved after the second period.

Specifically, we assume that, in period 0, price P_0 is equal to 2.5. In period 1 price P_1 may be $\overline{P}_1 = 4$ or $\underline{P}_1 = 1$ with probability q and 1-q respectively, and it remains at the same level thereafter. In this example we let q =½.

The investment decision

We consider first the investment decision. The cost of the investment is I = 5 and this is sunk, i.e. non-recoverable upon exit from the industry. The firm has short-run variable costs of c = 3 per unit of output, and can produce one unit of output per period indefinitely. The standard calculation of the present value of the NPV (net present value) of the investment opportunity faced by the firm is then:

$$NPV = -I + (P_0 - c) + \sum_{t=1}^{\infty} \frac{\{q\overline{P}_t + (1-q)\underline{P}_t - c\}}{R^t} \quad (1)$$

where R = (1+r), and r = the firm's cost of capital or internal discount rate, which we assume equal to 0.10. In this example therefore the 'standard' NPV of the investment opportunity is equal to – 10.5 and the firm apparently 'holds' a valueless investment opportunity ([1]).

([1]) It is valueless because the firm has the option of not investing, and hence realising a profit of zero.

Consider now the NPV when the option to wait and invest only if the price goes up in period 1 is introduced. Then:

$$NPV = q\left[-\frac{I}{R} + \sum_{t=1}^{\infty} \frac{\overline{P}_t - c}{R^t}\right] \quad (2)$$

Now the NPV of the investment opportunity is positive and equal to 2.272 In other words, a firm holding the 'option' to invest in the project one period owns a valuable asset, which could be sold at a positive price, despite the fact that the traditional approach found this 'asset' to be of no value. It is a simple matter to amend our example so that under the traditional approach the firm would invest in period 0, whilst under the option approach it invests in period 1 only if $P_1 = 4$. An example of this kind is considered by Dixit and Pindyck (1994).

The disinvestment decision

For our purposes we are more interested in the firms' disinvestment or exit decision. Hence assume now that the firm has invested at some point prior to period 0, and may exit (i.e. disinvest) by incurring an immediate sunk 'exit cost' of E = 5. We assume for the moment that once it exits the firm cannot re-enter (see below where we relax this assumption).

Under the standard NPV rule the firm should base its exit decision upon a comparison of the cost of exiting (option 0) versus the NPV of the profits expected from staying in production (option 1). Thence:

$$NPV_0 = -E$$

$$NPV_1 = (P_0 - c) + \left[\sum_{t=1}^{\infty} \frac{q\overline{P}_t + (1-q)\underline{P}_t - c}{R^t}\right] \quad (3)$$

Note that in our example $NPV_0 = -5$ whilst $NPV_1 = -5.5$. Hence the NPV rule says that the firm should exit and incur cost E, rather than covering its current operating loss P_0-c and waiting for the price uncertainty to resolve itself. Under the 'options approach' however we must recognise that the firm has a third option which is strictly preferable to option 1, viz. to remain in the market and take its optimal exit/staying decision in period 1, once it knows what the future price will be. Under this option (option W, for 'wait'), its expected profits are:

$$NPV_W = (P_0 - c) + q\sum_{t=1}^{\infty}\frac{\overline{P}_t - c}{R^t} + (1-q)\frac{-E}{R} \quad (4)$$

In this example, $NPV_W = 2.227$, which not only exceeds the exit cost -5, but is positive, indicating that the firm's optimal decision is to cover the operating loss P_0-c for one period and exit in period 1 if and only if $P_1 = 1$. Thus not only is the traditional NPV rule wrong in this example, but it recommends that the firm incur a substantial exit cost when the firm's correctly calculated NPV, taking into account its option to wait and exit/stay optimally in the future, is positive (i.e. the firm could be sold at a positive price in period 0).

The 'value' of the 'option' to wait and exit in period 1 if price is equal to 1 can be easily calculated in this example as the difference between NPV_0 and NPV_W, or 7.227, with no recourse to option valuing techniques. However in more complex and realistic examples, the problem of calculating the appropriate NPVs for the firm under all possible future courses of action quickly becomes intractable. An important insight of Dixit and Pindyck (1994) was to observe that techniques used in financial economics to value 'financial options' can also be applied to value 'real options' in investment theory, and in so doing make the problem tractable, albeit at the cost of employing more sophisticated mathematical techniques. Dixit and Pindyck (1994) consider not only the problem of correctly valuing firm's investment/disinvestment opportunities under more general conditions concerning the future path of prices, but they also consider the cases of:

> the pair of 'linked' options to invest and disinvest facing the firm; in effect by investing the firm 'purchases' the option of exiting in the future, and by disinvesting or exiting the firm obtains once again the 'option' of investing. A complete analysis of the problem requires that these two options be valued simultaneously;
>
> the problem of market equilibrium under conditions of free entry (i.e. perfect competition) and oligopoly.

We can easily adjust our example to take account of the first of these points (it is not so easy in general), but we do not attempt here to explain Dixit and Pindyck's (1994) results on the structure of market equilibrium. Concentrating on the exit decision, instead of assuming that exit is a 'once and for all' decision, we now assume that if the firm exits (incurring cost E) it thereby obtains the option to re-enter by incurring the (sunk) investment cost I. Because in our example all uncertainty is resolved in period 1, this affects only the calculation of NPV_0, which becomes:

(A.1.5)
$$NPV_0 = -E + q\left[-\frac{I}{R} + \sum_{t=1}^{\infty}\frac{\overline{P}_t - c}{R^t}\right] \quad (5)$$

which is equal to – 2.27 ([1]). Comparing (2) and (3) to (5) and (4) respectively, we see that proper accounting of the firm's option to 'wait and see' and to invest and disinvest accordingly in our calculations, uniformly increases the value of the firm's opportunities.

Implications of the 'new view' for State aids policy

Our preceding discussion was based upon a very simple example. Nevertheless it illustrates a number of the key concepts, and points to potential problems which may arise in applying the 'market economy investor principle', or the notion of a 'rational' investor, based upon traditional principles, to the investment decisions of firms or governments. As noted in the text, the 'market economy investor principle' applies the criterion of a 'rational' or 'reasonable' investor to financing or investment decisions taken by public bodies and organisations, and identifies as 'State aid' any financial assistance to firms which would not have been provided by a private investor under similar conditions and in similar circumstances. At the heart of the market economy

([1]) In fact in this example, for any reinvestment cost, no matter how small, this option is not preferred, and we must have I/1.1 <10 for investment to occur at all.

investor principle is the traditional NPV approach to analysing investment decisions. This is stated explicitly in Commission communication to Member States (OJ C 307, 13.11.1993, p. 12) with respect to the provision of equity finance:

> 'A capital injection is considered to be aid when it is made in circumstances which would not be acceptable to an investor operating under normal market conditions....A market economy investor would normally provide equity finance if the present value (future cash flows discounted at the company's cost of capital) of expected future cash flows from the intended project (accruing to the investor by way of dividend payments and/or capital gains and adjusted for risk) exceed the new outlay.'

And where this condition is not satisfied:

> 'The Commission will examine whether there is an element of aid contained in the amount of capital invested. This aid element consists in the cost of the investment less the value of the investment, appropriately discounted.'

In our exit example above, the 'cost' of the investment required to remain in the market is 0.5 (i.e. the current operating loss), whilst the 'value' of the investment, calculated according to traditional methods, is – 5.5 (i.e. the discounted expected cash flow from staying in the market). Hence the 'State aid' element would be 5.5 if the government (as owner) provided funds to cover the current operating loss. However when the 'option value' of the future exit opportunity is taken into account the value of the investment becomes 2.227, and hence there is no State aid element at all. Thus the identification and quantification of State aid based upon the market economy investor standard can, not surprisingly, lead to serious error if proper account is not taken of the firms' future opportunities or 'options'.

Equally serious errors can arise if the value of all of the firm's liabilities are not properly accounted for, and the 'new view' of investment has the merit of highlighting these. It would be easy to adjust our exit example above so that NPV_W — the NPV of the 'wait' option — is negative (but greater than – 5), indicating a negative expected return from remaining in the market for one more period. Against this however must be compared the alternative of exiting immediately and incurring the exit cost E in period 0. Thus 'investing' in current operating losses may — and often will — remain the optimal policy despite the fact that expected future cash flows under this policy are negative. Thus the mere observation that a firm is receiving financing to cover operating losses, with no particular expectation that the firm will be restored to profitability, is not sufficient to infer that the firm is receiving 'State aid'. A rational private owner/investor will provide such financing when exit or shut-down costs are high enough.

The 'options approach' to investment theory thus identifies and highlights a number of key issues which a policy aimed at identifying — and quantifying — State aid to private firms must concern itself with. Apart from pointing to particular key areas, such as the firms' future options, and the costs of exit, however it raises broader problems both for State aids and competition policy more generally.

Chapter 6

State aid, industrial restructuring and privatisation in the new German *Länder*: Competition policy with case studies of the shipbuilding and synthetic fibres industries

by Lars-Hendrik Röller and Christian von Hirschhausen ([1])

6.1. Introduction

Industrial restructuring in the post-socialist new German *Länder*, the former GDR, was the primary economic challenge of German reunification. The speed and complexity of the process greatly exceeded expectations, as did the total incompatibility of East German industry with West German, European and worldwide competition. Within several months after economic union, industrial production had fallen by 50 %. In this context, the concept of State aid, as laid out in Articles 87 and 88 of the EC Treaty, could not be applied in the same fashion as in cases of gradual restructuring, experienced by EU industry over the last 20 years.

In this paper we analyse the economic rationale for State aid to newly emerging enterprises in the post-socialist new German *Länder* between 1990 and 1994. Restructuring and privatisation took place in a very specific context, i.e. the passage from socialism to post-socialism. The institutional framework for restructuring was the German Treuhandanstalt (THA), an agency charged with an active industrial policy of recreating a maximum of new private enterprises from the ruins of the socialist combines. In early 1996, the results are mixed at best: 1.5 million new job creations in 15 000 enterprises, a deficit of DEM 250 billion, many newly created production sites on the leading edge of technology, and about 20 % of the active population without regular employment.

In terms of competition policy, the THA's action was significant both on a German as well as a European level, since the GDR immediately integrated with the EU. Heavy State involvement and massive financial flows caused mixed reactions in German and European industry which were directly affected by east German restructuring. The compatibility of State aid in eastern Germany and its effect on European competition is one of the key issues of the surrounding policy debate.

We first describe the specificity of post-socialist restructuring in eastern Germany. The task was to transform multifunctional socialist industrial units, which were not developed with the objective of obeying capital constraints, into profit-oriented enterprises operating in a new, competitive environment (Section 1). We then discuss economic aspects of State aid focusing on competition policy aspects (Section 2). These arguments are then applied to two industries where State aid and European competition issues are particular important: shipbuilding and synthetic fibres. We analyse the process of and obstacles to transforming socialist combines into a large number of new enterprises, the specific policy applied by the THA, and the effects of State aid on competition in the east German and European shipbuilding and synthetic fibre industries (Sections 3 and 4).

In sum, our conclusions are as follows: from a static perspective, we do not see any evidence in the two cases studied that would justify the State aid on economic grounds. In particular, European competitors were hurt through the introduction of new, modern capacity on the market. When adopting a dynamic perspective, this result has to be somewhat weakened. For eastern Germany, the process of industrial restructuring means the creation of new capacities on the leading edge of technology and productivity. The direct and capital-intensive interventions of the THA might have rescued some industrial enterprises in the new German *Länder*. As a consequence, industrial restructuring in eastern Germany may have succeeded in setting up several modern firms and new industrial tissue. Yet, when evaluating the process from a European perspective, the State aid channelled through the THA was hardly compatible with usual EC competition policy.

([1]) Wissenschaftszentrum Berlin für Sozialforschung.

6.2. The specificity of post-socialist industrial restructuring in eastern Germany: turning socialist combines into enterprises

6.2.1. Difference between 'classical' and 'post-socialist' industrial restructuring

When analysing the reform process in eastern Germany, one has to take into account the very specificity of the case: that is, the post-socialist nature of industrial restructuring. When the reform process began in 1990, the understanding of this particular process was not yet developed; policy measures were defined in terms of an ordinary restructuring process of an ordinary EU Member State. We contend that the nature of the restructuring process in eastern Germany is very different from 'classical' restructuring processes witnessed in the EU over the last 20 years. The latter has always consisted of gradual adaptation of industries or enterprises to gradually changing external conditions: demand, costs, technical progress, etc. In this case, State aid is provided to facilitate the structural change, either by lowering the barriers to exit for enterprises or by providing different types of operating or investment aid, if the enterprise is deemed capable of restructuring. Though the speed varies across countries and industrial sectors, standard restructuring processes in the EU as in other industrialised countries proceed gradually and, hence, take long time periods of up to several decades (e.g. textiles, shipbuilding, steel).

In post-socialist economies, there is no such thing. Socialism was an attempt to coordinate production and needs, without any reference to the role of money as a universal equivalent and, hence, a constraint to production or consumption (von Hirschhausen, 1995 a, b). In the socialist system, the very notion of prices, costs or profits did not exist. Decisions concerning investment and production were subordinate to the will of the Communist Party. Socialism has ended in central and eastern Europe with the abandonment of this non-monetary system, through the introduction of money as a universal equivalent and a certain liberalisation of prices. We refer to this as the process of 'monetarisation' of an economy. Monetarisation then revealed real costs for previously non-monetarised items, such as transport, energy, stocks, social services, labour, etc. Under socialism, production was not constrained by money; in post-socialist economies, however, questions of liquidity and cash-flow dominate the management of production (Bomsel, 1995; Rouvez, 1995).

In all countries of central and eastern Europe, including the GDR, abandoning socialism was a very rapid process. Monetary reforms and price liberalisation were introduced within a very brief period of time ([1]). Hence, industrial structures that had been developed over four decades (in eastern Europe) or even seven decades (in the USSR), lost their internal logic from one day to the next. The immediate change of relative prices implied that the capital stock of the socialist combines, designed for one and only one technology and output ('putty-clay technology'), was immediately devalued (Akerlof et al., 1991). Networks between combines fell apart due to the disappearance of Comecon, but also due to the drop in demand and the appearance of transportation costs. The institutional void further contributed to the dismantling of the old industrial structures: socialist institutions (planning system coordinated by the Party, informal barter trade, legislation, etc.) disappeared without being immediately replaced by the institutions of established market economies (e.g. labour and capital markets, financial intermediaries, contract law, etc. (see Schmieding, 1993)).

6.2.2. From socialist combines to capitalist enterprises

What does the post-socialist perspective imply for the process of industrial restructuring? On-site empirical research has shown that socialist industrial units ([2]) were not at all the 'public enterprises' for which they were commonly held in the standard economic literature (Sachs, 1994); i.e. enterprises seeking to maximise profit or productivity under constraints fixed by the State. Instead, socialist industrial units were multifunctional units where the physical production of goods was just one activity among others and most often not the central one. Other functions fulfilled by socialist industrial units included the provision of social services to their members (housing, hospital, kindergarten, culture club, vacation homes, etc.) and the exercise of strict political con-

([1]) Poland in January 1990, East Germany in July 1990, Czechoslovakia in January 1991, Russia in January 1992, etc.

([2]) The term 'socialist industrial unit' here designates the smallest administratively independent unit in socialism, which was called 'combinate' in most of the socialist countries. This term corresponds to the VEB ('factory of the people') in the GDR, the 'predpriyatie' in the Soviet Union, etc. The term 'combinate' must not be confused with the form of industrial coordination modelled in the 1980s according to the East German *Kombinat*.

trol in the form of the Party nomenclature, union, paramilitary activities, prisons and individual repression. In this context, the optimisation of any individual objective of production was simply not possible. Investment strategies were not geared toward the optimisation of output, but toward maintaining the political and social balance within the industrial units, as well as between combines of a region, an industry, or an entire country.

Socialist combines were not 'inefficient State enterprises', but rather multifunctional units whose structure did not correspond to any capital constraint. It follows that privatisation can not be a sufficient measure for assuring efficient restructuring of these combines. No capitalist entrepreneur, whether private or public, can be interested in taking over a multifunctional industrial unit. The problem of industry restructuring turns out to be larger and more complex than unbundling the over-integrated industry structures (Aghion et al., 1994). Instead, the very *raison d'être* of each production unit has to be redefined according to the new products and new industrial networks they are capable of integrating. Thus, two distinct questions make up the challenge of post-socialist industrial restructuring: one concerns the process of ownership change and privatisation; the other, the transformation from socialist combines to capitalist enterprises, i.e. the process of new enterprise creation, or 'enterprisation' (Bomsel, 1995). The institutionalisation of this process, i.e. the framework in which new enterprises can be created, emerged as the single most important issue of post-socialist industrial reform, from East Germany to Russia.

In practice, the process of 'enterprising' socialist industrial combines proceeds in two steps. One is the decomposition of the socialist multifunctional structures, which were designed for the non-monetary exchange of goods. The second, is the creation of new enterprises, adapted to meeting market demand in a competitive environment and subject to a monetary constraint. Note that this process of 'creative destruction' does not necessarily imply the physical destruction of old machinery, sites, and the shedding of former employees. Instead, it is the old network relations between productive units that are abandoned, and new ones that are created. The start-up of new greenfield enterprises also falls in the category of enterprisation.

The post-socialist vision of industry reform implies that there can be no 'restructuring' of capacities of a socialist industrial unit, in the proper sense. In other words, if the socialist productive network for which capacities were created disappears, the capacities of this network also disappear. What follows is the process of creation, i.e. the development of new capacities, serving a new market, with a new product, under a new brand name and competing with other firms in a new competitive environment. From an industrial economist's perspective, this is not a process of 'restructuring' of capacity. Instead, it has to be regarded as the complete abandonment of the socialist capacities, and the creation of new productive capacities adopted to the capitalist market economy ([1]).

This interpretation of post-socialist reform also has an important impact on the analysis of competition issues. In socialist times, combines did export to western markets, but never under real conditions of competitive markets. Instead, exports were 'planned', both in quantity and in price. In post-socialism, however, products from central and eastern Europe have entered new markets, both in western Europe and overseas. These products have undergone either a complete change, or at least significant innovation, in order to become competitive on these markets. Hence, the capacity created in post-socialist enterprises has to be considered as new capacity from the western point of view. By enterprising the east German combines, the Treuhandanstalt implicitly added new capacity to the EC market to which the east German producers now belonged.

6.2.3. The east German solution: industrial policy of active, local restructuring by the Treuhandanstalt

Though eastern Germany is certainly a special case due to the peculiar context of German reunification, eco-

([1]) One example might clarify this point: until 1990, the socialist factory of the people 'VEB Sachsenring Zwickau', employing 12 000, had a capacity of 160 000 units of the 'Trabant': a strange combination between a fairground go-cart and a 2-stroke motor, fuelled with a sulphurous CnH2n+2-containing liquid. The Trabant was delivered, not sold, to 'deserving domestic citizens' with an average waiting list period of 10 to 12 years. The VEB Sachsenring Zwickau also ran a full programme of social services, amongst them: housing, schools, a holiday resort, a polyclinic and a football team. The VEB was managed and controlled by the Party nomenclature. This is what we have called capacity in a 'socialist industrial unit'. By 1996, the situation has radically changed. The site, employing about 2 000, now features a production facility for the most recent Volkswagen 'Polo' model, with a capacity of about 250 000 a year. The model successfully competes in the European automobile markets. The organisation of production is 'just-in-time', which means that the largest possible number of tasks is outsourced. This corresponds to what one would call capacity in a capitalist enterprise. The point is the following: would anyone still seriously contend that the change from the socialist facility producing the Trabant to the JIT-production facility for the VW Polo has anything to do with the 'restructuring of capacity'? Or should it not be regarded as the shedding of old capacity (for the Trabant) and the creation of new (VW Polo) capacity?

nomic reforms have to be considered as a case of post-socialist reform. Radical economic reform was only enacted in July 1990: this was the economic, monetary and social union between the GDR and the FRG. As one of the earliest and most radical cases of post-socialist reform, the east German case offers important insight for other reforming countries in central and eastern Europe.

The institutional setting for industrial reform in eastern Germany was unique as well: the responsibility for managing the process of new enterprise creation and for privatisation was carried by one single institution, the Treuhandanstalt (THA). Originally, the THA was created as the privatisation arm of German unification, only. However, after the poorly anticipated collapse of east German industry following monetary union of July 1990, the THA had to change its strategy: accepting to 'assume full responsibility as the owner of its enterprises, including restructuring' (the so-called common declaration of March 1991). Two major policy implications were derived from this reorientation: first, the THA created 15 decentralised and largely independent regional agencies all over the country; second, it put its own personnel directly into the main executive positions of its combines. To this end, it accelerated the integration of west German and European managers — up to a maximum of 5 000 in 1992. Thus, rather than simply selling off combines from its Berlin headquarters, the THA could attack the restructuring of each factory directly on-site. The THA managers were in charge of:

- evaluating all technical alternatives to convert a maximum of the productive functions of the combines into new enterprises,
- combining a local approach with sectoral considerations,
- coordinating restructuring activities with the separation and closures of non-productive functions (housing, infrastructure, transport),
- facilitating the conditions for management buy-outs of individual departments of the former combines,
- negotiating with local administration over the integration of the new industrial structures into regional development plans (highways, electricity, etc.).

The results of this effort are quite remarkable: between 1990 and 1994, the THA achieved the split-up of 2 500 socialist combines, and actively pursued the creation of about 14 000 new enterprises. 1.5 million new jobs were created ([1]). The price of the operation was high: instead of an expected profit of DEM 600 billion, the THA has accumulated a loss of about DEM 250 billion ([2]). Yet the financial aspects and the continued monetary support from western Germany and the EU are but one aspect. Another specificity of the east German case is the fact that the THA was the major institutional innovation of post-socialist eastern Germany, whereas other State structures were simply taken over from the old Federal Republic. This also distinguishes the east German case from other post-socialist countries, where the economic, legal and institutional framework of restructuring have to be built from scratch.

6.2.4. Implication for the nature of aid

The EC Treaty of 1957 could not possibly include anything related to post-socialist industrial restructuring. How could the situation in eastern Germany, which became part of the EC in July 1990, be treated within that framework? How should State aid be dealt with in a country where, from one day to the next, almost all industrial enterprises needed some form of State aid in order to survive?

From the beginning, the European Commission accepted the specificity of post-socialist restructuring in eastern Germany. Though maintaining Article 87 of the Treaty of Rome as its legal basis, the Commission conceded rapidly 'that the task of the THA — i.e. support the transformation of a socialist planned economy into a market economy — is without precedent' ([3]). Henceforth, the Commission redefined the nature of the

([1]) The combines employed 3.4 million at the time of the GDR. The initial shock of reunification on the East German labour market is only slowly subsiding. In April 1995, the shortfall of 'regular employment' was still 24 %, down from 30 % in the first half of 1993 and 34 % in the first half of 1991. They are composed of 1 040 million unemployed, and 1 039 million 'persons in labour market measures' (reconversion, technical education, early retirement, etc.) (Employment Observatory East Germany, 1995).
([2]) This sum is equal to total East German GDP in 1994; see Brücker (1995).
([3]) SG(91) D/17825.

aid provided to east German industry according to the following principles ([1]):

(a) Before any privatisation, the THA could provide guarantees and even loans to those enterprises willing to engage in restructuring. Even though the ratio of bad debts was very high for the THA enterprises, most of them had no other security and were therefore unable to obtain any bank credit. Therefore, THA guarantees and even loans to those enterprises were not to be considered as State aid. The support provided to enterprises in sensitive branches (steel, shipbuilding, synthetic fibres, motor vehicles, fishing, agriculture) had to be reported to the Commission according to Article 88(3) of the EC Treaty.

(b) The annulment of old debts dating from before July 1, 1990 by the THA was not to be considered as State aid either, as long as they originated 'exclusively on arbitrary decisions of the former socialist planned economy'.

(c) The THA could provide financial support for cleaning up environmental hazards caused by its enterprises before the July 1, 1990 deadline.

(d) As for the practice of auctioning, no case in which the THA sold off an enterprise to the highest bidder or a single bidder — after having conducted an international call for tender — was supposed to include State aid. This point turned out to be important, since the value of THA enterprises, when offered to the European market, turned out to be very low, if not negative. Only in those (few) cases where an enterprise was not sold to the highest bidder, did the Commission reserve the right to inquire into the compatibility of the sale with Article 87(2) of the EC Treaty.

The very flexible treatment of THA action towards its enterprises turned out to be a crucial instrument in the day-to-day supervision of east German restructuring. Later, as the list of THA enterprises diminished, the Commission hardened its position on State aid, but continued to treat all cases with much flexibility ([2]).

Retrospectively, one observes that the Commission went way beyond the strict limits associated with 'classical' restructuring, as defined most recently in the guidelines on State aids to the rescuing and restructuring of firms in difficulty ([3]). Had one considered the case of the east German combines as 'classical' cases of restructuring, one would have had to strictly apply Articles 87 and 88 of the EC Treaty. This, in turn, would have meant the immediate end to practically all east German industry. The east German case had forced the Commission to bend Articles 87 and 88 of the EC Treaty as it had never done before and, most likely, will never have to do again.

6.2.5. Implications for industrial restructuring in other post-socialist countries associated with the EU

Post-socialist industrial restructuring is increasingly attracting the attention of researchers and policy makers (Portes, 1994). Whereas macroeconomic stability was rapidly achieved in all central and east European countries, the task of transforming socialist combines into market oriented enterprises is a long-term process. Privatisation is a necessary but insufficient condition for succeeding structural change. The east German case is an ideal type of privatisation and restructuring carried out simultaneously.

In many respects, the east German experience has important implications for the restructuring process in other post-socialist countries; in particular, the countries approaching EU membership (Poland, the Czech and Slovak Republics, Hungary, Romania, Bulgaria, Slovenia, Lithuania, Latvia and Estonia). These countries cannot and probably should not adopt the same institutional framework. In post-socialist countries other

([1]) Defined in the Commission decision on the notification procedure for privatisation by the THA (SG(91) D/17825).

([2]) SG(92) D/17613 of December 1992 clarified and modified four points on which a dispute with the German government had emerged during the course of 1991 and 1992: THA was required to report cases of continued financing for enterprises with more than 1 500 employees and with financial obligations exceeding DEM 150 million. Second, 'packages' of a 'good' and a 'bad' enterprise which the THA offered in order to get rid of the 'bad' enterprise, had to be reported whenever they exceeded 1 000 jobs. Third, in cases of re-privatisation, the Commission defined precise criteria to limit the compensation the THA could provide to former owners for the loss of value. Finally, sales to the highest bidder had to be reported whenever the price was negative and employment in the enterprise concerned exceeded 1 000.

