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► **To cite this version:**

Catherine Mathieu, Henri Sterdyniak. Should we still use the concept of potential growth?. 2015.
hal-03459550

HAL Id: hal-03459550

<https://sciencespo.hal.science/hal-03459550>

Preprint submitted on 1 Dec 2021

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Working paper

2015-30

SHOULD WE STILL USE THE CONCEPT OF POTENTIAL GROWTH?

Catherine MATHIEU
OFCE-SCIENCES PO

Henri STERDYNIAK
OFCE-SCIENCES PO

December 2015

ofce

Should we still use the concept of potential growth?¹

Catherine Mathieu and Henri Sterdyniak (OFCE)

Abstract:

The concepts of potential output level and growth survived the 2008 crisis and are still widely used in economic policy debates. The paper discusses the theoretical foundations and empirical assessments of these concepts. Potential output may refer to different concepts, depending on the constraints taken into account. Potential output cannot be assessed without a complex macroeconomic analysis. The paper discusses recent empirical work on potential growth estimates, especially how they introduce a break in potential growth after the 2008 crisis, and how the methods used often justify pro-cyclical policies. For the future, the problem is not a slowdown in potential growth but the inability of developed economies, under globalisation constraints, to reach a full-employment growth.

Keywords: potential growth, euro area governance.

Classification JEL: E63, 047

¹ Earlier versions of the paper were given at an internal seminar at OFCE, 16 March 2015, at the 12th EUROFRAME Conference: 'Challenges for Europe 2050', Vienna, 12 June 2015, and at the AIECE meeting, Brussels, 5 November 2015.

1. Introduction

The concepts of potential output level and growth survived the crisis. They have been set in stone in the European Fiscal Compact (i.e. the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union), which refers to structural public balances and structural efforts, as evaluated by the European Commission. These estimates are derived almost directly from potential output estimates, in order to assess and to sanction national fiscal policies, in a rather strange combination of theoretical concept, empirical assessment, and technocratic validation of economic policy strategies. Thus, potential growth estimates for France (1 or 1.6 %?) enable to validate (or not) the 2015 French budget. Thus, euro area member states (MS) are obliged to cut their structural deficit by at least 0.5 percent of GDP per year and to bring their structural deficits to balance in the medium-term (or at least to bring their structural deficit below 0.5% of GDP), the structural deficit being based on the European Commission evaluation.

The potential growth concept is also very present in current economic policy debates: did the 2008 crisis lower potential output so much in the euro MS that austerity policies are necessary? Is the euro area condemned to low growth in the years to come due to low potential growth, and hence should the priority be to strengthen potential growth rather than supporting effective growth? Is potential output really an effective binding constraint on the economy today?

One may first recall that the European Commission, the OECD and the IMF are unable to assess potential output levels in real time, as can be seen from their successive releases: for example, the Commission revised its estimate of the French output gap for 2007, from -0.2% in 2008 to + 3.1% in 2014; of the Spanish output gap from -0.4 to +3.0%. The method used does not explain the output loss due to the crisis (except in a tautological way), and does not allow to say whether the loss is permanent or may be reversed. There is no clear definition and measure of potential output, if one considers that the working age population, its participation rate, skills, capital stock and labour productivity are not independent of the effective growth path. The cases of Spain and Greece show that there is no potential output path independently of the observed output path, of macroeconomic policy, of EU and EMU membership, of the financial crisis. There are statistical methods that allow to exhibit so-called potential growth trajectories but there is no explanatory model which would justify a break in potential growth in 2008-09, unless one recognizes that this break comes from a break in growth itself which on the one hand raises the issue of its reversibility, and on the other hand, does not explain the inability of economic policy to maintain output close its pre-crisis so-called potential level. There are several definitions of potential output, depending on the constraints and time lags taken into account. Thus, potential output cannot be assessed without a comprehensive and complex macroeconomic analysis. *A priori*, no endogenous and automatic forces can bring output back to a potential level defined in an a-historical way.

Section 2 discusses from a theoretical viewpoint the concepts of potential growth and output as well as their use for short, medium or long-term economic policy. We analyse the constraints that the notion of potential output should aim to assess and measure (demand or supply constraints, permanent or temporary). Section 3 presents and discusses empirical works evaluating potential growth. We examine how these works deal with the 2008 crisis, and how they explain the slowdown in potential growth on this occasion. We show the limits and dangers of the methods used, which often lead to justify pro-cyclical policies. Section 4 deals with the debate on future potential growth. We argue that the problem is not so much the risk of lower potential growth, than the inability of MS to implement an economic strategy allowing to reach a full-employment growth, accounting for constraints in terms of profitability and competitiveness that the current European strategy does not allow to overcome.