([3]) OJ C 368, 23.12.1994, p. 12.

than the GDR, the process of restructuring can not be handled by one State institution and foreign investors. The peculiarity of the east German case was that restructuring and privatisation were managed by the same institution, equipped with unlimited resources. The separation of productive and social assets coincided with the implementation of investment projects. Regional and sectoral aspects of restructuring were coordinated.

Other post-socialist countries are searching for other institutional settings adapted to their situation. Today, a variety of corporate governance structures is emerging for setting up new enterprises (Gray, Frydman, Rapaczinski, 1995; von Hirschhausen, 1996b). Basically, two patterns can be identified so far:

(1) the 'classical' approach with a central agency, controlling privatisation, formally, but lacking control over its large number of enterprises;

(2) the mass-privatisation approach of diversifying and diluting ownership and control, favouring informal holding companies and insider control.

The centrepiece of the 'classical' standardised approach is an ambitious privatisation law and an agency charged with carrying out the so-called large-scale privatisation: first, through corporatisation (i.e. the definition of legally defined State-owned enterprises), and second, by selling these enterprises — as such — to the highest bidder ([1]). The condition underlying this approach is the capability of State institutions to evaluate the restructuring potential of 'their' enterprises and exert owner-like control. Both conditions have only partially been fulfilled as one observes, for example, in Poland, Hungary and Estonia.

The second type of corporate governance in post-socialism has emerged in countries where mass-privatisation was the dominant characteristic. The unorthodox method of mass-distributing ownership rights to the entire population was preferred on the following grounds: the populist appeal and considerations of 'fairness and equity', the speed of operation, the simplicity of administration, and finally, the understanding that 'classical' privatisation — carried out for example with the speed it was done in the UK — would take 'at least 2 000 years' (Sachs, 1994). Although, technically, mass privatisation succeeded and led to high rates of privatisation, it can not be concluded that the emerging governance structures were clear and efficient. Instead, one observes the concentration of ownership rights in the hands of employees and/or managers and a few investment funds; the degree of insider control exceeds expectations. In most cases, a peculiar form of ownership-control emerged, the 'post-socialist industrial holding company'.

6.3. Economic rationale for State aid

It is clear that political aspects regarding German unification and the integration of the new German *Länder* into the EU have played an important role in the debate about State aid to the former combines. The magnitude of the task at hand became apparent by 1991 when the 'sudden death' of east German industry seemed eminent. The rationale put forth by the German Government can be summarised as relatively strict State intervention in order to prevent the new *Länder* from vanishing from the economic map.

Whether subsequent measures taken by the THA have been economically efficient is still very much under debate and possibly too early to judge since many of the measures put in place have not fully unfolded. Despite the fact that decisions are based on political and social considerations, it is important to judge those policy decisions on economic grounds. Below we shall analyse the restructuring of east German industry from the point of view of competition policy. To be sure, we will not consider any political or social aspects of restructuring that might explain the actions of the THA, but merely focus on the economics of the situation and how it affects competition at the European level. In this sense, our analysis is normative, rather than descriptive. The approach we are taking is one where we begin outlining the economic arguments under which State aid could be justifiable from an economic efficiency perspective. In particular, we specify the market and firm specific conditions which need to be present for the arguments to follow through. If the conditions of an economic rationale for State aid are not met, State aid must be termed as economically wasteful. The presence of these conditions is then assessed empirically in the context of two important cases, which we believe have relevance over and above their immediate industries: the shipbuilding industry and the synthetic fibre industry. Before we turn

([1]) This approach is called classic because it is based upon the standard privatisation programmes in western Europe, notably in the United Kingdom, during the 1970s and 1980s.

to these cases we next summarise the economic rationale for State aid.

6.3.1. Increase competition in the case of oligopolistic demand or supply structures: static arguments

State aid can be economically meaningful if it used to increase competition in an otherwise imperfectly competitive market. Policies to foster competition can take a variety of forms, one of which is direct State aid (reducing entry barriers is another prominent policy). Clearly the economic argument in favour of State intervention in this case is based on the rationale that a relatively small amount of aid can create a viable competitor, increase competition, lower prices, increase innovation and consumer welfare.

It is clear that the above argument rests on various assumptions which need to be present. We shall spell out four of them explicitly. The first assumption is that the amount of aid necessary to increase the number of players is relatively small. In other words, the deadweight loss created by imperfect competition is reduced by an amount larger than the aid. This, in turn, depends on the demand elasticities, the number of competitors in the market, and the efficiency differential between the subsidised and the unsubsidised firms. For instance, increasing the number of competitors by one through State aid in a market which is not concentrated is unlikely to satisfy this criterion. Furthermore, if the efficiency gap is large, the cost of fostering competition is too high to justify. A second assumption implicit in the argument in favour of State aid is that firms do not collude. If competition is increased by keeping another competitor in the market, it is necessary to assume that competition actually takes place. Tacit or explicit collusion would merely consume the aid, without passing the benefits on to consumers. It is thus imperative to have an effective competition policy in order to give economic merit to an efficient industrial policy. Next, there is an assumption regarding the production technology: economies of scale must not be too high. This well-known argument refers to the intrinsic trade-off between economies of scale and competition. Clearly, if economies of scale are present, a limited number of firms might be desirable. An extreme case of this would be a natural monopoly. Increasing competition through State aid would be undesirable in such cases. Finally, and perhaps most importantly, the argument rests on the assumption of imperfect competition. In particular, there should be no supply or demand substitutes available (i.e. there is market power). Moreover, the existence of overcapacities, though one could justify them as evidence of market power ([1]), is indicative of excessive competition.

In sum, State aid can be economically justified in a static framework, whenever a market is imperfectly competitive. It is worth emphasising that the economic efficiency of State aid is not automatically satisfied for all imperfectly competitive markets. In general, the implications for economic efficiency rest on the careful weighing of the several forces discussed above. The final rationale for State aid is determined by the relative magnitude of these forces and has to be done through a case by case analysis. Examples of such an evaluation of an active European industrial policy has been done recently by Neven and Seabright (1995) for the European commercial aircraft industry, as well as by Neven, Röller, and Waverman (1993) for the European satellite industry.

6.3.2. Temporary aid for potentially viable enterprises: dynamic arguments

Note that the argument in the previous section does not depend on the enterprise becoming more productive over time. A second argument in favour of State aid is that an enterprise might increase its efficiency and/or productivity after its survival has been guaranteed for a certain time through State aid. In this case, limited support to an enterprise can result in establishing an efficient competitor over the long run. Clearly this argument can be (mis)used in many instances where the resulting State aid does nothing to increase the productivity of the receiving firm (in fact one could argue that productivity falls as a result of State aid). In any event it is imperative that the aid is committed to for a limited amount of time in order to prevent an inefficient firm from asking for more and more subsidies.

As mentioned above, the value of the 'capital' inherited from socialism can be regarded as low or even negative. This is consistent with the fact that (almost) no western entrepreneur has been willing to pay a positive price for a socialist combine. In this context, State aid for short-term survival can be justified on the grounds that it increases the medium-term capital value of some enter-

([1]) Excess capacities can be used by an incumbent monopolist to deter entry, by credibly threatening to expand production in the face of entry.

prises. The key question is, of course, why a State institution, and not private investors, would have the knowledge to select such enterprises. Following is a list of possible reasons.

6.3.2.1. Separation of productive and social assets as a prerequisite for successful restructuring

As long as the socialist industrial units remain multifunctional, the real value of their productive assets can not be known. Temporary aid can be justified if it enables the former socialist factory to proceed with the unbundling of social functions. These should be transferred to new State institutions, taken over by private institutions, or simply be closed. As long as it is uncertain which parts of the multifunctional units are available for restructuring, there can be no competition for them. Whether one centralised State institution is more efficient in achieving the process of unbundling than a decentralised auction, remains an open question. But as long as kindergartens, schools, public transport, energy, etc. are at the charge of the enterprise, no market-oriented capital value can be determined for the factory. During that period, State aid can be justified: transaction costs to the State for transferring the social functions are well below those of a new private investor.

6.3.2.2. Limiting the risk of short-term disappearance of enterprises

Independent of the question of social assets, the risk of severe destruction of the industrial base is a serious problem that has not been given sufficient attention in the early phase of post-socialist reform. Price liberalisation and the end of socialist pricing mechanisms result in a radical change in relative prices. Yet, these prices are not stable in the short-run, thus making it difficult to make large-scale restructuring decisions in an uncertain environment. Enterprises can benefit from windfall profits if their products' prices rise. It is more likely, though, that a fall in prices results in a 'windfall loss' to an enterprise. The latter is particularly true for enterprises in heavy industry, whose products were systematically kept high under socialism, and whose costs (in particular energy) were kept low. In eastern Germany, the shock of the change in relative prices was extreme in July 1990. As a result, about 5 000 of the 8 000 enterprises that THA owned became illiquid by late 1990 (Webber, 1994). In this situation, there is no direct correlation between the financial result of an enterprise in 1990, and its real, medium-run capital value. Even though price expectations in the former GDR stabilised rapidly — as a result of economic union with West Germany — no operational indicator existed for evaluating enterprises. Capital markets, that might have played such a role in developed capitalist market economies, did not yet exist. In the east German case, the risks associated with the unstable environment was so large that only the government could provide the necessary insurance: no private investor would have been willing to assume the short-term risk of such a large number of enterprises. By keeping several thousand enterprises afloat, the State could 'buy time' for the enterprises concerned. As the information base improved, potential investors benefited from this policy.

6.3.2.3. Positive externalities

Another role for government is one of credible commitment, thereby (indirectly) increasing the chances of other private enterprises engaging in the restructuring process. In other words, externalities might exist from regional or sectoral investment. Whenever such externalities are present a coordination problem can arise, leading to basically two types of outcomes: one, where no one invests (i.e. investment is done in other regions), and the other, where everyone invests. Which of the two outcomes materialises depends crucially on the expectations of the parties involved. To put it differently, if everybody expects that others will not invest, no one will invest, and the expectation is indeed fulfilled. Alternatively, if everyone expects that others will invest, then it is financially attractive to invest (because of the externality), and again, the expectations are fulfilled. In the language of game theory, there are multiple equilibria which are self-fulfilling. Clearly, in such cases, the better outcome is accomplished by government moving first, triggering a 'bandwagon' of other investors ([1]).

In sum, the case for State aid can be made by taking a dynamic perspective. As in the previous section, State aid has to be carefully justified, and certain conditions have to be satisfied: (1) firms will increase their produc-

([1]) Two recent examples from the east German steel industry can illustrate this point. In 1990, there was a tacit understanding among west European enterprises, facing another overcapacity crisis, not to invest in east German capacities for long products (Maxhütte Unterwellenborn) or flat products (EKO Stahl AG Eisenhüttenstadt). Only when THA showed its determination not to abandon the two sites did the cartel of refuseniks break up, and a 'rush' on the two sites began: four candidates for the Maxhütte, three for EKO (see Hirschhausen, 1995a, Chapter 7).

tivity beyond other competitors in a reasonable amount of time, and (2) the financial aid can not otherwise be provided through the financial sector. If these two conditions are met then the positive medium-run effect of aid to some firms might outweigh the negative short-run effects.

On the other hand, there are also considerable dangers that can cause well-intentioned State aid to fall short of its goal. The most obvious shortcoming of State aid in the dynamic context is the ability of governments to pick winners. It is often convincingly argued that private sources are in an equal or better position than government to assess the potential for profitable investments (Vickers and Yarrow, 1991). Indeed, the evidence for government to target so-called strategic industries or national champions is not inconsistent with this assertion. Another problem is the issue of credible timing when aid is supposed to be phased-out over time. Governments need to set firm deadlines for reducing or terminating financial assistance so that enterprises have the correct incentives to restructure. The difficulty here is one of time (in)consistency: given that the enterprise has not achieved viability by the agreed upon date, it is unlikely that government would abolish the aid. If firms are aware of this, the incentive to restructure is severely dampened.

6.3.3. Rent shifting: A national perspective

The final argument in favour of State aid is, strictly speaking, not an economic efficiency rationale. The argument is often made in the context of the case of *Airbus v Boeing*. It can be shown that an active industrial policy on the part of one country can be used to shift some rent from the foreign competitor to the domestic enterprise ([1]). The outcome of this is that welfare for the domestic market increases. In general, the above argument depends on a variety of assumptions. Most importantly for our purposes, a crucial prerequisite for this reasoning is the existence of a highly concentrated market structure. Oligopolistic competition is necessary for the existence of rent which can then be transferred from one firm to another.

For example, State aid to east German producers can be efficient from a German point of view if it succeeds in creating and allocating rents to German producers, that would not have benefited otherwise. In other words, depending upon which perspective one adopts, the results of the analysis will differ ([2]). In the interpretation of the case studies, we will have to make that distinction. A situation where the EU loses in terms of social welfare may still be a winning game for an individual nation, or an enterprise.

We now turn to the empirical evidence presented by THA cases. In the following sections, we shall apply the above mentioned hypothesis to two concrete cases: shipbuilding and synthetic fibres. The two cases were chosen for several reasons: In both branches, the former GDR had developed considerable capacities, and seemed, in 1989, to be at least partially competitive on the European level. Both industries' capacities corresponded to an important market share in western Europe (12 % in chemical fibres, 14 % in shipbuilding). Whereas the chemical fibre plants were spread all over the territory of the GDR, shipbuilding was concentrated on the Baltic seashore in only one Land (Mecklenburg-Vorpommern); it was the only significant industrial activity in the GDR north of Berlin. Finally, from an EU point of view, both shipbuilding and synthetic fibres fall under special legislation regulating State aid in the difficult process of restructuring these industries: the code on aid to the synthetic fibre industry ([3]) and several Council directives on shipbuilding, the latest being the seventh ([4]).

6.4. The enterprisation of the east German shipbuilding industry

6.4.1. From one socialist combine to five new shipbuilding enterprises

The restructuring of the east German shipbuilding industry is representative of the east German process in several aspects: None of the socialist shipyards of the former 'VEB Schiffbau Kombinat' was economically viable after the monetary union of July 1990. Without massive THA intervention, the seven would have perished altogether. Also, in no case did any 'classical'

([1]) This is referred to as 'strategic trade policy', see also Neven and Seabright (1995).

([2]) In the *Airbus v Boeing* case, State aid was efficient from a European point of view, whereas it seems to have been inefficient from a US point of view.

([3]) Document 92/C 346/02.

([4]) Directive 90/684/EEC, prolonged through Directives 93/115/EEC and 94/73/EC.

restructuring take place; instead, old capacity, mainly designed for mass production of low value-added ships, was gradually removed and new capacity was built and put on international, mainly west European markets. Between July 1990 and summer 1992, the THA was the only major actor in the process of restructuring.

In 1990 the east German shipbuilding industry consisted of one large combine in which production was coordinated according to 'socialist work-sharing' principles. Each of the seven sites was designed as a multifunctional unit in which the production of ships was but one activity; other functions were the provision of social services to employees (such as housing, education, child care, health care, vacation, cultural activities, access to consumer goods, transport, etc.) and the maintenance of political activity. In early 1990, west European industrialists voiced concern about the financial viability of the seven yards. With monetary union, these concerns materialised even more dramatically than foreseen: under the price shock of July 1990 and deprived of their former clients in the Soviet Union, all seven producers ran losses in 1990 and 1991 ([1]).

In the first instance, the THA decided that the socialist combine was to be transformed into a large holding company, called DMS (Deutsche Maschinen- und Schiffbau AG). This large holding company combined not only all the shipyards of the former GDR, but also the departments for mechanical construction, equipment and engineering ([2]). A consultant study concluded that, after the necessary capacity reductions and spin-offs, 'the viability of the east German shipyards was never seriously in doubt'. ([3]) Hence, the holding DMS started operation in January 1991, financed through liquidity credits from the THA, already amounting to DEM 900 million by July 1991.

However, the concept of a State holding company turned out to be politically unwanted, as it did not correspond to the THA strategy of splitting up combines rapidly. Also, the risk that substantial financial resources of the THA would be channelled through the holding was unacceptable to the THA Board. After one year of operation, in March 1992, the DMS holding company was dissolved, and a strategy of partial privatisation started. The THA approached virtually every large west European shipbuilder, promising substantial operating and investment aid. Yet most large western shipbuilders hesitated to take over supplementary capacity at a time when capacity utilisation rates in Europe were below 4/5. In this first instance, the general tendency among the large shipbuilding groups was not to engage in the development of new overcapacities in eastern Germany.

Nevertheless, the THA's determination to save a large part of the industry remained unbroken. It gradually improved the conditions for potential investors, until the resistance of some western yards broke. The two largest European groups conceded to integrate the three large east German shipyards: Bremer Vulkan (Germany), fully taking over the MTW and a majority of the Volkswerft; while the Kvaerner Group (Norway) selected the Warnow Werft from the Warnow-Neptun package it was initially offered ([4]). Thus, both groups increased their world market share significantly (from 1.6 % to 2.8 % and from 2.9 % to 3.5 %, respectively). Besides the increase in market share, the takeovers allowed the groups to widen the scope of their existing yards ([5]). The deals, negotiated during 1991 and 1992, were finally signed between late 1992 and mid-1993.

During this period, it was the THA alone, that engaged in the physical and financial restructuring of the east German yards. With regard to financial restructuring, the THA took over old debts, financed liquidity credits, and took over losses. On the real side, it decided on the splitting up of the former structures into smaller pieces, creating new, independent shipyards, each of them specialising in a particular market segment (from small fishing boats to large petroleum tankers). Thus, the THA carried out an active strategy of restructuring for each of the combines concerned, according to a 'master

([1]) The losses amounted to several hundred million German marks. Dr Ken-Peter Paulin, Director of the Treuhandanstalt for vehicle construction, expressed the situation (ex-post) as bluntly as this: 'We should have liquidated all shipyards, immediately, in order to limit the losses stemming from the loss-making contracts already signed.' (cf. Treuhandanstalt Dokumentation 1990–94, Vol. 5, p. 196).

([2]) The only units that were immediately separated from the former VEB were the production of civil goods (camping-car elements, refrigerators, furniture), social assets (hospitals, holiday resorts), and the thrust of the former combine: several commercial market gardens (cf. Treuhand Dokumentation, Vol. 5, p. 105 ff).

([3]) Ibid., p. 108.

([4]) Cf. Treuhand Dokumentation. For a case-study of the Neptun-Warnow-Werft, see also Damaris and Wolff (1993).

([5]) Bremer Vulkan owned four other yards at the time; Kvaerner, even eight (among them, Europe's second largest, the Masa Yards, with a capacity of about 300 000 cgt, alone).

plan' conceived for the entire shipbuilding industry. This first phase consisted of restructuring only, and had nothing to do with privatisation. Though negotiations with potential investors had started earlier, privatisation first took place in 1992 and 1993, i.e. two to three years after the start of the restructuring by the THA. The task of the private investors, then, was the reorganisation of business administration and the carrying out of investment schemes, which were largely financed by the THA as well. Thus, a new industrial structure emerged in the form of five new, independent enterprises, with a new product mix, integrated into west German or European industrial groups, and engaging in a radical conversion of their capital equipment.

Table 16 shows a representative case of enterprisation. Under socialism, the Mathias Thesen Werft VEB (factory of the people) was part of the Schiffbau combine. It had two small building berths, producing a standardised product range. Its main client was the Soviet Union. At a total employment of 6 000, the shipyard featured 135 000 cgt of what we have called 'socialist' capacity (left column). In contrast, once enterprisation and restructuring have succeeded, a completely new shipyard will emerge, featuring a new dry dock, one of the most modern 'compact yards' in Europe, and a new product range (right column). As a result, one has to consider that 135 000 cgt of 'socialist capacity' have disappeared, and about 100 000 cgt of 'new' capacity have been installed, i.e. market economy oriented capacity.

Table 17 provides general basic data on the restructuring of the east German shipbuilding industry between 1990 and early 1996 ([1]) (the financial collapse and liquidation of the Bremer Vulkan and its dismantling in 1996 are not yet taken into account).

Two key ratios can be derived from Table 17 that will be used in the evaluation of State aid. One is the private investment/public expenditure ratio (PPR), which measures the ratio of private investment over the total expenditures incurred by the THA and other State institutions, i.e. expenditures before privatisation, and the different kinds of State aid falling under Article 87. This ratio is an indicator for the 'efficiency' of State intervention in attracting new capital ([2]). In a certain sense, PPR measures the opportunity benefits from not having closed former socialist industrial units, an (hypothetical) alternative for which the expenditure is supposed to have been 0.

In the shipbuilding case, the PPR is very low, indicating a weak return of public expenditures. The THA expenditures and Article 87 aid amount to about DEM 6.3 billion (approximately ECU 3.5 billion, see Table 17 ([3]), which implies, at DEM 350 billion private investment, a PPR of only 0.055. The ratio of private investment over State aid is still very small, at 0.09, implying a ratio of State aid over private investment at about 11/1. In other words, for each DEM 1 of State aid about DEM 0.09 of private investment was attracted.

Another useful ratio is expenditures over jobs created (EJC). Again this can be considered as the opportunity cost for not having destroyed jobs through immediate factory closures. If one calculates the expenditure per job saved, the east German shipbuilding industry used a sum of about DEM 6.3 billion (including expenditure before privatisation, State aid, and private investment) for about 6 500 permanent jobs in the shipyards, or approximately DEM 1 million (ca. ECU 550 000) for one job created.

6.4.2. The nature of competition in the European shipbuilding industry

Market structures and overcapacities before 1990

In the 1970s, European shipbuilding entered a permanent state of crisis, due to badly anticipated demand and the slow pace in which restructuring proceeded in the structurally weak shipbuilding regions. The EC Council directives on State aid to the shipbuilding industry gradually reduced the level of aid to the shipyards from 27 % to 9 % (seventh directive, 1991–95). Still, in the early 1990s, each ship built in an EC country could benefit from State aid of up to 9 % of the sales value. Japan

([1]) In this table, and for the remainder of the paper, we do not account for the alleged misuse of State aids, that may have been committed by the Bremer Vulkan. We assume that — independently of the outcome of the ongoing legal processes — the restructuring of the yards will go according to the announced plans. Indeed, the Bundesanstalt für vereinigungsbedingte Sonderaufgaben (the successor organisation to the Treuhandanstalt) and the *Land* of Mecklenburg-Vorpommern have pledged their support to the east German yards, and have announced that they will continue to finance their restructuring projects after the liquidation of the former owner, the Bremer Vulkan Group.

([2]) Note that the PPR is not at all a 'legally sound' definition; in particular, it does not correspond to the concept of 'investment aid intensity' used as a criterion in the testing of Articles 87 and 88.

([3]) Not all of these are real costs to the THA (e.g. some of the old debts of other THA enterprises may have simply been cancelled, or payments covering environmental damage may take years to be used).

and Korea, the two largest shipbuilding countries in the world, also practised different forms of State aid.

As a result, the European as well as the world shipbuilding industry were characterised by a considerable level of overcapacities in the late 1980s, and almost perfect competition reigned among the large number of players in the market. Worldwide, the completion of merchant ships decreased from 20.2 m cgt (1975) to 11.7 m cgt in 1990; a decrease of 44 %. In 1988, it had even been as low as 8.6 m cgt, only 42 % of the 1975 level. Available capacity was also reduced during that time, but less than production: from 22 m cgt (1975) to 15 m cgt (1990), i.e. by 32 %. Thus, overcapacity, which was already identified as a structural problem in the late 1970s, remained high during the 1980s, and particularly so in the 1986–88 crisis. In 1990, overcapacity was at 27 %, in 1991 even 33 %. An identical situation prevailed in western Europe. Capacity utilisation was at only 73 % in 1987, and slightly recovered at 77 % in 1988 and 84 % in 1989, to fall back to 82 % in 1990. The Council directives had not succeeded in reducing overcapacity significantly. When the east German yards joined the EU, the latter had already 22 % overcapacity (see Tables 18 and 19).

When considering different market segments, the judgment of overcapacities needs to be slightly modified, but still holds true. As a result of increasing competition from eastern Asian low-cost producers in the lower value-added segments, European shipbuilders went through a period of upgrading capacities and developing a broad range of higher value-added ships. Thus, in 1992, European shipbuilders still held dominating market shares in passenger ships and ferries (79.2 %), fishing vessels (46.6 %), full container ships (33.0 %) and refrigerated cargo ships (34.9 %). In contrast, the segments of oil tankers (10.2 %), bulk carriers (8.9 %), Ro-Ro vessels (6.1 %) and LNG-tankers (0.0 %) were largely abandoned ([1]). Table 20 shows the European market shares for the main segments of the shipbuilding industry.

Turning to the competition aspects of the industry it is important to realise that there is a high degree of product flexibility. A yard can relatively easily modify its product mix within the range of low value-added ships, high value-added ships, and passenger boats which compose a market segment in and of themselves. The limiting factors of a yard are the size of the dock, the capacity of the cranes, the block and unit assembly areas, and the flat panel lines. Thus, product differentiation is difficult. As a result, the supply structure in European shipbuilding is one of intense competition. In Europe alone, approximately 25 yards of similar capacity and product range compete with each other; strategic alliances are not (yet) systematically observed. Competition is on price, delivery time, and quality (value of reselling); but it is close to 'pure' competition without any particular market power on the side of any yard ([2]).

Static arguments: State aid was not efficient

We have now assembled the necessary elements to evaluate the impact of State aid on European competition in the shipbuilding industry. Table 19 already showed the overcapacities prevailing in the European market before eastern Germany joined the EC, i.e. before 1990. If one accepts the premises that through enterprisation, 'new' capacity was created in eastern Germany, one has to consider this as additional capacity from 1991 onwards. The capacities can not be analysed for particular market segments, as the high substitutability within shipyards makes it impossible to determine overcapacities for specific market segments. Moreover, this seems less important for competition policy, since the relevant market definition, due to the high substitutability, is not the segment but the industry as a whole. What one can do, though, is analyse the contribution of east German shipyards to the overcapacity problem on a national level. This can provide an indication of how harmful State aid for new east German yards may have been to competitors.

Table 21 provides an estimation of the 'overcapacity effect' of the east German shipbuilding industry.

([1]) COM(95) 38 final, AWES annual reports, authors' calculations.

([2]) The main European shipbuilding groups, sometimes encompassing several yards, were: Kvaerner (Norway), Bremer Vulkan Group, Howaldswerke Deutsche Werft Group, Blohm and Voss, Mayer, Flender (Germany), Hellenic, Eleusis and Avlis Shipyards (Greece), Chantiers de l'Atlantique, Aterliers and Chantiers du Havre (France), Fin Cantieri (Italy), Odense Stee Shipyard, Danyard, Burmeister and Wain (Denmark), Astilleros Espanoles (Spain), Boelwerf Vlaandeeren (Belgium), v.d.Giesen de Noord (Netherlands), Swan Hunter (UK), Finnyards (Finland), Oskarshamns Varv (Sweden).

Two observations can be made from the analysis of overcapacities:

- New capacity in eastern Germany did not fundamentally alter distribution among the large European shipbuilding countries, i.e. Denmark, Spain and Italy. Between 1990 and 1994, the European market shares of Denmark and Italy increased; for 1993 this is true also for Spain. Hence, the smaller shipbuilding countries may have suffered more from the additional east German capacity.

- Amongst the larger countries, the main loser of the 1990s, in terms of market shares, was western Germany. Contrary to other shipbuilding countries, western Germany never recovered from the 1990 output decline, when its market share fell from over 30 % to the 21 % range.

One other way to analyse the impact of State aid is to check whether the degree of competition has been increased. State aid might have been justified on the grounds that it increased competition. The criteria for this test were developed in Section 2. The analysis yields the following results:

- The amount of State aid is very high, so as to bear no relation to the potential gain in competition stemming from the new yards under development in eastern Germany. The market is in overcapacity, and the efficiency gap between the former east German yards and the west European yards is rather considerable. Under these conditions, the reduction of dead-weight losses would appear marginal compared to the ECU 3.5 billion in public expenditure;

- Scale economies played no role in the process, and hence, cannot be used as an argument for State aid. Scale economies do exist in the shipbuilding industry: they are estimated at 5–10 % for the first four ships, and 15–30 % for the first 10 ships of one series. But potential scale economies gained through extended series in the east German yards can hardly outweigh the costs of keeping them open.

- Finally, the market structure in the shipbuilding industry must be considered as highly competitive. As explained above, there is a high degree of supply substitutability; on the demand side, no particular market power can be detected either. Hence, none of the static arguments for increasing the level of competition, spelled out in Section 2, applies to the case of the east German shipbuilding industry.

Dynamic arguments: too early to judge

When adopting a dynamic perspective, things may become somewhat less evident. The strategy of the THA in the new German Länder had prevented the complete disappearance of the 540 000 cgt capacity (1990), and would create several hundred thousand cgt of modern capacity by 1997/98, when restructuring of all east German yards would be completed. State aid to east German yards may have triggered a restructuring process that the European shipbuilding industry was due to begin anyway. The necessity of restructuring the industry has been generally accepted now for several years, if not decades. With the phasing out of State subsidies of the seventh Council directive on aid to shipbuilding, and the beginning of the OECD shipbuilding agreement in 1996, European industry faces a profound process of reorganisation ([1]). In this respect, the events in eastern Germany and the strategy followed by the west European group that succeeded in eastern Germany (Kvaerner) may provide an impetus for the rest of the industry: this concerns the concentration of capacities, mergers, and product specialisation, and the coordination of production among several yards.

The takeover of the three largest east German shipyards has allowed Kvaerner, and initially, Bremer Vulkan as well, to concentrate production activities and increase specialisation in individual yards. Yard specialisation would improve productivity and yield economies of scale, both in design and assembly. Second, the takeover of yards facilitates the reduction of capacity within a group, as the closure of any one yard can be gradually prepared; it is not — as in the case of single-yard firms — 'an all-or-nothing' decision. Finally, the east German case also points in the right direction of international mergers, a rarity so far in this nationally oriented industry ([2]).

([1]) See Kurth, D. (1995), The shipbuilding industry in the years ahead, Hansa, Vol. 132, No 7, pp. 6–8.

([2]) The developments described here correspond roughly to the concept of horizontal industrial restructuring aid developed by the Commission, in particular, DG III. Among the instruments are the Maritime Forum, R & D, and standardisation polices (cf. COM(93) 526 final: On the way to conducting a global policy for the maritime industry: first concrete results).

Let us examine the dynamic arguments for State aid, assuming temporary support only for potentially viable enterprises. The arguments presented in Sections 6.3.2.1 and 6.3.2.2 were already discussed. Under the assumption that THA wanted to save the shipyards from disappearing, it had to engage in the separation of productive and social assets, and make sure that the productive assets would not disappear due to short-term illiquidity. As for the argument in Section 6.3.2.3, positive externalities were weak. State aid succeeded in triggering a series of private investments, but the anticipated 'bandwagon' effect of investment has so far not taken place.

Two other reasons indicating that the dynamic effects of State aid may have been more positive than it seemed from the static perspective. One is simply that it is too early to say. As most of the decisions made between 1991 and 1993 are only just being implememted, it is impossible to judge the dynamic outcome of shipyard restructuring at this time. The other argument is that the available empirical evidence implies that the productivity gains of east German yards might indeed be large. Two or three years from now, the east German yards are likely to be among the most productive shipyards in Europe. Their average productivity, in terms of cgt/employee year, could be amongst the best in Europe, and thus, come close to the best world productivity figures (see Table 22) ([1]).

A close look at the data shows that in reality, the so-called capacity 'reduction' in eastern Germany from 540 000 cgt to 327 000 cgt does not correspond to any significant reduction in output from east German yards, as compared to their output in the late 1980s. In 1994, the restructured east German yards produced exactly the same gross output as in 1988 (303 000 gt, as compared to 305 000 gt in 1988). Instead, since the quality of the ships produced increased during that period, one can conclude that the restructuring of east German shipyards led to an increase in capacity in terms of cgt (see Table 23). It comes as no surprise that in 1994 east German yards already produced 360 000 cgt of ships, a figure that already exceeds the 327 000 cgt limit demanded by the Commission.

Rent shifting: the question of perspective

Finally, the question of the effects of State aid depends on the perspective adopted. If, on the one hand, we conclude that State aid was inefficient from a European point of view, this might not be the case from an 'east German' point of view, on the other hand. From a European perspective, the market conditions and overcapacities worsened. That eastern Germany benefited from State aid seems plausible. Once restructuring is finished and employment reduced, the east German yards could belong to the lowest-cost suppliers in the European Union. Job creation, though limited, is taking place and industrial cores are developing.

In contrast, other European competitors may be indirectly hurt by the revival of east German shipbuilding capacity. This is particularly the case for higher-cost producers in neighbouring countries, that are in direct competition with the new yards. It is difficult to establish a causal link between State aid to eastern Germany and yard closures in other European countries. But it seems reasonable to suspect that the 1.6–1.7 m cgt of ships constructed in east German yards since 1991 have crowded out competitors in other countries.

6.4.3. Lessons for other post-socialist countries of central and eastern Europe

Leaving competition issues aside, the case of the east German yards can be indicative of possible developments in other post-socialist countries, whose shipbuilding capacities are large and relatively modern. Since 1991, the Polish shipyards have overcome the post-socialist crisis and are more active on the west European and world markets. Already, Polish ships are among the world price leaders for capsize bulks, Panamax bulk carriers, factory fishing vessels and small containers (1 900 teu). Other traditional shipbuilding countries follow right behind: Croatia, Ukraine, Romania, Bulgaria. The east German experience teaches three things:

- First, the closure of certain yards must be possible. One central problem of the THA was its obligation to keep alive, and to modernise, all east German shipyards.

- Second, privatising a multifunctional shipyard is not a sufficient public policy. Restructuring can only succeed when the State is capable of impos-

([1]) Once again, it is assumed that the restructuring of the east German shipyards will be completed according to the projects that were accepted by the European Commission.

ing the isolation of productive assets on the former combines.

- Third, contrary to the east German case, massive capital flows are neither needed nor possible in eastern Europe. In eastern Germany, all steps of restructuring were 'planned' by the THA, and investment projects preceded market demand. Instead, in eastern Europe direct access to solvent demand and the integration with shipping companies will precede restructuring, and be the key determinant of success in the restructuring of any yard.

6.5. The enterprisation of the east German synthetic fibre industry ([1])

6.5.1. From a socialist combine to several independent synthetic fibre enterprises

In 1990, the chemical fibre industry of the GDR consisted of one large *Kombinat*, the 'VEB Chemiefaserkombinat Herbert Warnke' in Schwarza-Rudolstadt; a collection of eight local factories with close vertical links ([2]). Though the production of 330 kt of chemical fibres corresponded nominally to 10 % of west European output, both the equipment and the product range were outdated by western standards:

— the equipment dated largely from the 1960s and had only been marginally updated in the 1980s,

— over 50 % of total output consisted of Cellulosics; the production of which was decreased in western economies due to environmental reasons and decreasing demand (down to 10 %, as compared to 90 % synthetic fibres),

— the percentage of specific filaments was largely below that of generic staples,

— production was concentrated on low value-added acrylic and polyamide fibres, but few high-tech fibres (microfibres, PP, Elastan, Aramid),

— 80 % of total production was geared to East German and Soviet Union clients, another 10 % to other socialist countries, and only 10 % sold to hard-currency countries,

— coordination of raw material supplies, know-how and production was difficult among the eight combines of the *Kombinat*; the three dominant combines (Schwarza, Premnitz, Guben) tried to achieve maximum autarchy, whereas the five small units were for the most part limited to one product.

All in all, the 330 kt were typically what one would call 'socialist' capacity.

With the currency union between East and West Germany (July 1990) it became evident that none of the factories in the chemical fibre industry would be competitive under the new conditions. The sudden increase in input prices (mainly labour, but also raw materials) and a shift in domestic demand towards western products dealt a blow to the industry. The January 1991 disintegration of Comecon — followed one year later by the breakdown of Russian demand for foreign intermediary products — had a drastic impact on output and profitability. Whereas production in 1990 was down by 'only' 15 % from 1989, the industry produced 40 % less in 1991; and still, a large part of the 200 kt of production went on stock. In 1990, none of the eight producers of the former socialist VEB Chemiefaserkombinat made a profit ([3]).

The Treuhandanstalt strategy to rescue some parts of the industry

As in the shipbuilding industry, the THA pursued an active rescue strategy right from the beginning. Contrary to the shipbuilding case, though, there was no need for a global master plan. First, because the interdependency of existing capacities was lower; and second, because the multifunctionality of the industrial units was less complex, making it easier to identify poten-

([1]) Synthetic fibres are made from oil or gas: polyester (PES), polyamide (PA), acrylic (PAN) and polypropylene (PP). Together with cellulosic fibres (made from renewable raw materials, mainly wood) they make up the category of man-made fibres, or chemical fibres. In this section, we are concerned with the synthetic fibre industry, only, regulated by the European 'code on aid to the synthetic fibre industry'.

([2]) Chemiefaserwerke Schwarza-Rudolstadt, Chemiefaserwerk Premnitz, Chemiefaserwerk Guben, Kunstseiden Pirna, Kunstseidenwerk Elsterberg, Zellstoff- und Zellwollewerke Wittenberge, Sächsische Zellwolle Plauen, Spinnstoffwerk Glauchau.

([3]) Cf. Treuhandanstalt Dokumentation, panorama of European industry (1994), CIRFS statistical yearbook, IVC, business reports of chemical fibre companies.

tially viable production capacities. The chemical fibre industry was also less capacity-intensive than shipbuilding, and finally, much less sensitive politically.

In a first instance, the THA strategy of individual restructuring and subsequent privatisation of some units of the former combine seemed to pay off. Though none of the big European synthetic fibre producers could be attracted, the THA found a couple of industry 'outsiders' willing to invest in the newly established enterprises. Within one and a half years, the THA completed the first round of sales. Already by early 1992, the three large producers (Schwarza-Rudolstadt, Premnitz, Guben) were partially privatised, and the three smallest ones (Wittenberg, Plauen, Glauchau) prepared for liquidation. Synthetic fibres thus seemed to have been a 'success story' for THA's industrial strategy.

Yet four years later, none of the privatised enterprises has fully succeeded in its restructuring project; hence, the probability is high that some of them will need further restructuring. Contrary to the shipbuilding case — where evidence of some success of restructuring is becoming visible — the synthetic fibre industry has yet to overcome the errors resulting from over-optimistic assumptions regarding the external conditions of restructuring and from unrealistic demand projections.

By sketching out the trajectories of the three most important former socialist VEBs, we point to different types of difficulties in the enterprisation of the east German synthetic fibre industry.

6.5.1.1. Märkische Faser AG: difficulty of core-privatisation when there is no core

When the THA took over the 'VEB Chemiefaserwerke Friedrich Engels', the VEB-owned machinery, including a brand new acrylic fibre line (Acrylfaserstraße), was considered powerful. The combine's capacity of 100 kt of synthetic fibres corresponded to roughly 15 % of total European capacity in that market segment; mainly PAC and PES staple fibres, destined for the East German and Soviet markets. The Treuhand steering committee, a group of experts in charge of evaluating the enterprises and counselling the THA, recommended a quick privatisation of the company. The steering committee estimated investment requirements at about DEM 300 million, and the necessary reduction of the labour force at 50–60 %. It was then decided that the THA should guarantee the survival of the factories by financing at least half of the investment, directly.

The 'core' business of the company, renamed 'Märkische Faser AG' in 1990, was offered to the chemical fibre industry around the world (promotion activities took place in Germany, France, the United States and even Japan). The 'non-core' parts were sold separately. The largest among them, Novoktan GmbH — a factory for the treatment of gasoline, with 220 employees — was given away to Alcor Chemie AG for a price below the DEM 2 million nominal capital. Not a single company, however, showed any interest in the core of Märkische Faser AG. In October 1991, the Treuhandanstalt sold the synthetic fibre activities of Märkische Faser to the trading company that had already bought the Novoktan subsidiary, Alcor AG ([1]).

In January 1992, the demand for synthetic fibres from Soviet Union business partners dropped dramatically, causing severe liquidity problems at Märkische Faser. The THA continued to fill up the financial bottlenecks of the 'privatised' company. But Alcor, the new owner, refused to put down the promised investment funding, arguing that the commercial basis for the contract, i.e. markets in East Germany and the Soviet Union, was no longer valid ([2]). In October 1994, Alcor officially withdrew from the privatisation contract, and the THA had to look for another investor. As large west European firms continued to be disinterested, the THA convinced a public bank, the West-NBL, a subsidiary of the WestLB, to act as an 'intermediary' investor; once more, in order to gain time. Between mid-1994 and mid-1995, the only concrete cooperation proposal came from the Russian Rostextil AG, a consortium of textile companies, several of which were former clients of the East German combine. While waiting for negotiations to progress, the West-NBL agreed to invest another 35 million DEM into Märkische Faser.

6.5.1.2. Thüringsche Faser AG: Continued splitting-up of a combine

The restructuring of the 'VEB Chemiefaserwerke Schwarza-Rudolstadt' is a case in which a socialist

([1]) In order to coax Alcor AG into this deal, Treuhandanstalt not only took over DEM 175 million of old debts, but also offered an industrial site of 3 million square metres. Alcor, in turn, promised to keep 1 700 jobs and invest at least DEM 100 million.

([2]) Whereas the Treuhandanstalt and the *Land* of Brandenburg continued to provide liquidity support to Märkische Faser, Alcor showed interest only in the use of the power plant, on site, which also furnished the Novoktan chemical plant. It thus seems the motivation for Alcor was simply to obtain control of the power plant.

VEB was split up several times in order to attract investors. In 1989, Rudolstadt was the second largest producer of synthetic fibres in East Germany, employing 6 500, with a production of about 80 kt of fibres (20 kt PA-6 filaments, 33 kt viscose staples, 30 kt PA-granulates). Over-staffed and badly equipped, Rudolstadt was classified a 'critical' case by the Treuhandanstalt in mid-1990. The THA received its only valid offer in mid-1991 from an Indian textile and trading house, Dalmia. Since Dalmia considered the real capital value of Rudolstadt low, it demanded that the THA and the *Land* of Thuringia contribute substantially to its modernisation ([1]). While Dalmia took over three main departments of the former combine, the fourth department, producing fibres for carpets, was separated and sold to another west German company, 'Odenwald'. In addition, several auxiliary departments — furnishing both productive and social services to the combine in socialist times — were leased or sold to their respective management. Thus, an industrial park developed around the privatised hard core.

In the early stage of privatisation things seemed to work out well. Dalmia proceeded with the creation of three largely independent profit centres, the first two of which were supposed to grow at a fast rate:

— Viscose staples, whose share in turnover grew to 42 % in 1993,

— Plastics (PA-granulates), increasing their share rapidly to 35 % of turnover,

— PA-6 polyamide filaments, already operating at a loss in 1991, continued to suffer, declining to 21 % of turnover.

In November 1992, the European Commission approved aid by the THA of DEM 127 million, in exchange for a further reduction in capacity.

Yet the move to profitability through increased sales on international markets failed to materialise, delivering a blow to Dalmia's expansion plans. In 1993, almost half of the production was still being sold in eastern Germany; with only 15 % being exported to western Europe (10 %) and overseas (5 %). Losses continued to be significant in 1991 (–DEM 95 million) and 1992 (–DEM 20 million). As a result, Dalmia threatened to cancel its obligations unless the THA and the *Land* of Thuringia provided further aid. In summer 1993, Dalmia withdrew definitively, and Thüringsche Faser was quickly declared bankrupt and sent into liquidation.

The splitting up of the former combine then continued:

— A west German firm proposed to take over the polyester activities;

— machinery and equipment were sold individually;

— the Regional Development Agency of Thuringia took over the 70 hectares of land.

By late 1995, about 600 jobs had been created in chemical fibre activities; and it is hoped that the industrial park will employ another 300–400. The split-up of the former VEB continues.

6.5.1.3. Chemiefaserwerke Guben: partial privatisation but continued losses

The VEB Chemiefaserwerk Herbert Warnke in Guben, the third largest in GDR until 1990, produced over 60 kt of fibres in 1989 (PA-filaments: 35kt, PES-filaments: 27 kt). Already in early 1990, Hoechst AG of West Germany identified Guben as a potential customer for its machinery; only after some initial delay did it develop the project to use the site for serving the growing east German market. From 1991, Hoechst outsourced the production of polyamide filaments to Guben, providing its own second-hand machinery. In 1991, the Guben site was split into two new companies. Hoechst AG took over the polyamide filament section, while the filaments for carpets were bought by a former client, the Lausitzer Teppiche. The department for polyester filaments was closed. Hoechst guaranteed employment of 1 000 (out of 7 100 in 1990!) and new investments of DEM 126 million, 23 % of which were to be provided by the *Land* of Brandenburg. The rest of the former factory was sold through management buy-out, or closed.

The restructuring of the fibre production facilities at Guben turned out to be a costly operation for Hoechst, but even more so for the THA which had given a guar-

([1]) The Treuhandanstalt then decided to fix the following conditions for privatisation of the hard-core of the combine: Dalmia had to procure DEM 150 million in investment over three years, and maintain at least 1 000 jobs; whereas the *Land* of Thuringia and the Treuhandanstalt were to contribute approximately DEM 400 million and DEM 127 million of investment subsidies, respectively.

antee for taking over losses during the first years of operation. Faced with a crisis of the European fibre industry and the unexpected disappearance of Soviet Union and eastern European markets, Guben became a permanent loss-maker. In 1992, turnover decreased to DEM 86 million, losses were as high as DEM 64 million. Consequently, polyamide production was discontinued in 1993; and instead, a new production line for airbag filaments was put under construction. In 1993, losses of DEM 75 million exceeded turnover (DEM 73 million). The restructuring of the Guben site was completed in 1994 with the transfer of a 6kt yarn-production from Berlin to Guben; which was part of the restructuring of Hoechst's European fibre production activities. Still, losses remained high: DEM 64 million in 1994, at a turnover of DEM 107 million. Thus, in the end, all production capacities inherited from the socialist combine had been closed by Hoechst, with two new production lines created at Guben. Today, the Hoechst Guben GmbH no longer has anything to do with the VEB Chemiefaserwerke Herbert Warnke.

The three cases in the synthetic fibre industry imply that the formal act of privatisation is not the central issue for the success of industrial restructuring. Inefficient corporate governance structures have delayed restructuring and investment. It is not certain whether the splitting up of the unsold units will continue, whether THA and the *Länder* can continue to save these enterprises, or whether large synthetic fibre companies have a future in eastern Germany. Table 24 provides the basic data on the restructuring of the east German synthetic fibre industry between 1990 and 1995.

Once again, we can calculate the two key ratios to obtain quantitative evidence for the evaluation of the process. The private investment/public expenditure ratio (PPR) is more favourable than in the shipbuilding case, at 0.12, yet it is fairly low. If one calculates private investment over approved State aid only, things already look better: with State aid of about DEM 343 million, THA was able to attract private investment of about DEM 171 million, i.e. a ratio of exactly 0.50.

Consequently, the ratio of expenditures per job created (EJC) is relatively favourable, i.e. low, at DEM 390 000 (ECU 215 000) per job. Again, if taking into account State aid only, the ratio of aid over job creation is still more favourable: for DEM 343 million of State aid, 3 495 jobs were created, i.e. DEM 100 000 (ECU 54 000) per job. These figures also support our hypothesis that synthetic fibres were a less important restructuring process than was shipbuilding.

6.5.2. The nature of competition in the European synthetic fibre industry

Market structures and overcapacities before 1990

Synthetic fibres is another EU industry in recurrent crisis since the 1970s. Among the reasons for this are: high capital-intensity, increasing international competition, substantial overcapacities due to badly anticipated demand, inadequate market growth and increasing delocalisation of the industry. Since 1977 the Commission, the Member States and industry tried to curb the spiral between State aid to industry and overcapacities. A 'code on aid to the synthetic fibre industry', called the synthetic fibres 'discipline', was enacted in 1977 and extended several times since ([1]). The 'discipline' is supposed to ensure transparency of aid given to synthetic fibre producers, to prevent subsidisation of capacity increases, and to link modernisation aid to capacity reductions ([2]).

Despite some success, the 'discipline' did not bring about the expected results. It succeeded in increasing capacity utilisation from an all-time low of 62 % (1975) to 86 % (1985). However, overcapacities again increased in the second half of the 1980s. In 1990, the year of German economic and monetary union, capacity utilisation in western Europe had fallen to 80 %. One year later, when the restructuring of the east German synthetic fibres industry started, it stood at only 77 %. Table 25 provides evidence on the continuous overcapacities in the west European synthetic fibres industry.

Static arguments: State aid seems to have been inefficient

Once again we make a distinction between the static and the dynamic perspective. From a static perspective, the impact of the east German synthetic fibre industry on European competition needs to be analysed. Just as in the shipbuilding case, we shall consider the capacity created in the east German factories after 1990 as 'new' capacity, i.e. new in terms of adaptation to the capitalist market economy. This new capacity completely replaced the 'socialist' capacity. The case studies have

([1]) The latest regulation is the 1992–96 'discipline', Document 92/C 346/02.
([2]) Panorama of European industry, CIRFS briefing note: The synthetic fibres 'discipline', Brussels, February 1995.

indeed shown that almost all of today's production is 'new' production, in terms of products and production technology.

Table 26 indicates the development of market shares in the European synthetic fibre industry before and after the entry of east German producers.

Once again, the static analysis of market shares does not hint at a direct relation between the new east German capacity and reduced market shares of the main competitors. Between 1990 and 1994, the three largest synthetic fibre countries, other than Germany, either increased their European market shares (Spain, Benelux) or kept it constant (Italy). Instead, the main loser seems to have been the west German producer, whose market share decreased significantly in this period.

According to the synthetic fibres 'discipline' ('code on aid to the synthetic fibre industry', Document 92/C 346/02), the Commission is supposed to 'oppose any public financial support which would result in the installation of new capacity or even in the maintenance of existing capacities in the synthetic fibre industry'. The granting of aid is conditional on a 'significant reduction in the production capacity of the assisted company'. In the post-socialist context of eastern Germany, the shedding of 'socialist' capacity can not be considered a significant reduction, since it did not represent any market-relevant capacity at all. On the other hand, aid can be justified for the support of less-favoured regions ([1]). This is clearly the case for all east German producers. Hence, the synthetic fibre 'discipline' does not provide any conclusive guidance on this particular case.

Finally, we shall analyse whether State aid to east German producers might have been beneficial to competition within the sector. Here the analysis is straightforward: the data suggest that the ratio between State aid and the reduction of dead-weight losses is much smaller than in the shipbuilding case. Yet, the absolute level of State aid, i.e. DEM 343 million, does not seem justified. The number of competitors in the market was relatively large, and demand elasticities high. Second, the risk of collusion between incumbents was low; State aid can not be justified with reduced collusion among competitors. Third, scale economies again play no major role in the industry structure. Most of the European companies are multi-product producers, i.e. they produce more than one of the main synthetic fibres (PA, PES, PP, PAN). Economies of scope exist from producing more than one fibre (purchase of raw materials, energy, stocking, sales and marketing).

In sum, the market structures in the industry can be considered highly competitive. On the supply side, more than 30 firms produce synthetic fibres in the EU alone ([2]). In the late 1980s, a process of product specialisation began in Europe, triggering several exchanges of production sites between producers ([3]). Yet, as of today, none of the strategic moves towards product differentiation and specialisation have led to a significant rationalisation of capacity ([4]). On the demand side, the synthetic fibre industry depends mainly on the development of downstream sectors; in particular, textiles and clothing. The delocalisation of the downstream sectors implied a delocalisation of synthetic fibres, too. The number of clients for the synthetic fibre industry is practically unlimited; no individual consumer has any market power. Given the overcapacities and the atomistic supply and demand structures in the European synthetic fibre market, there is no reason to believe that the entry of new east German producers has benefited competition.

We conclude, from the point of view of static competition analysis, that there is no economic justification for the State aid provided to east German synthetic fibre producers.

Dynamic arguments: dependent upon the success of pending cases

When checking the three dynamic arguments for State aid (separation of productive and social functions,

([1]) 'The Commission is generally sympathetic to investment aid granted to overcome the structural handicaps of the Community's less-favoured regions'; synthetic fibre code, cited above.

([2]) See CIRFS yearbook; in alphabetical order: Azko Nobel, Allied Signal, Aquafil, BASF, Bayer, Brilen, Courtaulds, Du Pont de Nemours, Enichem/Montefibre, Fabelta Ninove, Filanda, FISIPE, Hoechst, INACSA, Inquitex, Kemira, Lenzing, Miroglio, Moplefan, Novaceta, Novalis, Nurel, Nylstar, Rhône-Poulenc, La Seda de Barcelona, SNIA, SNIACE, Svenska Rayon, Textile Produkte, UNIFI, Val Lesina, Wellman International.

([3]) This process led in 1992/93 to several direct exchanges of companies between large chemical fibre groups. For example, ICI sold its acrylic-production to Du Pont and BASF; each in turn received a polyamide and a polypropylen unit, respectively. Allied Signal and Azko, Rhône-Poulenc and SNIA, respectively, joined their activities in polyamide production.