2. What theoretical basis for potential growth? ²

By definition, potential output is the maximum level of output that may be reached at a given point of time and maintained in the long term, without excessive tensions in the economy, in particular with no acceleration of inflation. The potential growth rate is the rate of growth of potential output. The output gap is the difference between actual output and potential output.

When the output gap is strongly negative at the beginning of the period, growth may be significantly higher than potential growth for a long time period, and this leads the potential growth notion to be ambiguous, incorporating or not a possible catching up of the economy. It is not obvious to say which imbalances which should be taken into consideration: should the external deficit be taken into account?

The potential output definition refers to a *reachable* output level. It therefore requires considering a hypothetical economic policy which would bring output back to its potential level, but in so doing potential output would be modified; this is a first ambiguity of the concept.

These concepts have two theoretical backgrounds. For the Keynesians, potential growth refers to a growth path close to full-employment. Potential growth is constant, and the output gap can be large, signalling that a vigorous economic policy may be required. For neo-classical economists, potential growth is a trajectory compatible with supply constraints, accounting for the equilibrium unemployment rate (which may be high) and the effective capital stock. The output gap is usually low.

Potential growth may refer to a hypothetical growth allowing the economy to be close to full employment. It may also refer, from a normative point of view, to the objective of macro-

² We develop here analyses initially presented in Hervé Le Bihan, Henri Sterdyniak and Philippine Cour (1997): « La notion de croissance potentielle a-t-elle un sens ? », *Economie internationale*.

economic stabilisation policy. Potential growth may also refer to a regular trend, around which effective output fluctuates and which serves as a basis for assessing the fiscal impulse and public finances sustainability. It may not be necessarily relevant to use a single concept of potential growth for all three approaches. For instance, a country with deteriorated competitiveness may be obliged to accept high unemployment for a while, and therefore output below its potential level according to the first definition. But the fiscal effort assessment should however be done using the third definition.

Potential output is not an observable variable. Its assessment is based on a large number of statistical assumptions and theoretical definitions. Potential growth is a subjective and questionable concept: maximum growth without (judged) excessive imbalances, resulting from supply constraints as opposed to a demand-driven effective growth. This concept makes sense in a specific theoretical framework: the Keynesian model with an amended Phillips curve. But the concept makes hardly any sense in real business cycle models where output is always at the optimum level and where inflation is determined by monetary policy expectations.

Besides, what imbalances may be acceptable? Should one only consider only production factors availability and inflation developments? The potential growth notion becomes unclear if the economy suffers from a capital constraint, strong inflation (at least, above the monetary authorities' objective), deteriorated competitiveness, excessive government deficits (at least, here also, as compared to the announced target), from inadequate income distribution. Potential growth can then be set only within a certain economic model, accounting for given imbalances, and a given economic policy strategy.

Potential output may be estimated *ex-post*, for a past time period, but should it then be dependent on what happened after this time period? This is the case if the method used requires that on average output equals potential output. The question is: is the return to the reference path automatic (but through which mechanism?), or the result of economic policy or is it an artefact (potential output is calculated *ex post* as an average of actual output)?

Potential output may be projected for the future, but how to take into account economic policy choices? Is there a single potential growth or does it result from social choices, for instance in terms of working time, female participation in the labour market, or retirement age?

At time t , where Y_t is effective output, the potential output level, $Y_t^* = f(t, X_t, Z_t, Y_{t-i})$ will be evaluated such that: $\pi_t = \pi_{t-1} + \beta(Y_t - Y_{t-1}^*) + \varepsilon_t$. X represents exogenous variables (like working age population, but the latter depends on immigration, hence on production); Z represents institutional or structural economic policy parameters which may possibly change (such as the retirement age). This raises several issues:

- One cannot estimate potential output without estimating its determinants. It is necessary to examine to what extent the latter are exogenous, to what extent they are affected by cyclical developments, to what extent they may or may not be changed by structural or cyclical economic policy measures. Let us consider a country where the older workers' employment rate is particularly low. It is not relevant to make huge efforts to increase this rate in a situation of mass unemployment. But if the country comes close to full employment, it may decide to introduce measures to increase this rate. How should this be taken into account in the potential output estimate?
- There is no evidence that β in the equation is stable. On the contrary, the kinked supply curve theory tells us that β is strong when the output gap is positive or close to zero, but becomes nil when the output gap is large. In such conditions, the naive econometrician will find that the output gap does not vary and therefore that potential production follows actual production.
- When the output gap is strongly negative, it is difficult to assess potential output; In addition, it makes little sense insofar as the alleged potential output will increase in line with economic recovery;
- One needs to explain why economic policy is unable to maintain output at its potential level: either the gap between potential and actual levels is a white noise, or there are obstacles to a full-employment economic policy and, in this case, one must choose to account or not for these obstacles when estimating potential output. Let us consider, for example, the case of a country where at $t=0$, inflation is high, competitiveness is deteriorated, the profit share in value added is low. The country will have to accept slower growth for a relatively long time period in order to reduce its inflation and its wages level. Should this period be reflected in its potential growth?
- If potential growth determinants depend on actual growth, potential growth may be evaluated by: $Y_t^* = f(t, X_t, Z_t, Y_{t-i})$ or by $Y_t^* = f(t, X_t, Z_t, Y_{t-i}^*)$. In the first case, potential output depends on actual output. In the second case, its trajectory may deviate from the current one for a long time.

The link between potential growth and actual growth raises many issues. Basically, potential growth is exogenous and relatively regular: it is the sum of exogenous technical progress, trend growth of activity rates and working age population. In fact, in most empirical studies, potential growth fluctuates strongly in correlation with observed growth fluctuations. Either one admits that growth is effectively hit by exogenous productivity shocks, such that actual growth is potential growth. Either it is an artefact: the so-called potential growth fluctuations are the reversible outcome of actual growth fluctuations. Stronger demand induces stronger growth which induces larger capital accumulation, increases activity rates, attracts migrant workers, raises apparent labour productivity. An imperfect filtering of these effects induces potential growth estimates to fluctuate. The issue is especially acute after a

strong shock, such as the output fall in the years 2008-09. How to disentangle a permanent and irreversible effect from a temporary one? The diagnosis of a permanent effect may be self-fulfilling since it leads to assert that one should accept the output loss and therefore implement restrictive economic policy in a depression period.

The standard method for estimating potential growth is the production function method. The maximum level of output which may be produced is determined by using the available production factors, i.e.: (1) $Y^* = A * K^{1-\alpha} (U * T_N H_N L_D)^\alpha$

K is the effective capital stock. A fall in demand, leading to a fall in investment and a fall in the effective capital stock will lead unfortunately to a fall in measured potential output. This is arguable as productive investment will recover when demand increases. The cases where investment is constrained (for example by financial constraints) should be distinguished from the cases where investment can follow demand. The 2008 crisis has caused in some cases a specific obsolescence of capital (for example in the construction sector in Spain or in the financial sector in the UK), but this is difficult to take into account. The effect of the crisis on the cost of capital is problematic: interest rates decreased significantly, but this was probably not true for interest rates adjusted for risk, growth and inflation; the required rate of profit declined, but it was formerly obtained via fictitious financial gains.

L_D is the working-age population; in many EU countries (Spain, Ireland, the UK), there were large immigration flows before the crisis, which were reversed when the crisis started. The concept of available labour force becomes vague.

H_N is the trend in working time. It depends partly on economic policy decisions.

T_N is the participation rate trend; it is sensitive to the labour market situation. In a long-term perspective, the participation rate depends both on effective growth and social choices (such as the retirement age or female employment). How can this be taken into account? Will the future European economy choose to allow non-activity for dependant people, women with children, older workers) or will it be a full-activity society seeking to offset working-age population decelerating growth by immigration, retirement age postponement, shorter holidays, longer working time, etc.?

U^* represents the equilibrium (or structural) unemployment rate, which is of course difficult to estimate. Usually, an equation of the type: (2) $\Delta r_{ulc}_t = -\beta(U_t - U^*_t)$ is estimated. The unemployment rate is above the equilibrium rate if real wages grow faster than labour productivity. But this is a descriptive method, which does not explain structural unemployment rate evolutions. But labour productivity strongly decelerates in times of crisis. When the unemployment rate is high, its fluctuations have little impact on real wage developments, and so according to this method an increase in the unemployment rate is an increase in structural unemployment. According to the hysteresis theory, the long-term

unemployed become progressively unemployable, so this effect would have theoretical justifications. The fact is that there is hardly any link between the theoretical justification and the estimation method. Conversely, however, the persistence of unemployment leads to a decrease in the reservation wage of unemployed workers, which should be favourable to employment. The irreversibility of this effect is problematic insofar as the so-called equilibrium unemployment decreases in job recoveries. Employability may be a problem for some workers, and this may increase after a depression period, but it is difficult to believe that these problems may be revealed by a single wage equation.