([4]) Panorama of European industry (1994), pp. 6–66.

avoidance of premature liquidation, positive externalities), the first two seem to hold. The THA aid certainly prevented the producers from immediate collapse, and thus limited the danger of an immediate devaluation of capital assets. As shown in the Thüringsche Faser and Guben cases, the only way to save some parts of the industry was to split up productive assets, and continue doing so until some of the pieces found an investor. On the other hand, positive externalities were hardly attained in the synthetic fibres industry. The strategic value of east German plants for western producers continues to be low. In the restructuring processes of the entire synthetic fibre industry, only two western groups showed some interest (Hoechst and Rhône Poulenc), and still their contribution remained limited.

Contrary to the shipbuilding industry, the future of the east German synthetic fibre industry is difficult to assess. Three relatively small units are currently being developed, which may become European leaders in a small number of niche products. But the future of capacity and production in the two largest combines (Märkische and Thüringsche) is still unclear. If the current projects succeed, the east German synthetic fibre industry will be small, but competitive. If the projects do not succeed, the new east German capacities pose no serious threat to the rest of the European synthetic fibre industry. This is, again, in contrast to the shipbuilding case discussed above: first evidence implies that the restructuring of the west European synthetic fibre industry, which in any event seems to be inevitable, is not significantly hampered by aid to eastern Germany. Table 27 provides a scenario for the east German chemical fibre industry for the year 1996/97, when restructuring is supposed to have ended.

The rent-shifting argument does not apply here fully. Certainly the 'big winners' of State aid were the east German enterprises, that may boast Europe's most modern capacities in a few years. From a European perspective, chances that the aid had some negative impact are high. The synthetic fibres industry continues to operate on very small margins and relatively high capital intensity. European producers already operating on the verge of market-exit may have been driven out of the market. However, clear-cut evidence of this does not exist.

The restructuring in eastern Germany could be used as an opportunity for reorganising business structures, as the Hoechst-Guben case has shown. But no immediate adverse effects on European industry can be detected from the State aid provided to east German synthetic fibres. The future will tell whether the large cases pending will pay off for public and private investment.

6.6. Conclusion

State aid, restructuring and privatisation in the new German *Länder* should be analysed in a perspective unknown to European competition policy before 1990: post-socialism. The transformation of socialist to capitalist industrial structures required a specific grid of analysis, that was rapidly developed for eastern Germany. It remains relevant to other post-socialist countries in central and eastern Europe, as they approach EU membership. Articles 87 and 88 of the EC Treaty were bent to their extremes in order to cope with State aid in a country where almost no producer would have withstood EU competition without support. In a rapid learning process, the THA lived up to the task of splitting up former socialist industrial units, until the last part had found an investor, or was closed.

It is difficult to judge the outcome of east German industrial restructuring today, as most of the decisions made between 1991 and 1993 are currently being carried out; in particular, with respect to investment projects. Econometric modelling of the impact of east German restructuring on European competition is impossible, since the results of the restructuring have not yet fully come to the fore ([1]). Nonetheless, qualitative analysis can be done for the most important sector in which the THA intervention was massive, such as: shipbuilding, metal, coal and potash mining, steel and non-ferrous metals, chemistry and refining, chemical fibres, mechanical engineering, automobiles and electronics.

We conclude from a competition policy point of view that the results of five years of the THA's efforts in the shipbuilding and synthetic fibre industries have to be judged as negative in a static perspective, and as questionable in a dynamic perspective. The THA's aid created 'new' capacity, i.e. capacity directed towards west European and world markets. This is the case for both

([1]) Also, data on east German enterprises is not easily obtained, since THA owned enterprises are not obliged to publish business reports nor financial statements.

the 327 000 cgt capacity in the east German shipbuilding industry, and about 150 000 t in synthetic fibres. In neither case did State aid contribute to an increase of European competition. Instead, the problem of overcapacities worsened ([1]).

In a dynamic perspective, the outcome of State aid to east German enterprises is still open. Though public expenditures were very high (i.e. the THA expenditures before privatisation and State aid according to Article 87 sensu stricto), dynamic restructuring processes were triggered that may have some positive impact on the European industry at large. In both cases, shipbuilding and synthetic fibres, the phasing-out of EC regulation is a contributing factor to industry dynamics in the early 1990s. Product specialisation, extended use of scale economies, and cross-country mergers and capacity management were triggered in eastern Germany, possibly indicating future developments in the European industry.

We also stress the point that what looks like a losing game from the European perspective may be a winning game from a regional perspective. This is certainly the case for the new *Länder* of eastern Germany, that — without massive State aid — would have perished from the economic map. Thus, new east German industrial sites benefited in the form of a huge qualitative push, both in terms of equipment and in labour productivity. With massive State aid, some large enterprises have been developed that are on the leading edge of Europe or even worldwide. When the investment projects underway are finished in a couple of years, the east German industry will boast a qualitative jump towards the most modern production facilities and organisation. Shipbuilding and synthetic fibres are but two examples of this. Other branches in which modernisation led to leading-edge technologies developed in eastern Germany are the optical industry, steel, chemical refining, semiconductors, and automobiles. Whether these units will remain 'cathedrals in the deserts' (Grabher, 1993, term chosen because the high-tech factories are not backed by an industrial hinterland) or whether they are the industrial cores of flourishing, self-sustaining industrial landscapes remains an open issue.

While the east German cases of State aid were a novelty for EC competition policy, they should also be considered as a forerunner to the integration of other post-socialist countries into the EU. These countries' industries are already in the process of changing the competitive situation in the new Europe: for example in shipbuilding, automotive steel, energy or food processing central and east European countries will not follow the capital-intensive east German pattern of industrial restructuring. But in almost all sectors, State aid will play a significant role in the recovery process of these industries. EU politics and research will need to cope with the post-socialist specificities in order to handle these newly emerging challenges to competition policy.

([1]) Quantitative analysis for other sectors indicates similar results. Take the steel industry, for example, where western Europe had just featured two overcapacity crises, in the mid-1980s (capacity utilisation of 67 % in 1986/87), and again, in the early 1990s (72 %, 71 %, 69 % in 1990 1991 and 1992, respectively): East German capacity was reduced from 8mt (1989), modern capacity of 3mt (1995) was built, one third with significant State investment aid. Market structures in the steel industry were slightly oligopolistic in the late 1980s, but the arrival of mini-mills has led to fully competitive structures since. In lignite mining, competition between producers and between energy sources was also high. The output decline of east German lignite was spectacular: in a sector in which east Germany, the world's largest producer, was considered to have had a comparative advantage, production fell by 69 % (from 301 million t in 1989 to 94 million t in 1992). The modernisation of the remaining capacities did not lead to an increase in competition in European mining. Chemistry and refining features probably the most striking aid/capacity relations; the new refinery in Leuna, if it ever goes on line, will have cost about DEM 6–10 billion for production in a sector that already features full competition and excess capacities of about 4–5 million t/year; i.e. over 10 % of production in the region (excluding light benzine; see Helie, Marie-José (1994): Perspectives sur les raffinage européen. Ecole des Mines de Paris). The same analysis holds for automobile production as well: the factories of the 'Trabant' and 'Wartburg' (still featuring models of the 1950s and 1960s) could not but perish immediately; the new capacities built on site, several hundred thousand car units (VW and Opel) could have been installed in other European plants.

Table 16

From the socialist Mathias Thesen Werft VEB to the MTW Schiffswerft GmbH — A case of creating 'new' capacities

	Under socialism (1989)	After restructuring (1997/98)
Name	Mathias Thesen Werft VEB (factory of the people)	MTW Schiffswerft GmbH
Owner	Schiffbau-Kombinat Rostock, controlled by the Communist Party and its 'plan'	Taken over by the BvS (ex-Treuhandanstalt) and the *Land* of Mecklenburg-Vorpommern, after the liquidation of the former owner, the Bremer Vulkan Group
Berths	Two small open building berths for ship sizes 87x25 m (5 000 t) and 206x32 m (8 000 t)	New dry dock, 340x67 m; 'compact yard 2000'
Product range	Fishing vessels and refrigerator ships; multi-purpose transport vessels; container ships	Very large crude carriers, specialised container vessels, passenger vessels, chemical tankers
Maximum size ships	40 000 dead weight tonnes	300 000 dwt
Markets, competition	Bartered with USSR; competition: none	Mainly European markets, competition with west European, and, increasingly Polish shipyards
Employment	6 000 (including social functions)	1 388
Capacity	135 000 cgt 'socialist' capacity	ca. 100 000 cgt 'new' capacity

Table 17

Basic data on the restructuring of the east German shipbuilding industry, 1990-95 (as of December 1995)

New enterprise	Taken over by	Market segment(s)	Capacity (approx.)	Treuhandanstalt expenditures before privatisation **	State aid falling under Article 87 (1992-95)	Private investment	employment (from 1990 => 1994)
(1) MTW Schiffswerft GmbH, Wismar (MTW)	taken over by the BvS (ex-Treuhandanstalt) and the *Land* of Mecklenburg-Vorpommern, after the liquidation of the former owner, the Bremer Vulkan Group (BV)	• crude carriers • large products /chemical tankers • Panamax containers • passenger vessels	100 000 cgt • new dry dock, 340x67 m (for ships 300 000 dwt)	DEM 686.5 million	Total aid: DEM 997.4 million of which: •operating aid: DEM 597.2 million (losses to be covered: DEM 458.8 million; injection of fresh capital: DEM 57.7 million; write-off part of old current liabilities: DEM 80.7 million) •investment aid: DEM 337.2 million •closure aid: DEM 18.0 million	Bremer Vulkan Group: ca. DEM 50 million	6 000 => 1 388
(2) Volkswerft GmbH, Stralsund (VW)	taken over by the BvS (ex-Treuhandanstalt) and the *Land* of Mecklenburg-Vorpommern, after the liquidation of the former owner, the Bremer Vulkan Group (BV)	• container ships (700–3 000 teu) • product tankers (45 000 dwt) • bulkers (48 500 dwt) • passenger vessels (23 000 Gt) • fishing vessels (970 dwt)	85 000 cgt • old launching dock (213x37 m) • new treatment and preparation shop	DEM 665.3 million	Total aid: DEM 1 087.7 million of which: •operating aid: DEM 680.5 million (40 % of old current liabilities: DEM 108.5 million; injection of fresh capital: DEM 50.0 million; loss compensation during restructuring: DEM 522.0 million) • investment aid: DEM 398.7 million • closure aid: DEM 8.5 million	BV and others: DEM 88.3 million	5 532 => 1 800
(3) Kvaerner Warnow Werft GmbH, Warnemünde (NWW) *	Kvaerner Group (Norway)	• gas and oil carriers (up to 160 000 dwt) • bulk carriers (up to 180 000 dwt) • Panamax containers (up to 3 000 teu)	85 000 cgt • new dry dock: 320x54 m, for 40 000 dwt, steel-cutting line, panel line hall	DEM 989.6 million	Total aid: DEM 1 247.7 million of which: •operating aid: DEM 745 million (40 % of old current liabilities: DEM 82.4 million; injection of fresh capital: DEM 105.0 million; loss compensation during restructuring: DEM 557.6 million) •investment aid: DEM 474.9 million •closure aid: DEM 27.8 million	Kvaerner: DEM 100.1 million	2 700 => 1 800
(4) Peene Werft GmbH, Wolgast	Hegeman-group	• chemical tankers (up to 7 400 dwt) • Ro-Ro • container ships and reefers	35 000 cgt • new dry dock: 180x 30 m	DEM 141.7 million	Total aid: DEM 391.1 million of which: •operating aid: DEM 157.7 million (40 % of old current liabilities: DEM 15.0 million; loss compensation during restructuring: DEM 142.7 million) •investment aid: DEM 173.1 million •closure aid: DEM 60.3 million	Hegemann: DEM 10 million	3 700 => 790
(5) Elbewerft Boizenburg GmbH (EB)	Petram und Brand (Brake)	• container feeder ships (300–600 teu) • riverboats	22 000 cgt (for new product mix)	:	Total aid: DEM 137.1 million of which: •operating aid: DEM 110.1 million (injection of fresh capital: DEM 5 million; loss compensation during restructuring: DEM 105.1 million) •investment aid: DEM 14.0 million •closure aid: DEM 13 million	Petram: DEM 1.5 million	3 200 => 330
(6) Neptun-Industrie Rostock *	taken over by the BvS (ex-Treuhandanstalt) and the *Land* of Mecklenburg-Vorpommern, after the liquidation of the former owner, the Bremer Vulkan Group (BV)	no more shipbuilding, repair work, diversification	0	:	:	BV: ca. DEM 100 million	7 300 => 1 200 *
(7) Rosslauer Schiffswerft GmbH, Rosslau (RSW)	—	no more shipbuilding, some diversification	0	:	DEM 9 million		2 000 => some hundreds
TOTAL			**327 000 cgt**	**ca. DEM 2 483 million**	**DEM 3 825 million**	**DEM 350 million**	**Ca. 8 000, in shipbuilding ca. 6 000**

* In the GDR, the Neptun and Warnow shipyards belonged to the same socialist enterprise, called Neptun Warnow Werft, employing 10 000 on 1 July 1990. Some transfers of personnel took place from the closed Neptun Werft to the Kvaerner Warnow Werft.

** Composed of: relief of old debts; compensation of losses on orders contracted prior to July 1990; payments connected to the repairing of environmental damage.

Table 18

The state of the European and world shipbuilding industry, 1980-94

Productionships completed (1 000 cgt)		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EU	Belgium	130	96	83	173	102	124	45	26	47	36	72	22	98	5	66
	Denmark	382	344	329	339	355	444	351	194	277	287	306	351	415	354	307
	France	268	443	353	357	357	164	145	208	63	199	114	171	182	65	103
	Germany (1)	673	1 270	1 182	1 268	1 165	1 143	1 067	765	885	847	1 002	810	958	853	961
	Greece	13	5	62	36	40	44	25	7	12	13	46	6	0	7	0
	Ireland	3	17	0	19	0	0	0	0	0	0	0	0	0	0	0
	Italy	346	359	156	217	182	124	61	225	120	285	328	424	289	496	440
	Netherlands	250	342	390	416	259	310	263	146	153	172	264	357	271	236	319
	Portugal	35	6	31	125	19	40	61	26	23	46	65	39	64	62	17
	Spain	441	557	587	489	346	400	230	328	326	306	365	301	428	365	233
	United Kingdom	459	243	394	319	305	164	142	162	113	157	145	171	140	148	139
Total EU-12		2 999	3 682	3 568	3 757	3 131	2 959	2 388	2 088	2 020	2 346	2 703	2 651	2 845	2 592	2 585
Other Western Europe	Finland	372	408	441	503	419	283	260	145	263	321	379	212	210	191	123
	Norway	324	342	448	278	175	222	163	181	155	79	158	249	311	203	195
	Sweden	335	421	253	294	180	127	116	123	72	34	45	46	32	24	0
Total Western Europe (EU-15 and Norway)		4 029	4 853	4 709	4 832	3 906	3 591	2 927	2 537	2 510	2 781	3 285	3 158	3 399	3 010	2 902
Japan		5 207	5 581	5 811	4 908	6951	6 498	5 085	3 795	2 953	3 664	4 456	4 417	4 379	4 854	5 177
Korea		446	512	880	986	1 015	1 633	1 971	1 194	1 505	1 389	1 564	1 730	1 995	1 835	2 104
China		:	28	105	170	298	172	215	207	253	230	304	255	282	446	481
Poland		498	346	370	277	382	358	340	300	344	238	177	223	306	264	402
Romania		:	:	:	:	:	:	:	:	:	:	:	126	147	72	22
Bulgaria		:	:	:	:	:	:	:	:	:	:	:	71	62	71	79
USSR		425	600	504	475	690	274	170	44	56	227	482	365			
	Russia													22	156	97
	Ukraine													119	153	210
Yugoslavia		171	225	221	217	237	281	188	3	230	328	293	240	21		
	Croatia													238	104	165
Rest of world		1 860	1 696	1 989	1 687	1 520	1 361	1 242	1 165	747	1 024	1 095	941	1 150	1 415	1 378
Total world		12 635	13 841	14 588	13 552	14 998	14 189	12 139	9 245	8 598	9 881	11 656	11 526	12 118	12 380	12 636

(1) From 1990, data include production from ex-GDR yards.

Sources: EEC Report of the Commission to the Council on the state of the shipbuilding industry, COM(95) 38 final, Table 5a.

Table 19

Overcapacities on the European and world shipbuilding market

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total world capacity (1 000 cgt)	18 400	18 600	18 800	18 400	18 000	17 300	16 000	15 500	15 200	15 000	14 800	15 300	15 800	16 200	16 700
World capacity utilisation (%)	69	74	78	74	83	82	76	60	57	66	79	75	77	76	76
World overcapacity (%)	45	34	29	36	20	22	32	68	77	52	27	33	30	31	32
European capacity (1) (1 000 cgt)	:	:	:	:	:	:	:	3 484	3 255	3 304	3 493	3 561	3 739	3 524	3 546
European capacity utilisation (%)	:	:	:	:	:	:	:	73	77	84	82	83	90	86	81
European overcapacity (%)	:	:	:	:	:	:	:	37	30	19	22	20	11	16	23

(1) Data for European capacity: EU-15 and Norway.

Sources: AWES annual reports; COM(95) 38 final; CSCN (1995): La situation internationale; author's calculations.

Table 20

European market shares in the main shipbuilding market segments (%)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Oil tankers	9.4	6.4	10.6	5.5	15.2	3.3	0.0	7.7	14.9	11.3	13.1	11.2	19.5	7.0	5.2
Bulk carriers	9.8	9.9	8.5	2.1	4.3	3.9	8.3	4.4	0.0	2.9	12.6	9.4	0.0	6.0	3.3
Cargo ships	21.4	27.0	19.2	17.6	19.9	19.4	18.3	23.0	27.5	21.4	23.6	21.3	21.4	21.8	21.9
Non-cargo vessels	32.3	24.9	29.4	20.2	22.9	22.0	25.4	28.7	47.8	43.1	42.5	28.3	39.0	50.9	45.7
Total	17.2	18.6	18.4	10.9	14.8	14.1	16.7	20.2	24.8	20.3	22.0	18.2	19.9	20.1	17.2

Source: COM(95) 38 final, Table 8.

Table 21

Market shares in European shipbuilding (production), 1987-94 (%)

	1987	1988	1989	1990	1991	1992	1993	1994
Eastern Germany	0.0	0.0	0.0	0.0	12.3	7.4	8.2	12.0
Western Germany	30.1	35.3	30.4	21.7	21.2	19.3	21.8	21.5
Denmark	7.6	11.0	10.3	9.3	11.1	12.2	11.8	10.6
Spain	12.9	13.0	11.0	11.1	9.5	12.6	12.1	8.0
Italy	8.9	4.8	10.2	10.0	13.4	8.5	16.5	15.2
Rest of western Europe	40.5	35.9	38.1	47.9	32.5	40.0	29.6	32.7
Western Europe (AWES)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: AWES annual reports; COM(95) 38 final; VSM Jahresberichte.

Table 22

Future productivity estimates for the east German yards compared to European and world standards

		Employment (plans for 1997)	Capacity (1 000 cgt)	Productivity employee years/cgt
East German	MTW Werft	1 300-1 500	100	ca. 0.018-0.020
Shipyards	Volkswerft Stralsund	1 800-2 000	85	0.022-0.025
	Kvaerner Warnow Werft	1 800-2 000	85	0.020-0.025
	Peene-Werft	750-850	35	0.020-0.025
	Elbewerft	330-400	22	0.017-0.020
East German average				0.019-0.024
Good European				0.022-0.028
Good world				0.011-0.017

Sources: AWES statistical yearbooks; VSM yearbooks; Treuhand Dokumentation; author's calculations.

Table 23

Completion of east German shipyards, 1985-94

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number of ships completed	69	65	47	38	37	33	31	33	35	42
1 000 gt	361	387	331	305	300	263	285	221	246	303
1 000 cgt	:	:	:	:	:	409	387	252	311	360
Value (million DEM)	:	:	:	:	:	1 351	1 255	1 012	1 389	1 700

Sources: AWES annual reports; VDM annual report 1994; Treuhandanstalt Dokumentation.

Table 24

Basic data on the restructuring of the east German chemical fibres industry, 1990–95

New enterprise	Taken over by	Market segment(s) Capacity (approx.)	Treuhandanstalt expenditures before privatisation **	State aid falling under Article 87 (1992-95)	Private investment	Employment (from 1990 => 1994)
(1) Thüringsche Faser AG (Schwarza-Rudolstadt) *	Allied Signal Deutschland GmbH (takeover from the Land of Thuringia (LEG) after failed privatisation to Dalmia Group, India)	• polyester filaments: 15 kt • polyamide granulate: 6 kt • polyester granulate: 6 kt • viscose fibres: 45 kt	• takeover of old debts: DEM 200 million • liquidity credits: DEM 210 million • capital provision: DEM 40 million	Total aid: DEM 127 million (N 553/92) • Aid Intensity: 23 % (Gemeinschaftsaufgabe) • Investment aid: 8 %	Dalmia: DEM 0.5 million potential investor: Zipperling-Kesler and Co KG (polyester): DEM 20 million (estimate)	6 500 =>600 (+ 300–400 in industrial park)
(2) Märkische Faser AG (Premnitz) *	West NBL (subsidiary of the public Westdeutsche Landesbank (West LB), after failed privatisation to Alcor Chemie AG (Switzerland)	• acrylic fibres: 35 kt • polyester fibres: 38 kt • viscose silk: 3.3 kt	• takeover of old debts: DEM 75 million • liquidity credits: DEM 143 million • free transfer of 300 ha of land • repurchase of land: DEM 20 million (no aid, if it is a 'market price')	Total aid: DEM 80.2 million (N 468/92) of which: • Grant: DEM 39.2 million • Guarantee: DEM 41.0 million	WestNBL pledged DEM 35 million (June 1995)	6 700 => 1 150
(3) Hoechst Guben GmbH (Guben)	Hoechst AG (taken over one fourth of the former plant)	• PA-filaments: 5 kt • PES-filaments: 17 kt • PA/PES high-tenacity fibres 5 kt	• takeover of losses for 1992–94: DEM 204 million	Total aid: DEM 38.5 million of which: • Gemeinschaftsaufgabe DEM 29 million • Investment aid (12 % / 8 %): DEM 9.1 million •Creation of high quality employment: DEM 0.4 million	Hoechst: DEM 87.5 million until 1997	7 200 => 1 050
(4) Rhotex Textilgarne GmbH (Cottbus) *	NYLSTAR (joint-venture between Snia Fibre SpA and Rhône-Poulenc SA)	• new production of polyamide fibres PA 6.6 textile filament yarn 1 875 t • Polyester filaments: 17 kt • Polyamide filaments: 19 kt • PA/PES high-tenacity yarn: 5kt	:	Total aid: DEM 7.15 million (N 12/93) of which: • Grant DEM 5.3 million • Investment aid: DEM 1.9 million	Nylstar: DEM 18.3 million	Several hundreds => 75
(5) Lausitzer Teppichwerk Guben GmbH	Maltzahn KG (Nottuln)	• PA-6 granulates 22 kt • PA-6 filaments: 10 kt • PP-filaments: 2 kt	• DEM 56.3 million of which: • liquidity: DEM 5.2 million • global collateral: DEM 51.1 million (loss compensation on deals with CIS:19.1,16.1 covered by Hermes exportation insurance; and rationalisation investment: 4.9)	State aid (N678/93 and N15/94): DEM 84.58 million of which: • Privatisation: DEM 76.4 million (liquidity: 32.2, grant: 32.2, 'Compensation': 12) • GA 'Improvement of regional development': DEM 8.18 million	:	140
(6) SST-Garngesellschaft mbH (Brattendorf)	private enterprise	• polyester staple: 9.2 kt		Total aid DEM 5.7 million of which: • GA 'Verbesserung der regionalen Wirtschaftsstruktur): DEM 3.4 million • Investment Tax Allowance: DEM 1.3 million	DEM 9.8 million	80
TOTAL			**DEM 1 028 million**	**DEM 343.13 million**	**DEM 171.1 million**	**3 495**

* files not yet closed.
** Composed of: relief of old debts; compensation of losses on orders contracted prior to July 1990; payments connected to the repairing of environmental damage.

Table 25

Capacities and overcapacities in the west European (EU-15 and Switzerland) synthetic fibres industry

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Capacity (1 000 t)	3 211	3 202	3 089	3 017	3 025	3 087	3 126	3 161	3 218	3 350	3 488	3 615	3 616	3 625	3 634
Production (1 000 t)	2 168	2 359	2 190	2 362	2 516	2 662	2 632	2 671	2 701	2 735	2 798	2 788	2 892	2 781	2 991
European share of world market				22 %	22 %	22 %	21 %	21 %	20 %	20 %	21 %	20 %	20 %	19 %	18 %
Capacity utilisation (%)	68	74	71	78	83	86	84	84	84	82	80	77	80	77	82
Overcapacities (%)	47	35	41	28	20	16	19	19	19	22	25	30	25	30	22

Table 26

Market shares in the European synthetic fibre industry (production), 1988–94 (%)

	1988	1989	1990	1991	1992	1993	1994
East Germany	0.0	0.0	0.0	4.4	4.1	4.1	2.6
West Germany	26.9	26.6	26.2	21.4	21.5	23.6	22.8
Italy	21.5	20.4	21.1	21.1	21.1	22.7	20.8
Benelux	5.7	7.6	0.8	8.9	8.5	8.6	9.4
Spain	8.8	8.5	8.3	8.2	8.5	8.6	9.1
Rest of western Europe	37.1	36.9	43.6	36.0	36.3	32.4	35.3
Western Europe (including Turkey)	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 27

Changing capacities in the east German chemical fibre industry (synthetic and man-made), 1989, 1993 and 1996/97

Product	Capacity 1989 (1 000 t)	Capacity 1993 (1 000 t)	Capacity 1996/97 (1 000 t, estimates)
Polyester staples	44.4	44	20–30
Polyester filaments	27.4	26	15–30
Polyamide staples	6.3	0	0
Polyamide filaments	54.6	21	19–25
Polyacryl staples	58.6	59	20–30
PP filaments	0	7	7
PVC staples	1.6	0	0
Viscose staples	120.7	98	36
Viscose filaments	23.7	12	10–15
Polyurethane filaments	0.4	0.4	0–1
Polyester granulates	0	6	6–10
TOTAL	337.7	264.4	134–184

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Chapter 7

External aspects of State aids

by Patrick A. Messerlin ([1])

7.1. Introduction

The issue of State aids (or subsidies) in an international perspective is a permanent source of conflicts because it is at the junction of three opposite views — the mercantilist attitude, the pure trade theory and the political economy approach. First, in a mercantilist perspective focusing on exports and domestic producers (to the detriment of imports and domestic consumers), that subsidies increase imports or reduce exports of the trading partners of the subsidising country is 'unfair' competition. Firms under foreign subsidy pressures feel that they cannot 'compete with foreign governments' and they lobby for 'countervailing' those foreign subsidies. Second, the pure trade theory has two stands. It underlines the fact that subsidised imports from trading partners are a benefit for the consumers of the importing country. And it shows that subsidies are among the least distorting instruments for solving a long list of problems. In particular, they are less distorting than tariffs or non-tariff barriers (NTBs). If public action favouring a particular activity is desired or if there is a need to compensate for economic distortions, then subsidised production funded by general taxation is likely to be the best instrument to be used. Lastly, the third view based on a political economy approach stresses the fact that State aids are easily captured by vested interests for their own agenda — hence becoming a source of waste of scarce economic resources. This approach explains the wide reluctance among economists to support subsidies and their perception that State aids should be constrained for domestic reasons — in sharp contrast with the first view which focuses on disciplines to be imposed on foreign subsidies and with the second view suggesting the use of subsidies for many purposes ([2]).

International rules on subsidies reflect an ever changing balance between these three views. The first trade treaties to address the subsidy issue aimed at imposing restraints on the subsidising country — they tilted towards the third view: in the 1862 Treaty with the German *Zollverein*, France committed herself not to apply 'excessive' refunds of excise taxes (Viner, 1966, p. 167). Almost 30 years later, trade treaties shifted to the first view: they gave to the importing countries the right to impose retaliatory — 'countervailing' in legal jargon — duties on subsidised foreign imports. Such a provision was first adopted by the US legislation in 1890, under the pressures of the sugar industry (Viner, 1966, p. 168). Two years later, this provision was extended to all goods by Belgium, and in a few years, it was progressively adopted by all the countries.

In 1947, the provisional GATT text followed quite naturally this almost universal approach. GATT Article XVI bans trade distorting subsidies and GATT Article VI allows countervailing duties when a domestic industry is injured by foreign subsidies — opening the door to a protectionist drift similar to what has been occurring in anti-dumping ([3]). Since then, the Tokyo and the Uruguay Round agreements on subsidies and countervailing measures have aimed at reversing — with limited success — the initial GATT position, and at reaching a better trade-off between the three views on subsidies.

Examining the external aspects of State aids raises a key issues: a given subsidy can be associated with other instruments (including other subsidies) or it can be used instead of other trade measures. In other words, it should not be taken in isolation, but it has to be seen as

([1]) I would like to thank very much Roderick Meiklejohn of Directorate General II for very helpful comments. Any error is mine.

([2]) The political economy approach explains the relative silence of the paper about strategic trade models which present subsidies as an instrument for shifting rents from one country to another. As the requirements of these models exceed by far the level of sophistication trade policy can achieve nowadays, they are left aside.

([3]) Anti-subsidy has not reached the pre-eminence of anti-dumping for several reasons — the most powerful being the inherent political risks in the countervailing procedure (countervailing measures are actions against a foreign State) which are absent in the anti-dumping procedure (anti-dumping measures target 'only' foreign firms).

complementary or substitute to other instruments. This point is crucial. As economic theory has a mixed message about subsidies (they can be useful instruments, but they have also to be kept under tight control), a policy about subsidies is likely to have two sides: a pro-subsidy policy and an anti-subsidy policy. The 'efficacy' of such a combined subsidy and anti-subsidy policy depends clearly upon the level of substitution between various types of subsidies and between State aids and other trade measures.

The paper is organised as follows. Section 2 summarises the major lessons to be drawn from economic theory about the key issue of substitution versus complementarity. Section 3 looks at the lesson to be drawn from the EC experience in these matters. This is particularly useful because EC Member States are more deeply integrated than most countries in the rest of the world. Section 4 describes the WTO regime after the Uruguay Round agreement on subsidies and countervailing measures. Section 5 compares the EC and WTO regimes concerning subsidies and anti-subsidy measures: it shows that the EC regime is legally less strict, but more economically sound that the WTO current regime, an useful lesson for the long run evolution of the WTO. Section 6 looks at the evolution of the WTO regime, with a special focus on the United States which has had (and still has) a considerable influence on the debate over subsidy and anti-subsidy during the last 40 years. Section 7 concludes by arguing that the best approach to State aids should begin by an unilateral move: a country should be in the position to assess the pros and cons of the subsidies it grants (and the anti-subsidy measures it takes). This cost-benefit approach would also improve international relations if it relies on transparent domestic procedures put in place by all the countries.

7.2. State aids and trade measures: substitutes or complements

This section focuses on the lessons to be drawn from economic analysis on the key question raised in the introduction: what is the level of substitution between the various types of subsidies (particularly between trade-related subsidies and other types of subsidies) and between subsidies and other trade measures (tariffs or NTBs)? As a previous issue of *European Economy* (Lehner and Meiklejohn, 1991) has presented a survey of the trade literature on subsidies in general, this section leaves aside the first lesson from economic analysis: foreign subsidies have a beneficial impact (net of adjustment costs) on the welfare of domestic consumers. Rather, it concentrates on the premises of most governments which are inclined to subsidise their domestic industries and to oppose foreign subsidies. In what follows, the neo-classical and the strategic trade theories are aggregated into the 'pure trade' theory because they both provide arguments for using subsidies in certain well-defined circumstances. In this sense, they both differ from the 'political economy' approach which focuses on the limits of subsidising.

7.2.1. The pure theory approaches

The neo-classical part of the pure trade theory approach is embodied in the theory of 'distortions' (Bhagwati, 1971; Corden, 1974). It shows that subsidies constitute a better instrument of intervention than trade measures (tariffs or VERs) for problems not directly related to trade flows. For instance, if there is a reason (a 'distortion') inducing firms to produce too small a quantity of a given product (because of externalities or market power), a production subsidy will provide a more welfare-enhancing solution than a tariff. The reason is that such a subsidy has an impact exclusively on the side of the market facing the problem. The subsidy induces the producers to change the mix of production in terms of goods: firms will produce more of the good subsidised, and less of the other goods — a globally desirable outcome. And it leaves untouched the relative choices of the consumers, who continue to be exposed to the unchanged world terms of trade.

The theory of distortions does not expressly look at the substitution issue between subsidies and other trade measures (indeed, nothing in the theory says that it is the role of the government to take anti-distortion measures: that is something to be done collectively, but this collective task could be handled by private groups or institutions). But its general approach tends to favour the view that there is no perfect substitution between instruments: for any distortion, there is one instrument to be used — the instrument which is the most directly apt to address the problem. However, there are cases where two instruments can be perfect substitutes: for instance, a production subsidy and a factor subsidy can be used indifferently if all factor rewards are subject to the same distortion and to the same extent.

In addition to the distortion theory, the Lerner symmetry theorem examines the problems raised by export

subsidies and other trade measures when those subsidies and trade measures are applied to different products. The theorem shows that taxing imports is equivalent to taxing exports and that subsidising exports is equivalent to subsidising imports (imports and exports involve different products). In sum, the Lerner symmetry theorem perceives a perfect substitution between various types of measures enforced on different products ([1]).

This result has two interesting lessons for a subsidy policy. First, it reveals the asymmetrical treatment of export restriction and export expansion by trade policies: despite the 'mercantilist' (export expansion oriented) rhetoric, import taxes (tariffs) which tend to reduce imports, hence exports, are recognised as an acceptable instrument of protection by GATT Article XI (in sharp contrast to quantitative restrictions), whereas it is not the case for export subsidies which tend to increase exports, hence imports ([2]). Second, the Lerner theorem perceives export subsidies as a potential anti-distortion policy: if taxing imports and subsidising exports are both costly departures from free trade, a country combining these two actions may reach the point where its import-increasing policy (export subsidies) counterbalances its import-reducing policy (tariffs) ([3]). In this perspective, anti-subsidy measures taken by an importing country (as allowed by GATT) may lock the subsidising country and its trading partners in the most protectionist world possible (if the best solution for both countries, that is, the elimination of the import-restricting policy in the exporting country is not politically possible).

All these results are obtained under pure competition (all costs are variable). When there are fixed costs and imperfect competition, there is an additional reason to use subsidies which is rent-shifting ([4]). Market power on foreign markets provides rents to domestic firms operating on these markets. However, this literature tends to perceive subsidies as non-substitutable to other instruments. Indeed, maybe the most important result of this literature is the tight relation between the instrument to be used and the existing market structure: a subsidy which is welfare-enhancing under a given market structure is welfare-deteriorating under another market structure (Eaton and Grossman, 1986).

7.2.2. The political economy approach

The pure trade theory suggests a friendly — at least an open-minded — approach to State aids, but it ignores the capacity of pressure groups to capture the government. Lobbies can obtain subsidies under conditions quite different from those carefully circumscribed by the various components of the pure trade theory. Or, if these conditions are met, lobbies can get State aids in an amount disproportionate to what would be required by the conditions existing in the real world. By contrast, the political economy approach underlines the fact (that anti-subsidy policies tend to ignore) that if export subsidies deteriorate the terms of trade of the subsidising country (and maybe of its competitors), they improve the terms of trade of the rest of the world as a whole (since the rest of the world is by definition a net importer with respect to the subsidising exporting country). A similar neglect emerges when there are discussions about 'matching' subsidies (that is, subsidies aiming at 'countervailing' the effects of subsidies granted by other countries).

The political economy literature focuses on the likelihood of a protectionist capture of a subsidy policy, leading to a great reluctance to use subsidies. First, it recognises that subsidies can be easily used for other goals than their official purpose when they are not well monitored (by far, the most frequent case). For instance, subsidies for domestic employment could be used for buying labour-saving machines or for expanding overseas operations. Even when they are well monitored, subsidies may add to the firms' global resources to an extent which does not match their intended purpose — hence being the source of gains to unknown beneficia-

([1]) The Lerner theorem can be generalised in the context of a multi-product/multi-country world. This is straightforward in the case of an uniform tariff rate on all imports: it is equivalent to an uniform export tax rate on all exports. In case of different rates, the theorem remains correct, but on the basis of the differences between the rates — not of the tax levels.

([2]) The Lerner symmetry theorem has many applications. For instance, a VAT regime is often considered as a non-subsidy issue. However, exempting exports from VAT (under the destination principle) has an implicit element of export subsidy: the higher the VAT rate is, the higher this subsidy element is likely to be. Indeed, this was the type of concern of the 1862 Treaty between France and the German *Zollverein* mentioned in the introduction. The generalisation of the Lerner theorem allows it to cope with various VAT rates.

([3]) There is a literature showing that trade policies of the Asian NICs of the 1960s to the 1980s have been of this kind (Krueger, 1978).

([4]) For a survey of the trade literature on these issues, see Vousden (1990). For a detailed analysis in an industrial perspective, see Harbord and Yarrow (this issue of *European Economy*).

ries. An illustration of divergences between intended and ultimate beneficiaries of subsidies are provided by the farm subsidies of the common agricultural policy (CAP). Essentially based on price supports, farm subsidies were intended to help farmers. In fact, increased farm output has raised land prices — the CAP has probably benefited landowners more than farmers per se, and farm subsidies have benefited traders more than farmers. It is also argued that the CAP has eliminated farmers more rapidly than would have been the case in its absence (Johnson, 1995).

Another way to look at the problem of the 'ultimate' beneficiaries of subsidies flows from the fact that State aids tend to be 'input' subsidies. For instance, one could easily build a simple case where subsidies granted to Airbus Industries could have benefited Boeing: this possibility merely would require that the price of aircraft engines declines because of scale economies associated with Airbus's activities. In other words, production and export subsidies to Airbus could have turned into input subsidies to Boeing ([1]).

If initially, the political economy approach was mostly developed in the context of the neo-classical trade theory, it is important to note that it has recently been extended to the strategic trade component of the pure trade theory. For instance, Moore and Suranovic (1994) have shown that introducing lobbying costs of the firms asking for subsidies in a Cournot framework implies that the 'optimal' subsidy rate should be smaller than the rate (supposed positive for some economic reason) in the absence of lobbying efforts (indeed, the optimal rate could even be zero). And a well-informed government should subsidise less than the subsidisation level requested by the lobby (in order to take into account the lobbying costs). One could add that in a two-layer decision-making process as in the EC, the government of a Member State is also in the position of requesting the authorisation to subsidise from the upper level of decision (the Commission) so that its strategy becomes extremely complicated.

7.3. Lessons from the EC experience

Economic theory suggests that the 'efficacy' of a subsidy and anti-subsidy policy consists in reaching the best possible trade-off between two aspects: permitting subsidies when they are the least inefficient way to achieve some desired goals (pure trade theory) and constraining them because their opaque nature makes them an easy capture for vested interests (political economy) ([2]). The efficacy crucially depends on the ability to capture the fact that subsidies are substitutable to some extent — at some costs. Subsidy and anti-subsidy policies ignoring this feature are doomed to fail — as best illustrated by the Tokyo subsidy code on export subsidies which has had such a narrow focus that its provisions were easily circumvented. As economic theory does not give the optimal trade-off between the two views, a look at the EC experience may be useful to get an empirical insight.

To the great surprise of many observers, the 1992 single market was not accompanied by a large surge of subsidies. Table 28 shows that the number of State aid cases handled by DG IV increased from roughly 320 per year (1987–89) to 490 (1994–96). This 55 % increase is small when compared to the enlargement of the scope of the European common market which amounted to 300 %, since services represent a value-added three times larger than the manufacturing sector ([3]).

There may be several reasons for such an evolution. First, it could be that in 1996 (the year of observation), the implementation of the 1992 single market exercise was limited to manufacturing, where most of the barriers were already eliminated. Second, in 1996, the single market programme is far from fully implemented in services: key decisions liberalising service markets have been enforced only recently or are still to be enforced. In services, there seems to be a surge of subsidies for rescuing the first casualties, for instance in air transport and banking. Third, private barriers (collusion between producers or cultural barriers from consumers) were

([1]) Does this illustration fit available evidence? Neven's and Seabright's estimates of an increase in total output of the relevant aircraft types of less than 3 %, following the entry of Airbus, suggest a negative answer. On the other hand, the fact that Boeing has never lodged a countervailing complaint against Airbus under US law (even when Airbus aircraft were bought by US carriers, and despite the almost complete certainty to win such a countervailing case) might be a sign that Boeing got some spillovers from Airbus subsidies.

([2]) This trade-off depends partly on the balance between market failures and State failures — a point not discussed in this paper, on which there is no consensus among economists, but which is at the heart of many political debates and conflicts at the international level. For instance, should information on a new export market be subsidised, or should it be subject to market behaviour on the market of information with a State role limited to regulatory engineering — if any?

([3]) This figure excludes the impact of the German reunification under the German decentralised system of State aid. In 1994, Germany notified some 206 different State aids (European Competition Policy, 1995).

erected in place of public barriers, etc. There is a last reason which deserves attention, and which has underlined by the 'Australian' school of economics (Snape, 1987): without the support of trade barriers, subsidies are a too costly instrument of protection (in sharp contrast with tariffs). In other words, one could expect the presence of subsidies when other instruments of protection are moderate — not when they are high (State aids are redundant) and not when they are low (subsidies are too costly). In this perspective, State aids are well constrained by free trade: a good approach to get rid of them would simply be to eliminate (or strongly reduce) the other trade barriers; subsidies granted by an open country are unlikely to really matter.

7.3.1. Inter-subsidy substitution in the EC case

The almost endless range of variants of subsidies depends only on the role attributed to the government by the society and on the government's creativity. As underlined by Snape (1991), 'virtually every government action can be regarded as a subsidy for someone, and virtually all such actions can affect international trade'. Indeed, such a wide scope is a constant source of international conflicts: governments are likely to disagree about the exact definition of subsidies, even though the definitions are likely to overlap to a large extent.

The effective substitution of a form of subsidy for another kind of subsidy will crucially depend on the magnitude of the substitution costs. This depends on two major factors: the ability of the legal definition of subsidy to be adapted to the new forms of subsidies; and the effective enforcement of the anti-subsidy policy. This section briefly discusses these points in the EC context.

7.3.1.1. Inter-subsidy substitution: the Treaty of Rome approach

Articles 87 to 89 of the Treaty of Rome (TOR) cover 'any aid granted by a Member State or through State resources, in any form whatsoever'. This wide definition allows the TOR to encompass all types of subsidies: it makes the Treaty well equipped to capture substitutions between various forms of subsidies. The few following examples taken from the EC case load illustrates this point.

Subsidies under the form of money transfers can be granted by bodies far away from the government. For instance, the Commission has considered as State aids the three following forms of subsidies showing an increasingly remote role of public authorities: a preferential tariff granted by a firm with the State as the major shareholder and subject to tariff approval by the State; a payment made out of private funds because the payment was required by and subject to the approval of the State; a price increase when consumers were reimbursed for purchases from such firms by the public health insurance system.

Subsidies can also be provided through infrastructure — raising the issue of defining the fine line between general and 'selective' public investments (see Section 4 for the WTO focus on selectivity). For instance, is State assistance for meeting costs inherent in preparing a building site a State aid or not? The Commission got enough degree of freedom from the Treaty of Rome to answer negatively in the Daimler case (1987), on the ground that the beneficiary contributed to these costs through local taxes, and positively in the Toyota-Derbyshire case (1992) on the ground that the State aid matched the price difference faced by the public authority which bought and sold the land. Subsidies related to infrastructure are likely to become a prominent issue in the future because infrastructure investments are crucial in services which will be progressively opened to EC and world competition. For instance, French TGV (high speed) trains stop at the Air France terminal located in the northern Paris airport (Roissy). Does the network of TGV trains (largely funded by State aids) constitute a substantial implicit subsidy to Air France? Airlines having slots in Roissy have an advantage (at least one and a half hours, in terms of travellers' time) with respect to those locked in the southern Paris airport (Orly). And Air France and its allies located in the same terminal Roissy 2 have an advantage over the airlines located in the two other terminals (roughly 20 minutes in terms of travellers' time).

Lastly, subsidies could also be provided indirectly by tailor-made regulations — another issue likely to be an increasing source of conflicts in the future because regulations are 'immaterial infrastructures' essential for services and labour market. As Snape (1991) put it, '(..) is 'free' education for electronic wizards a subsidy for the electronic industry?' So far, it is not the Commission's practice — but a final assessment on this point should wait for a full integration of services in completely liberalised sectors.

7.3.1.2. Inter-subsidy substitution: EC enforcement

Though the TOR provides a legal basis robust enough to address the issue of inter-subsidy substitution, substitution costs small enough may still leave the opportunity for Members States to shift from some kinds of subsidies to other types in order to escape the enforcement of the TOR disciplines. What follows aims at providing some useful evidence.

A first assessment can be drawn from data provided by the surveys of State aids (third, fourth and fifth). According to these data, the only major changes have been a reduction in tax exemptions and an increase in soft loans, both almost entirely due to Germany. This does not suggest any clear shift in terms of transparency. However, data from the State aid surveys are based on a very broad taxonomy in four groups (grants and tax exemptions in group A, equity participations in group B, soft loans and tax deferrals in group C, guarantees in group D) which may make more difficult the perception of the evolution in terms of types of State aids. As a result, what follows is based on the set of State aids covered by Hancher et al. (1993). This set has the advantage to allow a more detailed classification, but it has the inconvenient to be non-exhaustive (it is limited to 99 cases). Consequently, the results presented are only tentative, and should be tested for representativeness.

Has the increasingly stricter State aid control been followed by a recourse to a wider range of forms of subsidies by the Member States after 1987? Table 29 suggests a positive answer. Concerning the forms of aid, subsidies easy to label as State aid (and with a subsidy component easy to estimate) such as those aggregated under Form II aids have declined by more than 30 % (from an annual average of 6.7 to 4.5 aids). By contrast, subsidies easy to label as State aid but difficult to estimate, such as those aggregated under Form III aids have increased by 14 %. And aid difficult to assess and to estimate, such as subsidies aggregated under Form I aids, has increased by almost 100 %.

Table 29 shows two other dimensions of an increasing recourse to a wider range of State aid since 1987. First, there is an increasing variety among the types of State aid granted. From 1984 to 1986, the 37 cases investigated by the Commission involved 57 types of State aid (or an average 1.5 aid per case). From 1987 to 1992, the average ratio of aid per case has reached 1.9 aid per case (126 types of aid for 66 cases). Second, the sources of State aid witnessed both the emergence of new sources of subsidisation (local authorities and private firms, absent from State aid before 1989) and the increasing role of 'secondary' sources (State firms and other public authorities). Obviously, all these evolutions could have other causes, such as the deterioration of the public budgets or the privatisation process. But, it remains that substitution between subsidies has been available — and it has been used indeed.

Table 30 rearranges by Member State the information that Table 29 gives by year. Among large Member States, Germany, Italy and above all France are addicted to State aid — Britain showing a remarkably good record. Among the small Member States, Belgium has an impressive stock of potentially contentious State aid. Looking at the forms of State aid, there is a remarkable correlation: Form II aids represent only 13, 20 and 22 % of all the forms of aid in Belgium, France and Italy, respectively, whereas they represent 55 % of all the forms of State aid in Britain. In other words, Member States with few State aids, as best illustrated by Britain, have recourse to visible aid whereas Member States with large State aid programme have recourse to opaque subsidy schemes. Germany is the only Member State which combines a large State aid programme with relatively transparent forms of granting aid (it will be interesting to see whether this situation is transitory, related to the fact that subsidies are a recent phenomenon in this Member State, or whether it becomes a permanent feature). A similar separation line can be drawn when examining the types of State aid. By contrast, all Member States subsidise essentially through the central authorities, except Belgium and Italy.

7.3.2. Substitution between subsidies and other trade measures

Subsidies can be substituted to other trade measures, particularly during a liberalisation process. For instance, it is often said that subsidies are granted to compensate for decreases in tariff rates or reductions in NTB protection. In this context, assessing the impact of subsidies granted to an industry without taking into account the existing tariffs is misleading. The absence of subsidies or the presence of small subsidies may simply reflect high tariffs, whereas large subsidies may reflect smaller or decreasing tariffs or trade barriers.

The EC move to the 1992 single market offers a good opportunity to get a first look at such possible substitu-

tions because the 1992 programme has a wide range of sectoral liberalisation moves — some sectors being almost totally liberalised whereas others are just beginning to eliminate trade barriers.

Table 31 summarises all the information available on the various components of the protection 'package' for the EC manufacturing and services sectors. Manufacturing industries are ranked by the total number of forms of State aid. In the absence of the volume of State aids, this is a better indication of the willingness to subsidise than the mere number of cases: that one case can be based on several forms of State aids mirrors the strong desire of the public authorities to achieve some goals. Such ranking shows that only six industries represent half of the total number of forms of aid for the whole manufacturing sector: ISIC 320 (textile and apparel), 3210 (textiles), 3513 (synthetic products), 3620 (glass), 3710 (iron and steel) and 3843 (motor vehicles). These six industries have an average rate of protection (defined as the base rate tariffs plus the margins of dumping) which is 30 % higher than the average rate of protection of the rest of the manufacturing sector. Moreover, out of these six industries, only two (synthetic products and glass) have no official, public-supported VERs. But they are well known for being prone to private market sharing agreements.

Table 31 seems to support the 'Australian' view: subsidies are well constrained by free trade, whereas they tend to prosper in industries protected by other barriers. EC State aids in manufacturing are marginal for the industries where the single market is achieved and open. And they are concentrated in manufacturing sectors where EC protection is substantial, and where it still offers room to Member State protection (coal, steel, textiles, cars, shipbuilding or aerospace). Moreover, State aids tend to increase in services which are just beginning the liberalisation process. In other words, subsidies tend to be substitutable to other trade measures only when the global level of protection of the sector in question is still high (and provided by those trade measures). That is an important lesson to be kept in mind when examining the possible evolution of the WTO regime.

7.4. The WTO regime

The GATT-WTO regime is above all interested in designing a subsidy and anti-subsidy policy which eliminates as many international conflicts as possible. Though conflicts about subsidy and anti-subsidy policies are less violent today than 10 or 15 years ago, the very critical recent review of the Chinese (People's Republic) 'industrial' policy by the working group on China's accession to the WTO shows that the debate is still quite alive.

At the world level, the task of designing a good regime is more difficult than at EC level for two reasons. A lower level of trade and investment integration between countries may reduce the frequency of conflicts, but it may also increase the use of extreme solutions. And the world has a wider spectrum of conceptions about the government role as an actor for addressing distortions. For instance, the GATT history in this domain has been dominated by the profound hostility of the United States vis-à-vis subsidies and the fondness of many developing countries for subsidies.

This section is divided in two parts. First, it describes the key GATT Articles (VI and XVI) adopted in 1947 which, as said in the introduction, were initially deeply tilted towards the mercantilist approach: foreign subsidised exports were seen as 'unfair' imports in the domestic market or as exports 'unfairly' displacing the domestic country's exports in third markets. GATT countervailing procedures were seen as 'civilised' subsidy wars or retaliation measures (which survived in case of export displacement in third markets because GATT disciplines were impossible to enforce).

Second, the section presents the subsidy agreement (SAG) adopted by the 1994 Uruguay Round. The SAG is an 'interpretation' of GATT Articles XVI and VI which has been agreed by all the countries having participated to the Uruguay Round. It suggests that the Uruguay Round tends to shift the WTO regime towards the EC system — but still to a limited extent.

7.4.1. GATT Articles XVI and VI

GATT Article XVI is exclusively concerned by subsidies having an impact on trade: it allows a large measure of subsidy freedom which is constrained only if these subsidies nullify or impair concessions made on other trade measures, such as tariff reductions. This explains why most of GATT Article XVI deals with export subsidies: it bans such subsidies to the extent that they have 'harmful' effects for certain trading partners of the subsidising country. In this case, countries may wish to use GATT Article VI (but that is not an obligation).

GATT Article VI deals with anti-subsidy measures. The importing country is allowed — not obliged — to impose 'countervailing' measures (CVMs), such as countervailing duties on subsidised imports having harmful effects on its own economy. Before doing so, the injured country has to follow a procedure. A complaint against subsidised imports has to be lodged by a 'major proportion of the domestic industry' in order to allow public authorities to initiate investigations, if they wish to do so. If these investigations lead to the conclusion that there has been (i) subsidisation, (ii) 'material injury' to the domestic industry and (iii) a causal relationship between these two elements, then the importing country can take CVMs, after consultation with the exporting country. Another possible type of CVMs consists in 'undertakings' — that is, commitments by foreign producers to limit their exports to a given level or to charge minimum prices. The existence of such CVMs raises many questions. They do not fit the general GATT legal approach which bans quantitative restrictions and minimum prices. And they clearly represent a danger from the competition point of view: protection based on quantitative restrictions is shown to be generally much more costly than protection based on tariffs, and these additional costs are compounded when the importing markets have an imperfectly competitive structure.