A* stands for the total factor productivity (TFP) trend adjusted for the capacity utilisation rate. But the capacity utilisation is highly correlated with TFP variations which makes it uneasy to assess the trend. On the one hand A* decreases sharply in times of economic recession because firms are reluctant to lay-off workers; the extent to which the fall in A* is permanent is difficult to assess; on the other hand, one may consider that A* depends on the growth rate (the Kaldor-Verdoorn effect). Besides, in the medium term the TFP trend depends on companies' R&D efforts, and in the long-term of countries' efforts in education, so that its exogenous nature is problematic.

The alternative method consists in recognising implicitly that the capital stock is endogenous and to focus on the labour market:

$$Y^* = PT^* (U^* T_N H_N L_D)$$

Assessing PT* raises the same issues as for A*, in the short like in the long term. In times of high unemployment, governments encourage firms to maintain jobs, in particular by specific cuts in employers' social contributions, and so the apparent labour productivity growth trend is hindered. A company with strong output growth can more easily introduce innovations reducing the need for labour than a firm with stagnating demand, where these innovations would lead net employment to fall and consequently to layoffs.

None of these two methods incorporates the effective constraints which limit output in a given period, such as: on the supply side, the external constraint, competitiveness, firms' profitability or on the demand side, public balance or public debt or inadequacies in income distribution. These constraints could lead to specific definitions of potential output, which would then depend on the most significant constraint.

After the 2008-09 crisis and the great depression, the potential growth approach raises three issues:

- A choice needs to be made between two diagnoses: 1) pre-crisis growth was satisfactory, near full employment and without inflation in developed countries, 2) economies were overheating; growth was unbalanced. The output gap was strongly positive in 2007, but nobody noticed.
- A choice needs to be made between two analyses: 1) There was a new downward break in TFP in 2009 coinciding by chance with the financial crisis (but this is difficult to prove as

long as the economy is far from normal rates of capacity utilisation and labour). 2) This break is due first to labour hoarding, and later to weak growth itself.

- A choice needs to be made between two analyses: 1) potential output fell in the crisis because production capacities and skills became obsolete, because the rise in unemployment led to human capital permanent losses, because lower investment and innovation effort led to capital permanent losses. 2) The fall in demand led a fall in production and therefore production capacity and employment, but these falls can be reversed if demand recovers.

The financial crisis led to permanent weaker demand; it is no longer possible for the growth regime to be driven by rising debt and financial and real estate bubbles; the fall in equity prices impoverished households and weakened the firms' balance sheets; many households and businesses want to reduce their debts. Public finances deterioration paves the way for a prolonged period of fiscal austerity. The persistent weakness of demand necessarily translates into a persistent weakness of production, so of supply. Some see in this weakness a fall in potential output and growth. This seems to us a conceptual error.

3. What estimates for potential output?

3.1. Potential growth and the European Commission

While the first version of the Stability Pact was essentially based on the 3% of GDP limit for the nominal public deficit, the reforms introduced since then increased the role of the structural deficit notion (and thus of potential output). Thus, Member States should now reach a medium-term target of 0.5% for their structural public deficit; as long as this objective is not achieved, they should improve their structural balance by at least 0.5% of GDP per year. However, the 3% limit remains for nominal deficits; breaching this arbitrary limit initiates the Excessive Deficit Procedure.

These rules have no economic basis, as was already written many times (see, for instance, Mathieu and Sterdyniak, 2006). These rules are much more rigid than the *golden rule of public finances* (which allows a structural deficit, corrected for public debt depreciation induced by inflation, equal to net public investment), and more rigid than the debt stability constraint. They prevent any discretionary stabilisation fiscal policy, although it is necessary for full stabilisation (see box 1, and Mathieu and Sterdyniak, 2013).

Box 1: About fiscal rules

In order to obtain a satisfactory demand level, the government must accept a public deficit. Let us note y , production, d , private demand, g , public demand, r is the interest rate and h the public debt/GDP ratio. All variables are measured in difference with a reference path where production is at its potential level.

If $y = g + d + cy - \sigma r + kh$, then the stabilisation fiscal policy is, in the short-run: $g = -d + \sigma r$

If this policy is implemented, then stabilisation is perfect, there is no link *ex post* between the deficit and the output gap. Let us note also that, g , government borrowing, is considered as structural according to the OECD or the EC methods, which makes no sense.