This countervailing approach raises two problems. First, it is unlikely to be economically sound: for instance, it would be more profitable for the importing country to enjoy foreign subsidies. Second, CVM procedures have the same two basic protectionist biases as anti-dumping procedures (Messerlin and Reed, 1995). The first group of biases tends to inflate the estimated 'margins of subsidisation' (the difference between the price with and without the subsidy in question) which serve as a basis for calculating the level of protection granted by the CVD or the CVM. In particular, CVMs tend to be more harmful for the most benign type of subsidies (production subsidies) than for the most aggressive type of subsidies (export subsidies) because estimating subsidy rates on the basis of export and world prices overstates the price wedge which would exist in the case of a production subsidy (the impact of a production subsidy is partly offset by an increase in domestic demand), whereas it is a correct measure in case of an export subsidy (Francois, Palmeter and Anspacher, 1991). As a result, CVMs based on subsidy rates are excessive for production subsidies (which are the favourite instrument for economists). A second group of biases flow from the nature of the CVMs which are adopted: CVMs can be easily designed in such a way that they have severe anti-competitive effects. That can be the case even when CVMs take the form of *ad valorem* tariffs: the interdiction made to foreign exporters to absorb such countervailing duties has the potential to transform de facto these tariffs into minimum prices.

A last remark is necessary. CVM procedures should not be considered as isolated, but as part of a wide range of trade measures called 'contingent protection,' such as anti-dumping or safeguard procedures. All these procedures have in common two points. They are authorised under GATT rules. And they consist in quasi-lawsuits triggered by a contingent situation: for CVMs the existence of subsidies, for anti-dumping the existence of dumping, etc. It is out of the scope of this paper to discuss the economic rationale of such procedures. But it is important to understand that dumping (that is, the fact that the price charged by a firm in its export market is lower than its home price) could merely reflect the existence of an export subsidy. In other words, export subsidies can be dealt with by anti-dumping procedures — not only by CVM procedures.

7.4.2. The subsidy agreement of the Uruguay Round

The SAG of the Uruguay Round is an interpretation of these principles. Thirty years ago, GATT members decided never to redraft GATT provisions per se, because of the excessive procedural difficulties attached to such a task. Instead, they have decided to 'interpret' specific GATT provisions in a code or an agreement. This approach has the merit of the procedural flexibility. But, it also means that complete departure from the initial GATT text is almost impossible: the price to be paid for the procedural flexibility is a built-in rigidity in terms of substance.

The SAG is a good illustration of this trade-off: it shows a clear drift away from the countervailing pillar, but this pillar still dominates. The SAG can be described in four steps: the definition of subsidies, the criteria subsidies should meet for triggering anti-subsidy measures, the exemptions to these general rules, and the type of anti-subsidy measures authorised.

SAG Article 1:1 defines a subsidy with two elements. First, a subsidy is a financial contribution (through direct transfers, tax deductions or the provision of goods or services) by a government (either directly or

through public bodies or through mechanisms involving private bodies) or it is a form of income or price support. Second, such a financial contribution or such an income/price support must confer a 'benefit' in order to qualify as a subsidy. The notion of benefit is defined in SAG Article 14 which pertains to the part of the SAG devoted to anti-subsidy procedures. SAG Article 14 mentions four types of subsidies: government provision of equity, government loan, government loan guarantee and government provision of goods and services. Benefits from a government loan and from a government loan guarantee are precisely defined: for the former, it is the difference between the amount paid on the government loan and the amount the firm would pay on a comparable commercial loan; for the latter, it is the difference between the amount (including guarantee fees) paid on the government-guaranteed loan and the amount (including guarantee fees) paid on comparable commercially guaranteed loans. Benefits from government provision of equity or of goods and services are more vaguely described: SAG Article 14 only mentions that subsidisation emerges from the fact that the government has followed an 'unusual' investment practice or has not asked for 'adequate' remuneration.

The second step of SAG is to define the two criteria to be met for triggering anti-subsidy measures: a subsidy must be specific, that is, limited to certain firms or sectors (SAG Article 2:1); and, it must exert 'adverse effects' (or 'serious' adverse effects) on the industry of the complaining country. Non-specific subsidies can not be subject to countermeasures by the trading partners of the subsidising country. Specificity is the key criterion (Uruguay Round negotiators were influenced by OECD studies showing that only general — not specific — subsidies have decreased in the late 1980s). It can be *de jure* (embodied on the regulations of the subsidy scheme) or de facto — a crucial point because it allows to consider the widest coverage of subsidies. SAG Article 2:1(c) contains an illustrative list of the elements required for qualifying de facto a subsidy as specific: '(..) the use (..) by a limited number of certain enterprises, predominant use by certain enterprises, the granting of disproportionately large amounts of subsidies to certain enterprises, and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy'. (Horlick and Clarke, 1994, p. 43). The specificity criterion is so central that SAG Article 2:3 states that '(..) Any subsidy falling under the provision of SAG Article 3 shall be deemed to be specific'. SAG Article 3 prohibits export subsidies and subsidies '(..) contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods'.

There are exemptions to these general rules. First, the SAG scope is limited by other WTO agreements: the agreements on agriculture and on trade in civil aircraft, and steel might be de facto exempted (because of the pending 'multilateral steel agreement'). Second, SAG Article 8:2 states that three categories of subsidies 'shall' be non-actionable: (a) assistance for research activities conducted by firms; (b) assistance to disadvantaged regions within the territory of a Member given pursuant to a general framework of regional development and non-specific within eligible regions; (c) assistance to promote adaptation of existing capacities to new environmental requirements (a more detailed look at these exemptions is provided in Annex 1) ([1]). For each of these three types of subsidies, SAG Article 8:2 lists relatively precise thresholds and conditions that have to be fulfilled for declaring non-actionable the subsidies in question.

Lastly, the SAG deals with anti-subsidy measures. That half of the SAG is devoted to this aspect shows its still considerable importance. The SAG introduces more detailed procedural rules aiming at offering a better protection to countries caught in anti-subsidy cases. Many of these new rules are similar to those adopted by the anti-dumping agreement of the Uruguay Round for the same purpose. The evolution of anti-dumping procedures since 1994 shows that these more detailed rules are far from sufficient to counterbalance the biases evoked above against the defendants. There are too few anti-subsidy cases to allow the same conclusion to be drawn for the SAG, but it is likely that under stress, the procedural guarantees offered by the SAG will not be sufficient.

7.5. A comparison of the WTO and EC subsidy and anti-subsidy rules

Comparing the EC and WTO regimes leads to three unexpected conclusions which seem useful for the future evolution of the WTO (and EC) systems. First, the EC legal regime on State aids is *de jure* less severe

([1]) The initial scope of the exemption for environmental subsidies was considerably enlarged in a last-minute meeting.

than the WTO regime on subsidies, if only because it allows more exemptions from anti-subsidy disciplines. Second, it is based on more economically sound foundations than the WTO system, particularly concerning the criteria about subsidies to be disciplined and the type of anti-subsidy measures to be used. Lastly, the EC system benefits from a better enforcement procedure than the WTO regime, because of the role of the Court of Justice and of the European Commission as the 'guardian of domestic competition'. These three conclusions flow from the following four points (definition of subsidies, criteria for anti-subsidy measures, exemptions and definition of the anti-subsidy measures) examined in this section. Table 32 aims at presenting an useful summary of the main structure of the WTO and EC systems.

7.5.1. Definition of subsidies

Article 87(1) EC does not define a 'subsidy'. It simply mentions '(..) any aid granted by a Member State through State resources in any form whatsoever which distorts or threatens competition by favouring certain undertakings...' (emphasis added). Indeed, the TOR uses the word 'aid' instead of subsidy to place emphasis on the effect of the aid, rather than on its form. The ECJ has repeatedly ruled that it is the effect of the aid, not the form of aid which is crucial.

This definition reveals three noticeable differences between the TOR and WTO approaches. First, the TOR does not mention a 'benefit' component, except implicitly when using the word 'favouring' — but without defining it. That has had to be done by the ECJ and the Commission, which since 1958 has always referred to the notion of a 'gratuitous advantage' to the aid recipient with respect to the 'normal course of business'. For instance, what would have happened, were a 'private vendor' or a 'market investor' involved, or were an 'unduly generous term' not granted. Second, the TOR being an instrument for regional integration, only State aids based on Member States resources fall within Article 87(1) EC aids based on Community resources are under scrutiny only indirectly, to the extent they are co-financing national measures. That is not a minor point: according to the State aid surveys (fourth and fifth), over the period 1988–94, Community-funded State aids in manufacturing amounted to 9 % of State aid granted by Member States, and it showed an upward trend (from 3.5 % in 1988 to 13.9 % in 1994). The SAG does not contain any similar provision (which would be to exempt from SAG rules subsidies based on resources from Bretton Woods institutions, such as the World Bank or the IMF). Third, the intent of the subsidising authorities is not a necessary condition for qualifying as a subsidy in the TOR (and in the SAG). However, the Court of Appeal has introduced the notion of intent in one case (ICI, 1987) by stating that the inadvertent application of fiscal provisions did not constitute an aid.

Because the TOR recognises that subsidies can be compensations for constraints imposed by the government, the TOR leaves the possibility to estimate subsidies on a net basis. In sharp contrast, in the WTO regime, subsidies are likely to be estimated in gross terms. This difference may play a crucial role in the near future, with increasing liberalisation in services ([1]). For instance, Article 86 of the TOR exempts explicitly the production of 'services of general economic interest' from State aid disciplines: it would be surprising that this provision will not raise difficult issues in a 'gross-net' debate. Privatisation opens other difficult and potentially conflictual issues. As the TOR has no provision, balancing the costs and the gains of the privatisation of the firm involved has been left to the public authorities. For instance, the Commission considers that in case of a company privatised by open and unconditional tender or by flotation on the stock exchange, the price paid reflects the advantage conferred by past subsidies, and therefore it extinguishes that advantage. In sharp contrast, the SAG focuses on the argument according to which a subsidy is attached to the 'product,' not to the owners. This perspective may be consistent with the view that new owners 'inherit' automatically from past subsidies granted to the firm they have bought (say under the form of more efficient plants), except if they reimburse them when they buy the firm, a view which has been taken for some cases in some countries (US Federal register, 1993, July 9, Vol. 58, No 130, pp. 37259–37273).

7.5.2. Criteria for triggering anti-subsidies measures

Article 87(1) EC imposes three criteria for defining whether an aid is 'incompatible' with the common market or not: '... any aid (..) which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, shall, in so far as it affects trade between Member States, be incompatible

([1]) Though the SAG does not apply to services (anti-subsidy rules for services are not yet designed by the general agreement on trade in services), what follows assumes that general rules about anti-subsidy on goods will be adopted for services as well.

with the common market'. State aids which do not favour firms or sectors fall under the notion of 'general measures' to be dealt with under Article 96 EC. Clearly, the concept of 'favouring' is close to the 'specificity' notion of the SAG, more especially as it is on a de jure or de facto basis.

But, the EC and WTO legal regimes have different views on the second criterion for assessing the need for an anti-subsidy measure: competition distortions (TOR) versus adverse effects (WTO). This difference is important: the notion of competition distortions is likely to make EC rules less oriented towards anti-subsidy measures — and indeed more economically sound — than the WTO notion of adverse effects for three reasons. First, the adverse effect approach is biased in favour of import-competing producers. It expands the scope for anti-subsidy measures because it denies any right to the consumers of the importing country. It ignores the fact that a subsidy granted to producers of country A is beneficial to consumers of country B (it is a transfer from the tax-payers of country A to the firms of A and ultimately to the consumers in country B). Moreover, the logic of the adverse effect criterion ignores the impact of anti-subsidy enforcement on competitive behaviour. For instance, SAG Article 6:4 presents changes in market shares as evidence of serious prejudice without considering the possibility that such changes may also reflect a positive evolution in the level of competition — an erosion of a dominant position. Similarly, SAG Article 6:5 mentions price undercutting as another criterion of serious prejudice, hence ignoring the possibility that existing prices may reflect an abuse of dominant position. In a nutshell, the adverse effect approach relies on the notion of 'fair' competition.

However, there is also an element of 'fair' competition in the TOR because the 'favouring' criterion induces to look exclusively at producers and to ignore consumers' interests (which, indeed, are never mentioned in the TOR articles dealing with State aid). This argument is reinforced by the approach of the European Courts, in particular the Court of First Instance. As underlined by Ehlermann (1995, p. 1219), the Courts tend to shift the focus from Member State behaviour to the interests of the competitors of the aid beneficiaries ([1]).

([1]) In the EU as well as in the WTO regimes, State aid rules are addressed to Member States, not to firms. The increasing intervention of the European Courts changes this feature, and may also tend to reduce the margin of political discretion.

The competition and adverse effect approaches differ on a second point. An adverse effect approach is prone to link the existence of adverse effects to the importance of the subsidy. Indeed, SAG Article 6:1(a) states that 'serious prejudice' (one of the three alternative sources of adverse effects defined by SAG Article 5) shall be deemed to exist if the total *ad valorem* rate of subsidisation of a product exceeds 5 % (of the value of the product) ([2]). Another example is provided by SAG Article 11:9 which states that subsidies amounting to less than 1 % (the basis of the percentage is not mentioned) shall be considered as *de minimis* — hence not actionable. A competition approach would not rely too much on such numerical correspondences: small subsidies can create noticeable distortions of competition. Indeed, the Court of Justice has consistently rejected a de minimis threshold for State aids ([3]).

In sum, the divergences between the 'competition versus adverse effects' approaches have clearly the capacity to generate substantial differences in the enforcement of the disciplines on subsidies between the EC and WTO regimes. As a result, if the WTO criteria are *de jure* 'stricter' than the EC criteria, they are also much more prone to anti-subsidy measures biased in favour of plain protectionism.

7.5.3. Exemptions

There are three sources of automatic exemptions to the EC Article 87 rules. The TOR does not cover the steel and coal sectors ([4]). Article 87 does not cover most aids to the agricultural sector, which fall under Article 36, nor State aids which are necessary for the operation of 'services of general economic interest' (these subsidies are exempted by Article 86(2)). Moreover, under Article 73, aids to the transport sectors are deemed compatible with the common market 'if they meet the needs of coordination of transport or if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service'. Lastly, Article 87(2) itself includes three automatic exemp-

([2]) Annex IV specifies that this subsidisation rate is calculated in terms of the 'cost to the granting government' (not in terms of the advantage for the beneficiary).

([3]) However, since 1992, the Commission has applied a *de minimis* rule. But the threshold is very low (ECU 100 000 over three years) and subject to some sectoral restrictions.

([4]) These two sectors are covered by the Treaty of Paris (ECSC), but this situation should be terminated in 2002. ECSC Article 4(c) is close to Article 92(1) EC whereas ECSC Articles 67 and 95 fulfil the same role as Article 92(2) and 92(3) EC.

tions: aid of social character, granted to individual consumers with no discriminatory conditions related to the origin of the goods; aid to make good the damage caused by disasters or exceptional occurrences (under the implicit condition that they do not exceed what is necessary to compensate for loss or damage suffered); and aid to certain areas of the Federal Republic of Germany affected by the division of Germany.

As a result, the EC scope for automatic exemptions is wider than the WTO scope ([1]). This conclusion is reinforced by the fact that the WTO status of non-actionable subsidies is uncertain (Hoekman and Mavroidis, 1995). SAG Article 9 states that non-actionable subsidies can be actionable if the importing country finds that subsidised imports create 'serious' adverse effects to its industry or economy. In this case, the importing country is entitled to take 'appropriate countermeasures commensurate with the nature and degree of the effects determined to exist' (SAG Article 9:4). It could be argued that, before reaching this point, consultations between the subsidising and complaining countries should be held, and that, if necessary, the Subsidy Committee 'shall review the facts involved and the evidence of the (serious adverse) effects'. But these procedures are not well defined: the criterion of serious adverse effects is open to wide interpretation, as well as the exact role of the Committee. In sum, it seems that the WTO system does not yet have a category of truly non-actionable subsidies.

In addition to automatic exemptions, there are exemptions granted under certain conditions. Article 87(3) EC stipulates that three types of aid 'may' be exempted from State aid disciplines: (a) regional aid granted to regions suffering from abnormally low living standards (in fact, with GDP per capita lower than 75 % of the Community average in purchaser power parity terms) and from serious under-employment; (b) aid to promote the execution of a project of common European interest or to remedy serious disturbances in the economy of a Member State; and (c) aid to develop certain economic activities or certain economic areas '(...) when such aid does not adversely affect trading conditions to an extent contrary to the common interest'. Moreover, Article 87(3)(d) states that the Council has the power to exempt other State aid from the Article 87(1) prohibition. Since the Treaty of Union (Maastricht), the new version of Article 87(3)(d) contains another exemption with '(...) aid to promote culture, and heritage conservation, where such aid does not affect trading conditions and competition in the Community to an extent contrary to the common interest' (a wording ambiguous enough to simply confirm existing practice). Lastly, Article 89 specifies that the Council can '(...) make any appropriate regulations for the application of Articles 87 and 88 (...)'. In the two last exemptions, the Council should act pursuant the Commission's proposals and work under the qualified majority voting rule.

Table 32 summarises all these comparisons. It suggests that the EC regime contains a longer list of exemptions than the WTO regime. However, such a simple comparison of legal rules should take into account two aspects. First, the EC Council has never used the powers granted by Article 89, and it has not used very much the powers of Article 87(3)(d), except when adopting the decisions related to the State aids granted to the shipbuilding industry. Second, State aids falling under Article 87(3) are not exempted *ipso facto*: they have to be examined by the Commission which has a considerable discretion, as shown below. By contrast, any subsidy pertaining to the more limited list of exemptions in the WTO regime is deemed exempted from actionability (with the above-mentioned uncertainty concerning the cases of serious adverse effect).

As a result, it is interesting to look at the EC case load with the following question: would State aids exempted under the TOR rules have been unlikely to be exempted under WTO disciplines? Table 33 lists the major types of aid, their treatment under the TOR regime (based on the State aid cases which have been subject to close examination by the Commission under Article 88 EC) and their likely treatment under the WTO legal regime. As subsidy cases listed in Table 33 are those investigated by the Commission, they are biased towards 'incompatibility' (all these cases were seen as sources of potential problems by the Commission). Table 33 suggests a noticeable difference between the EC outcome and the likely outcome of anti-subsidy measures within the WTO framework. The essential reason seems to be that many types of aid can be declared compatible if they fall within Article 87(3)(c) and if they meet additional conditions. For instance, 'restructuring' aid may be declared compatible by the Commission if the

([1]) That the German exemption has not been repealed after the reunification reinforces this perception, and raises concerns about the future evolution of the EC State aid control. However, it should be added that there are recent signs of a stricter approach to the German case by the Commission.

subsidised firm does not expand its production capacity or if it reduces its capacity — a condition seen as an interpretation of the notion of 'competition distortion'. Such an approach is hard to envisage in the WTO context.

7.5.4. Anti-subsidy measures

In the EC regime, anti-subsidy measures range from the immediate withdrawal of the concerned subsidies by the Member State in question to the introduction of appropriate modifications (suggested by the Commission and often negotiated with the Member State) into the existing subsidy scheme. In this respect, the TOR approach is much more economically sound than the WTO approach. If a subsidy is found to make an economically unwarranted transfer from domestic tax-payers to domestic producers (hence, maybe to foreign consumers), then the best solution is to withdraw the subsidy. It is not to countervail it — that is, to make a transfer from foreign consumers to foreign (import-competing) producers.

The level of discipline enforcement depends on notification procedures ([1]). In the EC, notifying is an obligation (the absence of notification may make the State aid illegal, but not necessarily incompatible). But the Commission does not hesitate to use alternative sources to notifications, such as complaints of competitors or information published in newspapers. Whether the State aid is notified or not, the Commission has the exclusive responsibility to verify whether the criteria laid down by Article 87 are met ([2]). As underlined by Ehlermann (1995), State aid control is a 'Commission monopoly' — in sharp contrast to the other aspects of the competition policy (Articles 81 and 82 EC).

In the WTO procedure, notification is not mandatory — this option was dropped at the last minute of the negotiations — but there is the possibility of cross-notification (a WTO Member notifying a subsidy granted by another Member). Non-notified subsidies do not benefit from non-actionability, though this legal point is not totally clear (Hoekman and Mavroidis, 1995). Reviewing subsidies — including non-actionable subsidies — is under the responsibility of the Subsidy Committee where all WTO members have a seat.

These differences between the EC and WTO enforcement regimes are often invoked as the key reason for the EC regime to be seen as de facto (if not *de jure*) stricter than the WTO regime. In particular, the Commission's role is seen as crucial. The Commission is perceived as being stricter on exemptions than a WTO committee of countries prone to trade-off exemptions between themselves. However, as such, this argument is open to question. One could well argue that WTO members could be less lenient than a Commission which is obliged to take into account the political dimension of the issue because it has the monopoly of the State aid control.

Two more convincing arguments for the superiority of the EC system are based on economic and legal aspects — rather than on political assertions. The legal argument is that the increased intervention of the European Courts tends to reduce the margins of political discretion available to the Commission (and the Member States). The economic argument is that, because it relies on a permanent staff, the Commission is more likely to be open to economically-sound arguments about the impact of the examined aid and the measures to be taken than a Subsidy Committee composed of diplomats who are not necessarily experienced in such a difficult topic, are subject to a high turnover rate, and trained to make deals.

That being said, it is very difficult to get evidence for comparing enforcement in the EC and GATT-WTO context. Concerning the number of cases initiated, Table 28 shows that the number of State aid cases subject to detailed investigation by DG IV under Article 88(2) EC is not significantly different from the number of countervailing procedures initiated by the United States under the GATT-WTO aegis (and trade flows are

([1]) It also depends on many other factors. For instance, the TOR and WTO regimes have adopted the principle of the benefit to the recipient, when possible. Under such a criterion, a subsidy provided through a public guarantee could provide a huge benefit to the firm, at a cost possibly nil for public authorities. The alternative method of calculation is based on the cost for the government. It may also lead to ambiguous cases, such as a high cost of indirect subsidies for the government with a benefit for the recipient close to zero. Such a situation is currently observed in the aircraft industry, leading to divergent assessments, by the EC and the US, of the enforcement of the US–EC bilateral aircraft subsidy agreement (US General Accounting Office, 1994, p. 5). As a result, different relative frequencies of the two methods would be sufficient to introduce differences between the TOR and WTO regimes. There is at least one reason to expect such differences: the WTO procedures are directed at Member States more than at firms, whereas the EC procedures look at firms as much as possible. It follows that ultimately, the method of the 'cost to the government' is likely to be more frequently used in the WTO actions that it is in the EC State aid control.

([2]) In the Commission, State aids fall within the responsibility of DG IV, except aids for agriculture (DG VI), transports (DG VII), fisheries (DG XIV) and coal (DG XVII).

not too dissimilar) ([1]). But these cases involve quite different sectors. In particular, many services have been monitored by the Commission, whereas WTO cases are dominated by the steel cases.

To conclude, is the observation that the EC regime is more generous than the WTO regime really surprising? The answer is no. Federal states, such as the United States or Germany, and centralised states, such as Britain or France, have no disciplines about subsidies granted by their Member States or by their regions. There seems to be an inverse relationship between the degree of integration and the formal disciplines on subsidies: the deeper the integration is, the more lax internal aid disciplines are. As the EC is more 'federal' than the WTO, it can be expected that the EC rules would be less strict than WTO disciplines. This inverse relation between centralisation and State aid control may have several explanations. For instance, it may be because the budgets of the US States or French regions are small with respect to federal or central budgets — this relative size limiting the risks created by the subsidies granted by sub-central authorities. However, this kind of explanations is not completely satisfactory: all sub-central budgets may be small, but in relative terms, they may be large enough to shift investments or benefits from one State or region to another — hence for creating the alleged political and economic problems which the EC State aid control or the WTO subsidy regime want to address.

7.6. The future evolution of the WTO and the role of the United States

The future evolution of the WTO and SAG will largely depend on the evolution of the US approach. Until the Uruguay Round, the United States has taken a crystal-clear view: subsidies having some impact on trade flows should be eliminated because they distort trade; and CVMs are the key instrument for disciplining trading partners eager to subsidise.

The 1979 Tokyo Round almost collapsed on the subsidy issue. The GATT was torn apart between the US approach and the EC point of view which was much more favourable to subsidies and much more reluctant to leave CVM procedures unconstrained. At the last minute, a deal was achieved which could be described as the trade-off of two disciplines: the EC agreed to include stronger disciplines on subsidies in the 1979 subsidy code, whereas the United States agreed to follow stricter rules when implementing CVMs (at least, with respect to those GATT Members having signed the code).

As shown by Table 28, the United States remained by far the major user of CVMs during the 1980s and 1990. However, the large number of US CVM cases reveals a specific feature: a vast majority of them have been lodged by the US steel-makers (a detailed look at the steel sector is provided in Annex 2). By comparison with the large number of US sector-specific CVM cases, only a few CVM cases have been lodged in the EC, targeting only a few countries (for instance, Turkey).

The Uruguay Round negotiations on subsidies and CVMs have been much less conflictual than the Tokyo Round discussions for several reasons. Severe budget constraints faced by industrial and developing countries favoured a consensus on the need to constrain subsidies. The introduction of sub-federal subsidies fills the gap between the United States (which have few subsidies at the federal level, but many subsidies at the State level mostly under the form of fiscal exemptions) and the EC and other large trading partners. Lastly, the high concentration of US CVMs in the steel sector under the pressure of a handful of firms has clearly revealed the protectionist drift of the CVM procedures also observed in the anti-dumping cases (many CVM cases have been lodged in parallel with anti-dumping cases).

The implementation of the SAG raises three questions with respect to the traditional US attitude. First, does the SAG imply major changes in the United States CVM regulations and enforcement? Second, what lessons can be drawn from the past CVM enforcement by the US authorities? Lastly, is the balance at the world level between the countries which are lax with respect to subsidies and those which are hard on them likely to be changed by an evolution in the US approach of their own domestic subsidies?

7.6.1. A brief survey of past US CVM cases

As the CVM rules under the SAG are not very far from past US regulations and practice, it is interesting to draw three lessons from the past US enforcement.

([1]) As usually, such comparisons face many difficulties. Ideally, CV procedures under WTO rules should be compared to EC State aid cases subject to the full investigation procedure of Article 88(2). Notifications to the WTO could be compared to the EC examination procedure. Lastly, consultations in the WTO framework could be compared to the withdrawals and modifications in the EC procedure. Unfortunately, there are no data detailed enough to allow for such comparisons.