In the long run, $g=0$ and $h = -(d - \sigma r) / k$

The long-term public debt level is not arbitrary, but depends on private agents' wishes: debt must equal desired debt at the optimal interest rate, i.e. the rate equal to the growth rate.

This simple model shows that a fiscal rule like: $g = g_0 - \lambda y - \mu(h - \bar{h})$ cannot be proposed, since it would not allow for full stabilisation and since the government cannot set a debt target regardless of private agents' saving behaviour. The public debt level desired by private agents has probably increased during the crisis as households wish to hold less risky financial assets and businesses want to be less leveraged. Structurally, the ageing of populations implies that there is a rising demand for safe public assets.

They have no economic rationale; they can only be understood for political reasons; their objective is to deprive Member States of fiscal policy autonomy; to impose an automatic fiscal regime, to concentrate macro-economic policies at the EC level. But the EC is unable to implement the differentiated and reactive fiscal policies that would be necessary according to each country's economic situation. According to the 'austerity/structural reforms' prevailing ideology at the EC, MS should reduce public spending and seek growth through goods and services markets deregulation and downsizing of labour laws; therefore, the EC does not have the objective of implementing effective fiscal policies. The January 2015 Communication recognises that the requested cut in the structural deficit should depend on the MS economic situation. But the EC persists in refusing the implementation of any discretionary fiscal policies; the fiscal impulse should always be negative; in some extreme cases it could be zero, but never positive. The EC refuses the simple principle according to which: "each country should and must run the fiscal policy required to maintain its production at the potential level or to bring it back to it".

The devil is in the details: the crucial issue is the way of evaluating potential production. The Commission uses the production function method which leads to a fragile evaluation, which may be revised and is always close to the current production level. Let us look at the French case (table 1). In spring 2008, the output gap for 2007 was estimated to be slightly negative (-0.2 %). After the 2001-02 Internet crises, France experienced a weak growth period (1.6% average annual growth from 2000 to 2005). The French economy had recovered a satisfactory growth in 2006-07; the unemployment rate had fallen down to 8% in 2007. After

the 2008-09 crisis, the Commission entirely revises his assessment: the output gap is now estimated to have been strongly positive in 2007 (+3.1%); the French economy would have been overheating from 1999 to 2008; the output fall in 2009 is almost entirely a return to normal. The output gap is estimated at -2.2% for 2009. This is very awkward: over the 1999-2007 period, inflation remained close to 2%; the wage share in value added remained stable (55.8% in 1999; 55.3% in 2007). There was no sign of overheating. Nevertheless, the revision done by the Commission reduces by 3.3% the potential output level in 2007 and increases by 1.7 percentage point the structural public deficit (-2.4% in the 2008 estimate; -4.1% now).

Table 1. French potential growth and output gap according to the EC

	GDP*	Spring 2008		Spring 2010		Spring 2012		Autumn 2014	
		potGDP*	OG	potGDP*	OG	potGDP*	OG	potGDP*	OG
2000	3.9	2.4	2.2	2.1	1.9	2.0	2.9	2.1	2.5
2001	2.0	2.3	1.8	2.0	1.8	1.9	2.9	1.9	2.6
2002	1.1	2.1	0.7	1.8	1.0	1.7	2.0	1.7	2.0
2003	0.8	2.0	-0.2	1.8	0.3	1.8	1.1	1.7	1.1
2004	2.8	2.0	0.3	1.8	0.9	1.9	1.6	1.8	2.1
2005	1.6	2.0	0.0	1.9	1.0	1.9	1.7	1.8	1.8
2006	2.4	1.9	0.1	1.8	1.4	1.9	2.3	1.7	2.5
2007	2.4	2.1	-0.2	1.8	1.9	1.8	2.7	1.7	3.1
2008	0.2	1.9	-0.5	1.6	0.8	1.6	1.1	1.6	1.7
2009	-2.9			1.2	-2.7	1.2	-2.8	0.9	-2.2
2010	2.0			1.3	-2.7	1.2	-2.5	1.1	-1.3
2011	2.1				-2.3	1.3	-2.1	1.1	-0.4
2012	0.3					1.2	-2.8	1.0	-1.0
2013	0.3					1.2	-2.7	1.0	-1.7
2014	0.3							0.9	-2.3

*Growth rates, %

Source: DG ECFIN, General government data.

According to the Commission's current estimates, French potential growth was already relatively low before the crisis: 1.7% in 2006-2007 (against 2% for the estimates made before the crisis); it fell sharply in 2009 and was since then of 1% only. The situation is worse for other countries, such as Greece, Spain and Portugal. Evaluations made before 2008 did not warn these countries against an excessive production level. Today, the Commission considers that potential growth became negative in Italy, Spain, Portugal and even more Greece (table 2). These evaluations have dramatic consequences in terms of the structural budgetary efforts that the countries concerned are expected to make. A potential growth of -1% instead of +2% decreases by approximately 1.5 percent of GDP the estimated size of the structural effort. For a country where public spending represents around 50% of GDP, a structural effort of 0.5% of GDP is obtained with a 1% increase in public spending in volume by year, if annual potential growth is 2%; a 2% cut by year is required if potential growth is estimated to be -1%.

Table 2. Potential growth rates and output gaps according to the EC

	Output gap 2007 (2008 estimation)	Output gap 2007 (2014 estimation)	Potential growth 2007 (2008 estimation)	Potential growth 2007 (2014 estimation)	Potential growth 2013 (2014 estimation)	Output gap 2014 (2014 estimation)
Belgium	0.3	2.7	2.5	1.8	0.7	-1.1
Germany	0.7	1.9	1.4	1.3	1.3	-0.8
Ireland	0.2	4.7	5.2	3.1	0.9	-0.2
Greece	1.5	4.7	3.8	1.9	-3.1	-10.9
Spain	-0.4	3.0	3.7	3.7	-0.7	-6.0
France	-0.2	3.1	2.1	1.7	1.0	-2.3
Italy	-0.3	2.4	1.5	0.8	-0.4	-4.5
Netherlands	0.3	2.5	2.1	1.9	0.2	-3.0
Austria	0.9	2.0	2.2	1.9	0.9	-1.1
Portugal	-1.1	0.9	1.3	1.2	-1.0	-6.0
Slovenia	1.4	7.1	4.9	3.6	-0.2	-2.7
Finland	0.8	4.6	3.4	1.6	-0.1	-3.1
UK	0.4	2.1	2.7	1.9	1.0	-0.8

*Growth rates, %

Source: DG ECFIN, General government data.

The Commission's method, as it is applied today, is presented in *European Economy* (2014). The paper acknowledges the ambiguity of the concept: should capital stock be considered as fixed, knowing that it would increase in line with production? How to account for capital stock medium-term developments, which may follow production, but may also hit profitability or financial constraints? The paper recognizes that the EC method has institutional goals, and therefore should be simple, possibly at the detriment of pertinence. The paper considers potential growth should be equal on average to actual production, but this is questionable for an area which has experienced a prolonged depression and strong disinflation. Potential production is estimated according to the production function method (equation 1) with the already reported drawbacks. Immigration impacts past potential output, not the future one. The unemployment rate, estimated by equation (2), follows roughly the effective unemployment rate fluctuations, and is not explained by structural factors. For Spain, the structural unemployment rate would have declined from 17% in 1992 to 12% in 2005, before rising to 26% in 2015. In some countries, β is not significant.

At Year N, potential output must be extrapolated for years N+1, N+2. This is done using the Commission's projections figures, which necessarily fluctuate widely and are uncertain. Filtering methods to assess productivity growth trends are particularly fragile for the end of the period. Thus, potential production and structural balance estimates are particularly uncertain for the periods where the assessment given by the European Institutions on national fiscal policies is central³.

³ The use of structural public balances as evaluated by the European commission to analyze and guide the MS fiscal policy is also criticized by Hers and Suyker (2014).

For medium-term forecasts, the method becomes more pragmatic, ideological and political: the evolution of the structural unemployment rate accounts for structural indicators (such as the unemployment benefit replacement ratio, the weight of labour taxation, the unionization rate...), without any empirical evidence. The evolution of participation rates partly reflects changes in pensions' legislation. The EC paper gives no explanation for the revisions induced by the crisis and for the unrealistic results of the 2000-07 period.

As table 3 shows, the strong slowdown in potential growth, according to the Commission, is induced by the decline in capital accumulation (induced in fact by the output fall itself) and by labour contribution, which comes partly from the reversal of migration flows, partly because of an alleged increase in the NAWRU (8.8% in 2008, 10.2 % in 2015), despite all labour market reforms. The slowdown in TFP growth is a long-term phenomenon: it decreases from 1.5% in 1985-1992 to 0.9% in 1997-2002, and 0.65 per cent in 2003-2007 and would be 0.5% in 2015-18, despite all structural reforms.