First, it is easy to find subsidies — even if the 'rate of success' of the CVM complaints has fallen slightly over time. As shown by Table 34, the US Department of Commerce has found subsidies in 90 % of its final investigations (85 out of 93 cases) during the period 1980–84, and in almost 70 % (13 out of 19 cases) during the period 1989–92. The US International Trade Commission (hereafter ITC) which is in charge of assessing whether foreign subsidies have 'injured' the US industry concerned exhibits less severe scores on average, but these scores are increasingly severe for the defendants over time: cases terminated by affirmative determination represent 32 % (27 out of 85) of all the cases in 1980–84, but 62 % (8 out of 13) of all the cases in 1988–92.

Second, CVMs are severe because estimated subsidy margins are high (in US law, CVMs are set equal to subsidy margins), as shown by Table 35. Weighted average subsidy margins range from 2.6 (1985) to 113.6 % (1988). The first figure suggests that imports with very small subsidies have been caught in the US CVM procedures, whereas the second figure shows that extremely high subsidy margins could have been found (at this stage, it is useful to recall the existence of biases in these procedures for estimating subsidy margins evoked above). Average subsidy margins by exporting countries are also high — between 12 to 25 %, that is, between two to three times the *ad valorem* regular tariffs. The EC Member States the most often caught in US countervailing procedures have faced relatively high subsidy margins (that reflects the steel cases). More generally, countries with the lowest rates of aggregate export growth have the highest subsidy margins (and the largest shares of imports into the United States subject to CVMs), whereas, in the case of antidumping actions, it is the countries with the highest rates of export growth which fit these features.

Lastly, CVM cases place higher remedies on primary products and on products characterised by low or medium substitutability. Morkre and Kelly (1994) have estimated the 'injury' (revenue losses) of the US domestic industry associated to foreign subsidies. These estimates are based on alternative combinations of key parameters — the elasticity of supply of imports from countries not subject to countervailing investigations, the elasticity of demand for the aggregate (domestic plus imported) product and the elasticity of substitution between the domestic and imported products. Injury is almost always small (under 5 %) even when the mix of key parameters is likely to overestimate the injury. For instance, under conditions likely to provide the largest injury estimates (a zero supply elasticity for countries not subject to countervailing enquiries, an almost zero demand elasticity of the aggregate product and a very large substitution elasticity), 54 of the 57 CVM cases examined exhibit an injury smaller than 10 %, and 41 an injury smaller than 5 %. And, under conditions likely to provide the most plausible injury level (based on more realistic estimates for the three elasticities mentioned above), only two industries show an injury around 10 %, all the other industries showing no noticeable injury level.

7.6.2. The new US CVD rules

Horlick and Clarke (1994) have shown that in many aspects, it was necessary for the United States to change its CVM regulations to bring them into conformity with the SAG. However, these changes are generally of minor importance — mostly because the SAG approach follows past US regulations and practice.

Concerning specificity, the SAG language tracks the *de jure* analysis conducted by the Department of Commerce. And the SAG approach of the de facto definition of subsidies also follows US practices. However, the SAG has introduced limitations that the Department of Commerce did not consider before the Uruguay Round, such as limitations about specificity based on objective criteria, or the notions of 'diversification of economic activities' or 'length of time the programme has been in operation'. It does not seem that these differences go very far, except maybe when the SAG requires that any determination of specificity must be clearly substantiated on the basis of positive evidence (the US practice was to presume specificity unless positive evidence to the contrary was provided).

Concerning the three fundamental types of subsidies, changes are more serious — but in opposite directions. The SAG definition of prohibited subsidies requires US regulations stricter than before the Uruguay Round, in order to include subsidies contingent upon the use of domestic over imported goods. By contrast, the US CVM practice before the Uruguay Round countervailed R & D, regional and environmental subsidies, and it did not include the notion of non-actionable subsidies — leading to changes in the direction of less constraining rules. In fact during the Uruguay Round negotiations, the US negotiators have had very different positions vis-à-vis the various non-actionable subsidies: they supported non-actionability of the subsidies in R & D (after a complete reversal, in November 1993, from their pre-

vious position) but they were opposed to the exemption for environmental subsidies.

The SAG rules for calculating subsidies differ from US practices only marginally, except for the analysis for the provision of goods or services. In the past, the Department of Commerce considered a price as a source of subsidy if it was merely 'preferential,' whereas the price should be 'inadequate' in the SAG text.

Lastly, CVM procedures imposed by the SAG are stricter than those generally followed by the Department of Commerce and the ITC in CVM cases handled before the Uruguay Round. However, it should be underlined that such procedures are always easy to circumvent by creative lawyers. Past experience suggests that, case after case, new biases can replace outlawed or out-fashioned biases — it is only a matter of time and money.

7.6.3. Emerging changes in the US approach to subsidy and anti-subsidy policy?

Is the United States changing its traditional stance about subsidies? If that is the case, it could dramatically change the balance of the WTO framework. In the United States, there are two forces at work more favourable to subsidies and less favourable to CVMs. First, as already mentioned, the many US subsidies granted at the State level which are now clearly included in the SAG can only weaken the anti-subsidy stance of the US policy. The second force is the impact of the strategic trade theory among the political circles. This second force is so far best illustrated by the debate about 'flat panel displays' (FPDs) which thus deserves some attention ([1]).

Since 1989, the US Department of Defence (DOD) has run a USD 300 million precompetitive programme of subsidies through its Advanced Research Projects Agency (ARPA). The ARPA programme is a classical case of R & D subsidies, and there is little doubt that it would be considered as consistent with the existing WTO SAG. In 1993, the US authorities express concern about the fact that, despite the ARPA programme, no US company has moved to high-volume production of FPDs. The Council of Economic Advisers (CEA) explains this situation by the high barriers to entry in the FPD production. Initial costs of plants with reasonable scale economies are about USD 400 million and other costs (for keeping up with technological changes and distribution) could be of the same amount. Moreover, only minor changes in technology (FPDs versus CRTs) could cause huge swings in the rate of return of the whole operation. Lastly, 95 % of the current FPD production for commercial purposes is made by Japanese firms, making the entry of US firms as 'second movers' more difficult.

In this context, the CEA developed a 'dual-use' approach which deserves attention because it departed from the US traditional approach on subsidies. Negotiations with the leading Japanese firms have persuaded US authorities that the Japanese firms will not customise products for the US DOD. On the other hand, as the DOD demand is estimated at 5 % (15 000 FPDs) at most of the total US FPD market for the five years to come, the CEA concluded that a plant for only military purpose would be too expensive. Instead of spending DOD money on a captive and inefficient supplier, the CEA suggested to use it as a leverage for supporting a commercial industrial base, hence in the context of plants producing for both military and commercial purposes (the 'dual-use' notion). The CEA estimated that four to six plants could be built in the United States and it proposed to provide USD 587 million over five years as public money — to be spent exclusively on 'R & D and infrastructure' and to be matched by an (at least) equivalent amount of private money through competitive bidding where foreign firms will be eligible. In this context, the US Department of Commerce would aim at 'stimulating' demand by leading in developing new applications for the US information infrastructure and by adding FPDs to the list of exports that it promotes in foreign markets. Lastly, the CEA announced its commitment to try to build an industry 'that can capture at least 15 % of the global market by the year 2000' (Flamm, 1994).

Criticism of this 'industrial' policy abounded in the United States (Barfield, 1994–95). They ranged from questions related to estimates used by the CEA initiative (for instance, DOD demand of FPDs would represent only half the CEA estimates, hence making a purely military plant a reasonable option) to questions related to the nature of the programme — namely, an industrial and trade policy programme rather than a purely R & D-oriented set of actions.

([1]) FPDs are used in computers and many other electronic devices for conveying information quite instantly — a capacity which makes them particularly useful for military equipment. FPDs are substitute to displays based on cathode ray tubes (CRTs), and they are considered more reliable and less costly in terms of maintenance than the current generation of CRTs.

The FPD case raises two sets of issues. First, the CEA initiative seems to fit the provisions of the SAG on R & D subsidies in the sense that private R & D funds should match public money (hence, the SAG ratio of 50 % will be respected). But, US public money could be also spent on 'infrastructure,' a term so vague that it could easily lead to possible infringements of the WTO rules. Moreover, the CEA initiative shows the limits of the SAG rules in the sense that the global rate of subsidisation for the whole operation is very high. Using CEA estimates about costs of building FPD plants (USD 400 million) and about the number of plants involved (4 to 6), the subsidy rate corresponding to the USD 587 million public money would range between 20 and 30 % of the whole FDP industry.

Second, the CEA initiative has been accompanied by dubious trade measures — again the key issue of the relations between subsidies and other trade measures. FPDs have been subject to a US anti-dumping case in July 1990. The complaint in this case was lodged by a group of seven US firms — all of them small and specialised in military versions of the FDPs (most of the industry experts say that there is little relation between military and civilian versions of FDPs). Ironically (but it is not an unique case), the anti-dumping duties (7.02 to 62.67 %) were extremely harmful to the US computer industry, one of the largest user of FDPs. These duties led to absurd situations, as best illustrated by IBM. IBM has a joint venture (located in Japan) with Toshiba for building FPDs and it imports FPDs from this joint plant in order to incorporate them in its computers built in America. Not only IBM had to pay the anti-dumping duties, but also Toshiba was not concerned by these duties because it exported complete computers (including these FPDs) from Japan and not FPDs per se. After two years of battle, the anti-dumping duties on FPDs have been withdrawn in June 1993.

7.7. Conclusion: a need for unilateralism

The paper shows the need to evaluate State aids in the context of 'global' protection — that is, not independently from the other trade measures. What counts is the net impact of all the trade measures, whatever they are. In this perspective, the Australian Industry Commission has suggested an approach based on the notion of effective rates of assistance (ERA) which aim at measuring the net global incentives faced by industries producing tradable goods and services. ERAs are thus similar to the more familiar notion of effective rates of protection (ERPs) in the sense that they are rates applied to an industry (a set of vertically and horizontally related products), not nominal rates applied to individual products. But they differ from ERPs because they are based not only on tariffs and border measures, but also on non-border measures, such as subsidies of all kinds. An example of the ERA approach is presented in Annex 3. The ERA approach raises many issues in terms of the concrete methodology to be used, in particular concerning measurement problems (OECD, 1992). Clearly, the adoption of an ERA-based approach is likely to follow the same pragmatic development than the national account methodology.

If applied by all WTO members, this methodology would make more economically sound the enforcement of the WTO disciplines. It will not eliminate the use of CVMs. But it is likely to make it less frequent because it will help WTO Members too fond of subsidies to make a better appraisal of the costs of their policy and to have a better understanding of the risks that many State aids may have a very small net impact because subsidies granted to one industry are counterbalanced by State aids granted to the other industries of the country (everything is a matter of relative prices). For instance, if an employment aid encourages the use of more labour-intensive techniques, an aid to capital induces the use more capital-intensive techniques: as a result, a combination of the two subsidies may leave almost unchanged the relative wage-profit ratio and hence have no results, except to waste public funds.

The ERAs could also help to implement more economically sound 'compensations' to subsidies. For instance, the EC doctrine is that subsidised firms should contribute to the restructuring of the industry. This contribution has to be 'proportionate' to the amount of aid received — for example, it could consist in irreversible reductions or closures of production capacity by the subsidised firm, if the industry has 'structural excess capacity'. For instance, in the Air France case, the Commission has imposed no less than 16 commitments as compensations: four impose limits on Air France production capacity (in terms of number of aircraft, seats on European routes and European scheduled routes, and in terms of aircraft and seats for Air Charter, an Air France subsidiary), one imposes targets for the apparent labour productivity of Air France (minimum targets in terms of equivalent revenue passenger kilometres per employee) and two impose limits on Air France pricing

(floor prices for Air France, and 'market' transfer prices between Air France and Air Charter) (1).

These compensations are at odds with the TOR focus on competition: they are likely to favour anti-competitive behaviour by locking European markets in collusive pricing (non-subsidised firms are induced to align their prices on the prices charged by subsidised firms and frozen by the compensations requested). By contrast, the ERA perspective suggests two different approaches. First, if the level of global protection is low, ERAs suggest that subsidies are unlikely to have a strong impact (except if they are massive, therefore unlikely to be sustainable in the long run) and as a result that anti-subsidy policies are plain protectionism. Second, if subsidies are granted in the context of a high level of global protection, the best compensation to ask from subsidised firms is market opening, that is, a decline of global protection. For instance, in the Air France case, that would have meant a more rapid opening of the French skies — in terms of traffic rights and/or Paris airport slots — and an almost complete degree of freedom left to Air France. Such an approach is a more dynamic source of changes than the compensations which have been requested.

To summarise, the best way to constrain subsidies is to remove the trade barriers associated with them — that is, to reveal the real costs of the State aids granted. Most of the subsidies without the support of other trade measures are unlikely to deserve any anti-subsidy measures. Developing a systematic evaluation by sector of the magnitude of the subsidies and of the other trade measures within a common framework of 'effective rates of assistance' by industry would be of considerable help for achieving these goals in an international context.

(1) It should be noted that three conditions are opening up the market: there should be no preferential treatment for Air France in the matter of traffic rights, the Orly-London route should be opened, and the adaptation of two terminals at Orly should not hinder the operation of competing airlines. However, the two first conditions cannot be considered as compensatory measures (there are restatements of pre-existing commitments taken under the 1992 programme) and the last condition is seriously impaired by a sudden ardour of the French authorities about noise nuisance, ending in freezing Orly expansion.

Table 28

EC and US countervailing cases and EC State aid cases

Years	Countervailing cases		EC State aid cases (2) Art. 88(2) procedure (3)				EC State aid volumes (4)	
	US	EC(1)	Total	Sub-total	Comp.	Billion Inc.	Share (5) ECU	
1979	37	2						
1980	11	0						
1981	22	1	112	33	20	13		
1982	145	1	147	43	32	11		
1983	22	2	140	39	28	11		
1984	52	1	256	55	33	22		
1985	38	1	140	38	31	7		
1986	26	0	134	36	26	10		
1987	5	0	266	43	32	11		
1988	13	0	374	43	29	14	37.7	9.1
1989		1	307	37	21	16	30.3	6.3
1990		0	458	34	20	14	40.5	7.9
1991		1	543	37	28	9	38.1	7.1
1992		1	522	40	32	8	37.6	6.8
1993			435	26	19	7	42.7	8.3
1994			487	20	17	3	40.5	6.8
1995			562	36	27	9	38.6	4.8
1996			417	40	17	23	36.7	4.4
Total	371	11	5 300	600	412	188		

(1) Investigations opened. Five of these investigations led to imposition of countervailing duties.
(2) Cases on which final decisions were taken in the relevant year (excluding agriculture, fisheries and transport).
(3) Decisions in cases subject to detailed examination under the Article 88(2) procedure or equivalent for ECSC steel sector. Comp.: declared compatible, Inc.: declared incompatible.
(4) State aid in the manufacturing sector — 1988–94: EU-12; 1995–96: EU-15.
(5) As a percentage of intra-EC manufacturing exports.

Sources: Reports on Competition Policy, Reports on anti-dumping policy, fourth, fifth and sixth surveys of State aid.

Table 29

The EU State aid case load, by year

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984–86 average	1987–92 average
Case load											
Number of cases	20	5	12	11	15	9	14	13	4	12.3	11.0
Forms of State aid (1)											
I. Asset re-evaluation						1		1	2		1.3
I. Capital grant					1		4	3			2.7
I. Capital injection	3		2		3	2	1	3	3	2.5	2.4
I. Debt conversion				2			1	2			1.7
II. Direct subsidy	10	3	6	3	7	2	4	4		6.3	4.0
II. Foregone recovery			1		2		2			1.0	2.0
II. Subsidy to input						1	2				1.5
III. Interest subsidy	5		2	3	3	2	2	3		3.5	2.6
III. Preferential loan		1	2		2	2		1		1.5	1.7
III. Low interest operation		1	1	2	2	2		3		1.0	2.3
III. Parafiscal charge									1		1.0
III. Tax concession	1		3	1	1	1	3	4	1	2.0	1.8
III. Preferential tariff		1								1.0	
IV. State guarantee	1	1		1		1	1			1.0	1.0
IV. State participation	3		1	4	1	2		1	2	2.0	2.0
IV. Other forms	1			2			2			1.0	2.0
Form I	3		2	2	4	3	6	9	5	2.5	4.8
Form II	10	3	7	3	9	3	8	4	0	6.7	4.5
Form III	6	3	8	6	8	7	5	11	2	5.7	6.5
Form IV	5	1	1	7	1	3	3	1	2	2.3	2.8
All forms	24	7	18	18	22	16	22	25	9	16.3	18.7
Types of State aid (1)											
I. Environment				1			1	1	2		1.3
I. Research and development			2	1	1			1		2.0	1.0
I. Regional	6	1	4	5	3	2	4	7		3.7	4.2
II. Infrastructure							2	2			2.0
II. Investment	11	3	6	2	9	3	4	7	1	6.7	4.3
II. Training labour								1			1.0
III. Operating	3	2	4	3	1	1	7	2	1	3.0	2.5
III. Rescue	2		3	3	2	2		1	1	2.5	1.8
III. Redundancy						3		1			2.0
III. Restructuring	2	2	1	6	5	2	2	2	2	1.7	3.2
III. Sectoral	2	1	1	0	2	2	4	3	2	1.3	2.2
IV. Export	1				1	1		1		1.0	1.0
IV. Product					1	1	1				1.0
Type I	6	1	6	7	4	2	5	9	2	4.3	4.8
Type II	11	3	6	2	9	3	6	10	1	6.7	5.2
Type III	9	5	9	12	10	10	13	9	6	7.7	10.0
Type IV	1				2	2	1	1		1.0	1.5
All types	27	9	21	21	25	17	25	29	9		
Sources of State aid (1)											
Central government	16	4	7	9	15	8	9	7	3	9.0	8.5
Regional authorities	3	1	7	2		1	1	5		3.7	2.3
Local authorities							2	2			2.0
Other public authorities	1			1	1	1	2	3	1	1.0	1.5
Private firms								1			1.0
State firms	+	1		1		1		1		1.0	1.0

(1) There may be more than one State aid by case investigated.

Sources: WTO subsidy agreement, Treaty of Rome, Hancher et al.(1993), author's computations.

Table 30

The EU State aid case load, by Member State

	B	DK	D	EL	E	F	IRL	I	L	NL	UK
Case load											
Number of cases	21	1	18	5	5	24	1	17	1	6	4
Forms of State aid (1)											
I. Asset re-evaluation					2	1					1
I. Capital grant	3		2			1		2			
I. Capital injection	5				3	5		4			
I. Debt conversion	2			2				1			
II. Direct subsidy	5		11	2		8	1	4	1	4	3
II. Foregone recovery			1	2				1			1
II. Subsidy to input			1		1			1			
III. Interest subsidy	7		1		1	6		5			
III. Preferential loan	1		1			5					1
III. Low interest operation			2		1	5		3			
III. Parafiscal charge										1	
III. Tax concession	5		1	1	1	3		4			
III. Preferential tariff										1	
IV. State guarantee	1				1	2					1
IV. State participation	7				2	3		2			
IV. Other forms	1	1	2			1					
Form I	10		2	2	5	7		7			1
Form II	5		13	4	1	8	1	6	1	4	4
Form III	13		5	1	3	19		12		2	1
Form IV	9	1	2		3	6		2			1
All forms	37	1	22	7	12	40	1	27	1	6	7
Types of State aid (1)											
I. Environment	1				1	1		1		1	
I. Research and development	1					2		2			
I. Regional	6	1	11		1	8	1	4			
II. Infrastructure			1			1		1			1
II. Investment	9		10		1	10	1	9	1	3	2
II. Training labour								1			
III. Operating	3		6	1	1	3	1	6		2	1
III. Rescue	2		2	1	2	4		2		1	
III. Redundancy					1	3					
III. Restructuring	5		3	1	2	7		5			1
III. Sectoral	3		3	1	2	5	1	2			
IV. Export				2		1		1			
IV. Product			1			2					
Type I	8	1	11		2	11	1	7		1	
Type II	9		11		1	11	1	11	1	3	3
Type III	13		14	4	8	22	2	15		3	2
Type IV			1	2		3		1			
All types	30	1	37	6	11	47	4	34	1	7	5
Sources of State aid (1)											
Central government	15	1	10	5	5	20		14	1	4	3
Regional authorities	6		12		1			1			
Local authorities	1		1			1					1
Other public authorities	1					4	1	3		1	
Private firms								1			
State firms						1		2		1	

(1) There may be more than one State aid by case investigated.

Sources: WTO subsidy agreement, Treaty of Rome, Hancher et al.(1993), author's computations.

Table 31

EU State aid and other instruments of protection, by industry

ISIC codes ([1])	Sectors	Case load	Forms of aids ([4])						Tariffs		Anti-dumping cases			VERs ([3])
		No	I	II	III	IV	All	Avg number of forms	Base rate	Bound rate	No of cases	DUM ([2])	ADM ([2])	
1000	Agriculture	2		1	1		2	1.0	11.60	9.78				Yes
311	Food products ([1])	1		1	1		2	2.0	-	-	4	25.4	-	
3113	Fruits and vegetables	1		2			2	2.0	-	-				Yes
3114	Fish industries	2		1		1	2	1.0	14.28	13.30				Yes
3118	Sugar industry	1	1	1			2	2.0	-	-				Yes
3133	Beer	1			2		2	2.0	-	-				?
320	Textiles and apparel ([1])	4		1	5	3	9	2.3	10.46	8.11				Yes
3210	Textiles	4	3	1	2	2	8	2.0	10.08	7.62	13	32.7	26.3	Yes
3220	Apparel	2	1		1		2	1.0	12.28	10.48				Yes
3240	Footwear	1	2				2	2.0	10.83	9.44	2	6.1	6.7	?
3311	Sawmills	2		2	2		4	2.0	5.27	2.26	19	31.1	-	?
3411	Pulp and paper	4	3	1	2		6	1.5	6.50	3.09	3	7.7	-	?
351	Basic chemicals ([1])	1	1		1		2	2.0	7.19	4.87				
3511	Industrial chemicals	1			1		1	1.0	7.12	4.84	105	41.3	20.2	
3512	Fertilizers	1			1		1	1.0	4.88	4.32	19	43.3	22.3	
3513	Synthetic products	9	1	7	3	1	12	1.3	8.28	5.23	31	26.6	11.6	
3520	Other chemicals	1			1		1	1.0	6.39	3.40	6	83.6	-	
3522	Drugs and medicines	2	1	1		1	3	1.5	6.21	0.38	4	93.8	-	Yes
3530	Petroleum refineries	1		1			1	1.0	4.62	2.92				
3540	Petroleum and coal	3		2		1	3	1.0	2.14	1.27				
3610	Pottery and china	3	2			3	5	1.7	8.42	5.90	2	26.5	26.5	
3620	Glass industry	7	1	3	5	1	10	1.4	6.94	4.51	13	42.5	17.5	
3692	Cement, lime and plaster	1	1	1			2	2.0	2.74	1.42	5	37.7	-	
3710	Iron and steel	5	2	1	3	3	9	1.8	4.87	0.24	43	30.2	26.2	Yes
3720	Non-ferrous metals	4	1	2	1	1	5	1.3	4.61	3.03	14	16.2	-	
3812	Metal furniture	1		1			1	1.0	5.61	2.25				
3813	Structural metal products	1				1	1	1.0	4.66	2.17				
3822	Agricultural machinery	3	1	1	4	1	7	2.3	3.67	0.40				
3824	Industrial machinery	2	3		1	1	5	2.5	3.99	1.38	4	19.1	21.2	Yes
3832	Radio and TV	1		1			1	1.0	6.73	4.32	20	27.2	22.7	Yes
3841	Shipbuilding	4		4			4	1.0	2.88	1.75				Yes
3843	Motor vehicles	8	4	2	6	1	13	1.6	9.08	6.58				Yes
3853	Watches and clocks	1				1	1	1.0	5.45	3.49	1	19.5	-	
	Maritime services	3		2	3	1	6	2.0	-	-	2	-	-	Yes
	Airlines ([5])	1	2			1	3	3.0	-	-	0	-	-	Yes
	Other services ([6])	2		1	1		2	1.0	-	-	0	-	-	Yes
	Horizontal cases ([7])	12	4	6	9		19	1.6	-	-	0	-	-	
	Total	103	34	47	56	24	161	1.6			310			20

([1]) ISIC-4 digit (ISIC-3 digit correspond to cases involving a wide range of products).
([2]) DUM: dumping margin. ADM: *ad valorem* equivalent of known anti-dumping measures.
([3]) Yes: VERs have been observed.
([4]) For the definition of the four forms (I, II, etc.), see Tables 29 or 30.
([5]) Sabena case.
([6]) French horse betting (PMU) and Greek films.
([7]) Regional aid (5 cases), labour (2), taxation (1), natural disaster (1), global schemes (3).

Sources: Hancher et al. (1993); EC Official Journal, various issues; author's computations.

Table 32

The TOR and WTO regimes on State aids and subsidies - a synopsis

	Treaty of Rome Articles		WTO subsidy agreement Articles	
Definitions	87(1)	— any aid granted by a Member State,	1(1)(a)	— a financial contribution,
	87(1)	— in any form whatsoever,	1(1)(b)	— an income or price support,
	87(1)	— favouring certain firms or sectors.	1(1)	— conferring a benefit.
Criteria	87(1)	— distorts or threatens competition,	2(1)	— exerts (serious) adverse effects,
	87(1)	— favouring certain firms or sectors,	2(1)	— specific to firm or industry,
	87(1)	— affects trade between Member States.	3(1)(a)	— prohibition of export subsidies,
			3(1)(b)	— prohibition of subsidies contingent upon the use of domestic goods.
Exemptions	([1])	— steel and coal.	([2])	— negotiations on MSA.
	87(1)	— agriculture (Article 36).	6(9)	— agriculture.
	87(1)	— monopoly (Article 86(2)).		
	87(1)	— aid based on EC funds.		
	87(2)(a)	— social aid.		
	87(2)(b)	— natural disasters.	6(7)(c)	— natural disasters.
	87(2)(c)	— division of Germany.		
	87(3)(a)	— regional aid.	8(2)(b)	— regional aid.
	87(3)(b)	— European project.		
	87(3)(b)	— serious disturbance.		
	87(3)(c)	— develop certain activities.	8(2)(a)	— aid for research-development.
			8(2)(c)	— aid for environment.
	87(3)(d)	— upon Council decision ([3]).		
	87(3)(d)	— aid for culture ([4]).		
	89	— opens possibility for Council secondary legislation.		