Table 3. Potential growth and contributions according to the Commission

EA 18	Potential growth	TFP	Capital contribution	Labour contribution
2003-2007	1.8	0.65	0.8	0.35
2009-2014	0.6	0.4	0.3	-0.1
2015-2018	0.95	0.5	0.4	0.05
2019-2023	1.3	0.6	0.45	0.25

Source: European Economy (2014).

Four conclusions may be drawn from these considerations. The potential growth concept used by the Commission cannot take into account supply constraints faced by a MS. This is obvious from the estimates made for Greece, Spain, and Ireland before the crisis. If growth was unbalanced in these countries, these imbalances are not reflected in terms of deviation from potential growth.

The Commission has no explicit theories explaining why potential growth slowed down in 2008-09 and why it is so low now. It does not disentangle cyclical and structural developments. This is also true in the recent past. For instance, the UK potential growth estimate had fallen to an annual 0.9% in 2010, and has risen back to 2% in the following years. The potential output constraint drifts away as observed GDP comes close to it.

The potential growth notion and its use for economic policy are clearly undermined by these drawbacks. Either potential growth is independent from effective growth, and if so it is difficult to understand why the Commission lowered it so much after the crisis; or potential growth depends on effective growth: a recession causes investment to fall, and hence to lower production capacity; potential labour force decreases (since some workers are discouraged to find a job, particularly among older-people, young people, women with children; since migration flows are reversed); labour productivity growth decelerates due to labour hoarding. But should this lead to conclude that potential output is permanently lower

and that any strong increase in demand should be avoided in the future, or, in the contrary, that strong growth is needed to increase production capacity, to bring discouraged workers back to the labour market and to avoid a deterioration in their working skills?

The EC-DG ECFIN estimates cannot be used to set targets or limit public deficits, because they are volatile and unreliable. A more robust method resulting in a more stable potential growth would be necessary. It would either lead to the conclusion that fiscal policies should have been significantly more expansionary in the euro area or it would have to specify the reasons why expansionary fiscal policies would be irrelevant (such as current account imbalances).

It makes no sense to request a country to implement a restrictive fiscal policy in order to meet an arbitrary public finance target if this country has high unemployment and low and decelerating inflation. The output gap could serve as a guide for economic policy with a rule such as: “a country is allowed to run an expansionary policy if its output gap is negative”. But this is not what is written in the Fiscal Compact. The issue of the relevance of output gap estimates remains.

3.2. Potential growth and international institutions

The OECD and the IMF use similar methods as those of the Commission, with similar results (table 4). Spanish and Greek imbalances are not detected before the crisis; after the crisis, pre-crisis output gaps are strongly revised upwards; potential growth becomes nil or even negative in Spain and in Greece.

Table 4. Output gaps and potential growth, according to the EC, OECD, and IMF

In %

	OG 2007 (2008 estimate)	OG 2007 (2014 estimate)	Potential growth, 2007 (2008 estimate)	Potential growth, 2007 (2014 estimate)	Potential growth, 2013 (2014 estimate)	OG 2014 (2014 estimate)
Greece						
EC	1.5	4.7	3.8	1.9	-3.1	-10.9
OECD	0.7	9.5	3.8	0.7	-1.4	-12.7
IMF	-	10.0	-	0.5	-1.8	-9.4
Spain						
EC	-0.4	3.0	3.7	3.7	-0.7	-6.0
OECD	0.3	4.6	3.4	2.6	0.4	-6.1
IMF	0.3	2.7	3.5	2.8	-0.2	-5.0
France						
CE	-0.2	3.1	2.1	1.7	1.0	-2.3
OECD	0.3	3.0	1.9	1.5	1.3	-2.2
IMF	-0.5	2.1	2.1	1.6	1.2	-2.8

Source: *European Economy* (2008, 2014), *OECD Economic outlook* (2008, 2014), *IMF World Economic outlook* (2008, 2014).

Using the OECD method and data, Furceri and Mourougane (2012) find that a financial crisis has a permanent impact on potential production of 1.5 to 2.4% (3.8% for a strong crisis). But a substantial part of the effect comes from the decrease in the capital stock, so that one can hardly disentangle the supply effect and the demand effect.