([1]) Covered by the Treaty of Paris on ECSC.
([2]) So far, the negotiations on a multilateral steel agreement have been unsuccessful.
([3]) Used only for decisions about aid for shipbuilding.
([4]) Added by the Treaty of Union (Maastricht).

Sources: Treaty of Rome (1956), WTO subsidy agreement (1994)

Table 33

Types of subsidies under the TOR or WTO regimes - a comparison

Types of subsidies	Expected status in WTO regime (1)	Expected status (2)	Status in the EU case load (1984-91)						Share % (4)	Share % (5)
			Commission's decisions (3)							
			Sum	C	CS	CI	I	M		
Type I State aid										
Environmental	NA	C	5	1		1	3		80.0	60.0
Research and development	NA	C	5			1	4		100.0	80.0
Regional	NA	C	32	5	3	9	12	3	75.0	46.9
Type II State aid										
Infrastructure	As	C	4			1	3		100.0	75.0
Investment general	As	C	46	2	1	8	33	2	93.5	76.1
Training labour	As	C	1	1					0.0	0.0
Type III State aid										
Operating	A	I	24	3	1	1	19		83.3	79.2
Rescue	A	I	14	1	1	3	9		85.7	64.3
Redundancy	A	I	4	1		1	2		75.0	50.0
Restructuring	A	I	24	2	3	4	15		79.2	62.5
Sectoral	A	I	17	3	1	2	11		76.5	64.7
Type IV State aid										
Export	P	I	4		1		3		75.0	75.0
Product	P/A	I	3				3		100.0	100.0
All types of State aid										
Type I	—	—	42	6	3	11	19	3	78.6	52.4
Type II	—	—	51	3	1	9	36	2	92.2	74.5
Type III	—	—	83	10	6	11	56		80.7	67.5
Type IV	—	—	7		1		6		85.7	85.7
Total	—	—	183	19	11	31	117	5	83.6	66.7

(1) NA: non-actionable in principle; As: actionable if specific de jure/facto; P: prohibited.; A: actionable.
(2) C: compatible; I: incompatible.
(3) Sum: number of State aids investigated in Commission's cases handled under Article 88. C: compatible; CS: compatible subject to certain conditions; CI: partly compatible and partly incompatible; I: incompatible; M: recommendation of 'appropriate measures'.
(4) Share of decisions (CI+I+M) in all decisions.
(5) Share of decisions (I+M) in all decisions.

Sources: WTO subsidy agreement, Treaty of Rome, Hancher et al. (1993), author's computations.

Table 34

US countervailing cases — frequencies of determinations

	1980–84	1985–88	1989–92	Total
Total number of complaints	147	60	27	234
Preliminary determination (ITC)				
Affirmative	93	50	19	162
Negative	54	10	8	72
Final DOC subsidy determination				
Affirmative	85	41	13	139
Negative	8	9	6	23
Final ITC injury determination				
Affirmative	27	25	8	60
Negative	58	16	5	79

Source: Congressional Budget Office (1994), p. 51.

Table 35

US countervailing measures — the impact

Years	Subject imports	Subsidy margin		Countries	Share of country imports	Subsidy margin
1980	33.9	20.8		Argentina	10.39	15.00
1981	—	—		Brazil	0.02	0.08
1982	2747.7	3.2		Canada	—	21.61
1983	35.5	34.9		Japan	0.02	6.32
1984	372.7	8.0		Norway	0.35	0.23
1985	164.8	2.6		Thailand	0.33	2.16
1986	81.9	6.4		Venezuela	0.32	20.92
1987	61.5	38.4				
1988	7.0	113.6				
1989	352.5	4.5		Britain	0.31	12.38
1990	93.7	8.6	EC countries	France	0.03	23.14
1991	2926.0	5.2		Germany	0.08	16.83
1992	626.9	7.9				
1993	15.2	24.4				

Source: US International Trade Commission (1995), pp. 3-2 and 3-8.

Table 36

Exemptions for regional, R & D and environmental aid — a synopsis

WTO subsidy agreement	EC disciplines
Aid for environment	
1. — covers only cases with mandatory new environmental standards. — covers adaptation of existing facilities in operation for at least two years before the new environmental legislation.	— may cover cases without mandatory new environmental standards. — covers investment, information, training and advisory services; may cover energy conservation.
2. — does not cover costs of replacing or operating the assisted investment, nor any manufacturing cost savings.	— eligible costs confined to extra-investment costs necessary to meet environmental objectives. — covers operating costs in certain cases. — covers purchase/use of environmentally friendly products.
3. — limited to 20 % of the cost of adaptation. — directly linked to/proportionate to pollution reduction.	— up to 15 % gross of the eligible costs for mandatory standards. — up to 30 % gross of the eligible costs for non-mandatory standards. — plus 10 % possible for small and medium-sized enterprises (SMEs). — plus additional aid in assisted regions.
4. — one-time non-recurring measure.	
Regional aid	
1. — disadvantaged region must be a clearly designated contiguous geographical area, with a definable economic and administrative identity. — requires a general framework of regional development.	— geographical homogeneity (NUTS). — may cover 'pôles de développement.'
2. — criteria: GDP per capita (85 % of country's average), rate of unemployment (110 % of country's average), estimated over three years. — possibility of considering additional criteria.	— GDP per capita (formula based on 75 % to 85 % of EC or country averages), structural rate of unemployment (formula based on 110 % of country's average). — population density, changes in structural variables.
3. — no ceiling, but aid differentiated according to the level of development.	— maximum aid intensity of 75 % or 30 % (net).
4. — prohibition of export aid.	— prohibition of export aid.
Research and development aid	
1. — excludes 'fundamental research'. — covers 'industrial research' (IR), 'pre-competitive development' (PCD) conducted by firms or higher education or research establishments on a contract basis with firms.	— excludes 'fundamental research,' but possibility to include it. — overs 'basic industrial research' (BIR) and 'applied research and development' (ARD).
2. — covers costs of personnel; equipment and buildings used exclusively and permanently for research; consultancy; overhead and running costs related to research.	— covers costs of personnel; equipment and buildings used exclusively and permanently for research; consultancy; overhead and running costs related to research.
3. — maximum of 75 % (IR) and 50 % (PCD). — average ceilings in case of both IR and PCD.	— maximum of 50 % (BIR) and 25 % (ARD). — average ceilings in case of both BIR and ARD. — plus for SMEs, regional cases and major European projects.

NB: 1.: coverage; 2.: eligible costs; 3.: ceilings imposed on aid; 4.: other provisions.

Sources: WTO subsidy agreement (1994); European Commission, DG IV unpublished note (1994).

Table 37

Major EC imports of steel products

Year	EC apparent consumption	EC imports from: World (1)	World (2)	Western Europe non-EEA	Central Europe	Former Soviet Union	Africa	Japan	Asia less Japan	USA	American continent less USA
	1 000 tonnes										
1975	74 962	6 145	3 385	26	1 207	42	118	1 548	104	45	76
1979	92 401	9 416	4 629	350	2 581	163	298	601	77	140	290
1980	85 986	8 992	4 766	153	2 080	269	275	562	343	359	563
1981	81 689	6 566	2 681	45	1 925	106	89	164	15	125	186
1982	77 637	8 736	4 246	102	2 130	128	369	237	120	96	978
1983	75 465	8 491	3 693	345	1 815	282	284	255	84	71	456
1984	80 050	8 087	3 164	194	1 880	74	243	212	7	89	461
1985	79 151	8 616	3 404	201	1 779	120	323	287	46	64	554
1986	89 219	9 281	5 065	458	2 000	243	482	393	180	116	1 166
1987	90 257	8 833	4 638	655	1 923	330	476	210	189	93	757
1988	103 737	9 695	5 497	939	2 090	442	393	152	193	116	1 165
1989	110 444	10 734	6 381	890	2 110	538	434	165	192	393	1 641
1990	108 573	11 625	7 011	1 351	2 427	691	361	127	280	174	1 558
1991	109 603	10 709	5 630	525	2 208	1 129	277	114	148	209	923
1992	109 217	12 502	7 258	468	:	:	613	113	318	117	1 069
	% of EC apparent consumption										
1975	100.0	8.2	4.5	0.0	1.6	0.1	0.2	2.1	0.1	0.1	0.1
1979	100.0	10.2	5.0	0.4	2.8	0.2	0.3	0.7	0.1	0.2	0.3
1980	100.0	10.5	5.5	0.2	2.4	0.3	0.3	0.7	0.4	0.4	0.7
1981	100.0	8.0	3.3	0.1	2.4	0.1	0.1	0.2	0.0	0.2	0.2
1982	100.0	11.3	5.5	0.1	2.7	0.2	0.5	0.3	0.2	0.1	1.3
1983	100.0	11.3	4.9	0.5	2.4	0.4	0.4	0.3	0.1	0.1	0.6
1984	100.0	10.1	4.0	0.2	2.3	0.1	0.3	0.3	0.0	0.1	0.6
1985	100.0	10.9	4.3	0.3	2.2	0.2	0.4	0.4	0.1	0.1	0.7
1986	100.0	10.4	5.7	0.5	2.2	0.3	0.5	0.4	0.2	0.1	1.3
1987	100.0	9.8	5.1	0.7	2.1	0.4	0.5	0.2	0.2	0.1	0.8
1988	100.0	9.3	5.3	0.9	2.0	0.4	0.4	0.1	0.2	0.1	1.1
1989	100.0	9.7	5.8	0.8	1.9	0.5	0.4	0.1	0.2	0.4	1.5
1990	100.0	10.7	6.5	1.2	2.2	0.6	0.3	0.1	0.3	0.2	1.4
1991	100.0	9.8	5.1	0.5	2.0	1.0	0.3	0.1	0.1	0.2	0.8
1992	100.0	11.4	6.6	0.4	:	:	0.6	0.1	0.3	0.1	1.0

(1) At current EC borders.
(2) At constant borders of the EEA.

Sources: Iron and steel; Eurostat, various issues; author's computations.

Table 38

Steel prices for selected years and periods

	1982 USD per net ton				Annual growth rates (%)		Average price differences (2)	
	1969	1974	1979	1989	1969–79	1979–89	1969–79	1979–89
Real Japanese export prices (1)								
Hot rolled steel	204	393	352	323	5,5	– 0.9	—	—
Cold rolled steel	281	488	448	415	4,7	– 0.8	—	—
Real US domestic prices (1)								
Hot rolled steel	301	382	402	286	2,9	– 3.4	75.2	44.5
Cold rolled steel	383	460	497	385	2,6	– 2.6	69.6	63.3
Real EC domestic prices (1)								
Hot rolled steel and coils	233	385	424	288	6,0	– 3.9	41.8	14.9
Cold rolled steel and coils	315	469	514	369	4,9	– 3.3	53.0	22.1

(1) Deflated by US GNP implicit price deflator.
(2) Average (for the sub-period) between Japanese export prices and the EC or US prices, in 1982 US dollar per net ton.

Source: Crandall (1994), Tables 11, 12, 13 and 16.

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Annex 1

A more detailed look at the three WTO exemptions

The WTO regime allows only for three 'non-actionable' categories: subsidies related to R & D, regional and environmental purposes. It is thus interesting to compare the detailed conditions imposed by the SAG and the conditions imposed by the TOR (and the derived guidelines used by the Commission) for these three exemptions. Table 36, based on information kindly provided by DG IV (the Commission Directorate General for Competition), summarises the major similarities and the differences between the EC and WTO regimes for these types of subsidies. It suggests the following observations.

Concerning aid for environmental measures, the EC coverage is wider, in particular because it includes aid in case of non-mandatory standards (which are not taken into consideration by the WTO). The aid intensity is lower in the WTO (20 %) than in the EC (15 %), except for the EC small and medium enterprises (SMEs) which can benefit from a 25 % aid intensity. Again, the case for non-mandatory standards is a source of differences, since the EC regime allows more generous aid intensity — up to 30 % (40 % in case of SMEs).

Concerning regional aid, the EC system seems fundamentally in line with the WTO regime, except for the notion of 'pôles de développement' which may create frictions at the WTO level (it may infringe the notion of a 'definable identity'). EC rules are more explicit in terms of ceilings, on which the SAG is silent.

Concerning R & D aid, the two systems are very close for the SMEs which, in the EC regime, can add up R & D aid and other types of aid. The two regimes have different ceilings for larger firms — less generous in the EC case.

It has been argued that the EC rules should be made even more similar to the WTO provisions — meaning that EC rules should be aligned to WTO provisions when they were stricter than those rules, and kept unchanged when they have a wider scope or more favourable terms. Even if one leaves aside the problem of time-consistency (a very important aspect in a topic such as State aid), such a suggestion has two flaws. The first problem is internal to the EC. The suggestion would be likely to disturb the delicate balance reached in the EC between compatible and incompatible State aid — hence endangering the internal consistency of the EC rules based the competition distortion approach. The EC regime is flexible enough, and it offers enough ways and means for derogating from the basic prohibition of State aids, that one should not feel obliged to copy the WTO norms for these three categories. The second flaw concerns the relations between the EC and the other trading partners. A 'relaxing' move by the EC could be interpreted as a weakening of the EC rules which are seen as already weak on a purely legal basis. As a result, relaxing EC rules could increase the risk of countervailing actions from trading partners more anxious than ever to impose constraints on subsidies.

Annex 2

Subsidies in the steel industry

Although steel falls within the Treaty of Paris, rules imposed on State aid in the steel sector are similar to the TOR provisions, because Article 4(c) ECSC (which bans State aid in the steel sector) and Article 67(3) ECSC (which allows for State aid in case of 'serious disequilibrium') have proved to be impossible (for the former) or too cumbersome (for the latter) to be implemented. As a result, the current regime on State aid in the steel sector has been legally developed under a system of derogations permitted by Article 95 ECSC, and taken the form of a series of 'steel aid codes' adopted in 1980, 1981, 1985 and 1991. The fifth steel aid code was adopted in December 1996 and it will last until 2002 (when the Treaty of Paris is expected to expire).

The provisions of the three last codes are much stricter than the two first codes. For instance, the current code (Decision No 2496/96) allows for State aid granted for plant closure (with a maximum ceiling of 50 % of the cost to the firm in making redundancy or early retirement payments), provided those payments do not exceed those customary under the rules of the Member State concerned. Any aid not included in the categories considered as compatible with the Common Market, whether they are specific or non-specific, is prohibited in accordance to Article 4(c) ECSC. Special rules are applied under the TOR to steel products not covered by the Treaty of Paris.

Trade barriers and trade flows

As is well known, in the mid-1970s, the major OECD steel producers were expanding capacity in response to anticipated future growth in steel demand. This growth never materialised: in the 1970s, world raw steel production grew by an annual average of 2.5 %, compared to almost 6 % before (and to barely 0.5 % since 1979). The difficulties of the OECD steel industries were compounded by the emergence of new large steel producers, such as Korea, Taiwan, Brazil and Mexico. But the core of the problems was due to the OECD steel sectors, which still account for roughly 70 % of world exports and almost 60 % of world imports.

A correct assessment of the role of the State aid control requires some information about barriers to free trade. The United States was the first OECD country to face problems of excess production in steel and to impose barriers on imports. In the mid-1960s, the US Government imposed a series of 'voluntary export restraints' (VERs) on steel exports from Japan and the EC for a 'limited' period of time (initially three years). These VERs were renewed and reinforced. In 1974, the US President asked the industry to shift from VERs to anti-dumping actions. The first wave of anti-dumping suits lodged by the US industry was settled by the 'trigger-price mechanism' (TPM) which basically established a series of floor prices on US steel imports. In 1982, a second massive wave of anti-dumping complaints in the US was settled by the reimposition of quantitative restrictions (VERs) which were renewed in 1989 and scheduled to expire in March 1992. However, the expiration of these VERs was quickly followed by a new series of 64 anti-dumping and countervailing suits. In sharp contrast to the previous anti-dumping and countervailing cases, the 1992–93 cases were terminated by duties. These duties are often very large: countervailing duties imposed on EC steel makers range from 4.3 % (Sweden) to 72.9 % (Italy) ([1]).

In 1977, the EC followed the US example of erecting trade barriers. A first wave of anti-dumping complaints lodged by Eurofer (the association of the large EC steelmakers) was settled by 'arrangements' which were VERs (based on quantity or price constraints) defined by type of steel products, quality, time of delivery, etc.

([1]) Recently, some European steelmakers have been seeking the elimination of these duties (or maybe their renegotiation as VERs).

These arrangements were enforced against roughly 15 countries: the EFTA countries, the central European countries, the Soviet Union, Australia, Brazil, Japan, Korea, Venezuela and South Africa. In 1985, the EFTA countries agreed to follow the pricing rules of the ECSC Treaty which were thus substituted to the arrangements. Moreover, anti-dumping duties were imposed on 'small' steel exporters which tried to get in the European markets (Table 31 shows that EC tariffs on steel products are small, but that the level of protection amounted to 35 %, once anti-dumping duties were included). Since 1991, the central European steelmakers have also shifted from 'agreements' to the special rules governing steel included in the association agreements with the EC. Tariffs on steel imported in the EC from central European countries have been abolished. But safeguard measures included in the association agreements have been used to impose tariff quotas on major exporters (with tariffs up to 30 % on Czech and Slovak steel exports) and anti-dumping cases have been initiated.

Interestingly, the time pattern of the enforcement of EC State aid control was relatively similar to the time pattern of the US or EC CVDs (and anti-dumping measures in the US case) in steel, with peaks occurring during the first half of the 1980s.

What has been the impact of trade barriers on the steel world trade? Table 37 provides information limited to EC imports. In order to get meaningful comparisons, it gives two measures of total EC steel imports: one based on the EC defined by the EC historical borders for the year of observation (hence EU-9, EU-10 and EU-12), and another measure constant for the whole period and based on the EEA borders (a good proxy for the current EU-15, Norway being the only significant steel producer included in this definition). The second measure allows to take into account the progressive substitution of ECSC pricing rules for the 'arrangements' between the EC and the EFTA countries which were enforced before 1986.

Table 37 provides three major results in terms of trade flows. First, EC imports from the two major world steel producers (Japan and the United States) have been kept at a minimal level since 1979 until nowadays. In particular, EC imports from Japan have steadily declined since 1975. Second, since 1989, imports from central Europe have increased. But, as imports from the former Yugoslavia have strongly declined because of the secession wars, the net impact of these two changes is small. Lastly, imports from the former Soviet Union (FSU) and imports from the America continent (excluding the US) have increased. However, if growth rates of these imports are high, the current import level is still limited: in 1992, these two sources of imports combined hardly reach the level that steel imports from central Europe reached in 1979.

Table 37 also relates trade flows to the EC apparent consumption. It shows that the import market share in EC apparent consumption ranges steadily between 8 and 12 % (based on the historical definition of the EC), and between 3 and 7 % (based on the EEA definition). This result confirms that the last 20 years have seen a freeze of the global situation existing in the mid-1970s, accompanied by a substitution of certain exporters (FSU and Latin America) for previous exporters (Japan or the former Yugoslavia).

In sum, during the 20 last years, the EC steel market is almost totally isolated from Japan (the most efficient steel producer during the period) and the United States (the largest net importer during the period). It was only under marginal pressures of imports from Latin America and the FSU. Similar observations can be made for Japan and the United States: as shown by Wolff (1995), the Japanese and US markets have been isolated to the same extent from EC exports (and from bilateral trade). A plausible explanation of such an evolution is that private efforts to isolate markets have followed the partial and ambiguous dismantlements of the official trade barriers, such as VERs or anti-dumping duties. Indeed, Wolff provides factual evidence that there is a series of market sharing agreements between the major world steelmakers, splitting the world market in three sub-markets, the United States, the 'west of Burma' market dominated by the EC producers, and the 'east of Burma' market dominated by the Japanese steel producers, but there may be other reasons.

EC steel prices and the role of subsidies

The next question is to look at the impact of these permanent trade barriers on domestic prices. For the years of 'peak' world demand, Crandall (1994) provides estimates of world, US and EC steel prices for the two most important steel products: hot-rolled steel and cold-rolled steel (including coils in the EC case). These estimates are presented in Table 38 and they give three interesting results.

First, US and EC prices have become very similar during the peak years. In 1969, EC prices were 20 % lower than US prices, but they were almost identical in 1974, slightly higher in 1979 (5 %) and again almost the same in 1989 (at least for hot-rolled steel). Second, the huge initial price advantage of the Japanese steelmakers (initially able to afford world peak demand with prices still lower than the US or EC prices) has faded over time, as underlined by the last demand peak which is accompanied by a large increase of Japanese prices caused by a sharp fall in Japanese exports. This noticeable change may mirror the fact that the Japanese market is the only one to show a profound change in terms of import penetration: imports as a percentage of Japanese apparent consumption rose from 0.2 % in 1975 to more than 8 % in the late 1980s (to compare to the stability of the EC penetration ratio mentioned above).

The third and most interesting result provided by Table 38 is based on the averages (for each of the two periods, 1969–79 and 1979–89) of the price differences between the Japanese export prices and the US or the EC prices. Though they look substantial, these price differences are small or even in the wrong direction: once transport costs (estimated by Crandall as roughly equal to USD 60 per ton) are included, they suggest that trade barriers have not materially raised prices in the United States and in the EC. Such a conclusion requires an explanation.

In the US case, Crandall argued that excess capacity has been sufficiently large during the 1980s, and competition sufficiently intense, to prevent steel prices rising behind trade barriers. In addition, the US steel industry has witnessed the emergence of new and efficient steel production capacities — in the form of electric arc furnaces (EAF, or minimills) based on scrap. According to Moore (1995), EAF production has expanded its share of the US total crude steel from almost 20 % in 1974 to almost 40 % in 1994.

For the EC, this explanation seems much less powerful. According to Moore, the EAF market share of the EU-9 total crude steel production was 15 % in 1974 and 30 % in 1994. Moreover, as is well known, the EAF technology was concentrated in Italy: if Italian minimills are excluded, EAF production represented only 10 % in 1974 and 20 % in 1994 of EU-9 total crude steel production. According to Moore, the EC steel policy of the 1980s, based on a tight system of quotas (the Davignon Plan), is likely to have seriously delayed the introduction of this new and flexible technology.

There is thus a need for an alternative explanation. State aid in steel is a good candidate. According to available data (Les Echos, 22 November 1984), the total amount of State aid granted to the EC steel industry during the period 1980–85 was almost ECU 33 billion, or USD 42 billion ([1]). A simple calculation can provide two benchmarks. First, assuming that this State aid has been spent only on the production of the six years 1980–85 leads to the high benchmark of an EC average State aid of USD 58 per tonne of effective production of crude steel. Alternatively, assuming that this State aid has been spent on the production of the whole 1980s suggests the low benchmark of an EC average State aid of USD 33 per tonne. These two estimates of USD 58 and USD 33 per tonne are likely to underestimate the impact of State aid because they are based on the total crude steel production and they ignore subsidies granted since 1985.

Adding these estimates to the price differences calculated for the period 1979–89 suggests that EC prices were higher than Japanese export prices within a range of USD 48 to USD 55 per tonne. These figures are close to the USD 60 per tonne of transport costs which would make Japanese steel interesting to import in the EC. This result suggests that the major impact of the steel subsidies granted during the 1980s may have been the alignment of EC steel prices to the 'world' prices (including transport costs).

([1]) This figure seems compatible with the estimate of an annual flow of ECU 4.8 billion for the period 1981-86 (*European Economy*, 1991, p. 39).

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Annex 3

A worked example — Australian iron and steel industry

Calculation	Value (million AUD)	Data source
• Value of output	5 174.0	Sales and transfers out (adjusted for selling and distribution expenses) for the 3-digit ASIC (Australian Standard Industrial Classification) 'basic iron and steel' industry from the manufacturing census conducted by the Australian Bureau of Statistics (ABS).
• Production subsidies	19.3	Subsidies paid to producers of goods comprising the 3-digit 'basic iron and steel' industry. Data taken from government budget papers.
• Export incentives	1.6	Export incentives paid for market development and promotion to producers of 'basic iron and steel'. Data from government budget papers and the Board responsible for administering the schemes.
• Special labour adjustment	2.0	Payments made under special government plan for restructuring the industry.
(1) Assisted value of output (AP)	5 194.9	Value of output plus the value of subsidies and export incentives.
(2) Less inputs (AM)	3 364.7	Materials and fuels used by 3-digit ASIC industry 'basic iron and steel' from the manufacturing census conducted by the ABS.
(3) Assisted value added (AVA)	1 832.2	AP – AM = AVA
Output assistance		
• Tariffs	406.2	The subsidy equivalent of tariffs derived from general tariff rates applying to competing imports of 'basic iron and steel'. Requires the construction of a concordance between 'basic iron and steel' product groups (used by the ABS to collect manufacturing census data) and the customs tariff. The GSE for each product is derived by subtracting from each group's value of output its 'unassisted value'. The unassisted value is estimated by deflating each group's assisted value of output by its average nominal tariff rate. The GSE for the 'basic iron and steel' industry is the sum of each product group's GSE.
• Production subsidies	19.3	(from above)
• Export incentives	1.6	(from above)
(4) Gross subsidy equivalent (GSE)	427.1	Subsidy equivalent of tariffs + production subsidies + export incentives
(5) Unassisted value of output (UP)	4 767.8	AP – GSE = UP

Nominal rate of assistance on output (NRA) **NRA = 100*(4) / (5) = 9.0 %**		
Intermediate input assistance		
• Tariffs on materials	208.3	The TEM of tariffs derived from general tariff rates (adjusted for concessional tariff entry of imported inputs) applying to competing imports of material and fuel inputs used in the 'basic iron and steel' industry. Requires the construction of a concordance between 'basic iron and steel' material group (used by the ABS to collect manufacturing census data) and the customs tariff. The TEM for each material group is derived by subtracting from each group's assisted value of materials and fuels used its 'unassisted' value (estimated by deflating each group's assisted value by its average nominal tariff rate). The TEM for the 'basic iron and steel' industry is the sum of each material group's TEM.
(6) Tax equivalent on intermediate inputs (TEM)	208.3	
(7) Unassisted value of intermediate inputs (UM)	3156.4	(2) – (6) = UM
Nominal rate of assistance on intermediate inputs (NRM) **NRM = 100*(6) / (7) = 6.6 %**		
Value added assistance		Data from government budget papers.
• Special labour adjustment	2.0	
(8) Subsidy to value added (SVA)	2.0	(5) – (7) UP – UM = UVA
(9) Unassisted value added (UVA)	1611.4	
(10) Net subsidy equivalent (NSE)	218.8	(3) – (9) or (4) – (6) + (8) AVA – UVA or GSE – TEM + SVA
Effective rate of assistance (ERA) **ERA = 100*(9) / (8) = 14 %**		

Source: OECD, 'The measurement of ERAs in Australia', March 1992, mimeo.

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