In April 2015, an IMF study (IMF, 2015) distinguishes the notion of potential output from the notion of sustainable output (which would take into account all imbalances), but the latter is not estimated. Potential output is measured by a two-equation model, which has the weakness to be based on the Phillips curve linearity:

$$\pi = a + \pi^e - c(U - U^*) + e_\pi$$

$$U - U^* = \tau(Y - Y^*) + e_y$$

In developed countries, TFP growth would have decelerated before the 2008 crisis due to the waning of ICT effects and to the growth of low productivity sectors (personal services, construction, non-market services). The IMF considers that the crisis has been accompanied by a sharp slowdown in potential growth (especially in the euro area, from 1.5% by year to 0.7% in 2008-2014). On the whole, the crisis would have reduced potential output in the euro area by 7.75% in 2014. The study distinguishes permanent effects (the slowdown in potential labour force growth) from temporary effects (slowdowns of capital accumulation and TFP growth, increase in the rate of structural unemployment, decline in the participation rate, which should theoretically be reversible, but seem empirically to have lasting effects on levels as on growth rates). However, a large part of these effects reflects a strong pessimism about the pace of future growth. Low growth anticipations lead to a decrease in the rate of capital accumulation and of potential labour force. The IMF study concludes that potential growth should be increased by supporting productive investment, and investments in infrastructure, by increasing the use of ICT and by reforming the tax and social systems to encourage female and older workers' employment.

Ball (2014) considers that potential output revisions made by the OECD and the IMF between their assessments of December 2007 and May 2014 effectively reflect the impact of the crisis on potential output, without questioning the evaluation methods at all. Ball points that both institutions made similar revisions: -35% for Greece and Ireland (but was pre-crisis growth sustainable in these two countries?); -30% for Hungary; -22% for Spain and the Czech Republic; -19% for Finland; - 14% for the Portugal; -12% for Italy and the UK; - 9.5% for Japan; -8.5% for France; -5.5% for the US; - 3.5% for Germany. Ball offers the usual explanations (reduction of capital accumulation, innovations brakes), but questions neither the potential growth concept, nor the evaluation methods.

Ollivaud and Turner (2014) also try to estimate the impact of the financial crisis on OECD countries' potential output. They distinguish the impact on the capital per worker ratio, on labour productivity, on structural unemployment rate and on activity rates. According to them, a large part of the slowdown in growth since 2007 is due to the output gap (very

positive in 2007, very negative in 2014). The effect of the crisis on potential output would be +3.9% in Germany (due to higher rates of activity and decline in structural unemployment), + 1.1% in France (due to the increase in the rate of activity), -2.5% in the US, -8.0% in Spain (due to the increase in the structural unemployment rate), -8.6% in Britain (due to lower labour productivity) and up to -22.7% in Greece. In our view, the study is unconvincing because it does not allow to disentangle the effect of the crisis itself from the effect of other variables (restrictive fiscal policies, pensions or labour laws reforms, cyclical developments) or poorly explained phenomena (the sharp slowdown of productivity in the UK).

In a recent paper, the DG ECFIN (Commission, 2015 b) claims that its method performed better than HP filter, OECD and IMF methods. The fact is that all four methods have a poor performance. We can make three objections. Assessing the performance of a method by confronting its real time evaluation with the EC current one is more than problematic, as the EC current method is as (more ?) problematic than the real time one. We cannot accept the thesis according to which the break in growth in 2008-09 is structural, an evidence according to which the output gap was strongly positive in 2007 as the break comes from a financial crisis prolonged by a European-imposed fiscal austerity policy. The EC evaluations are self-fulfilling: an evaluation of slow potential growth obliges MS to implement austerity fiscal policy, which induces a slow growth, which the paper uses as an evidence that potential growth was effectively weak.

3.3. The introduction of financial variables

Borio *et al.* (2013, 2014) notice that, over the last three decades, price fluctuations poorly reflect output fluctuations in developed countries. But financial variables (credit growth rate, housing prices, real interest rate) play an important role in the dynamics of demand and supply: in times of financial booms, demand is risen, and this also holds for investment. This can be accompanied by exchange rate appreciation which reduces inflation. On the contrary, a stock market crash reduces demand, but also strengthens firms' financial constraints, which is detrimental to capital accumulation. This leads the authors to introduce financial variables in a model explaining the output gap. With ϕ financial variables, the model is written as:

$$\begin{aligned} \Delta y_t^* &= \Delta y_{t-1}^* + \varepsilon_t \\ (3) \quad y_t - y_t^* &= \beta(y_{t-1} - y_{t-1}^*) + \gamma\phi_t + \eta_t \end{aligned}$$

For 2000-2012 period, such a model has the advantage of inducing a positive output gap before the crisis and a negative one since then. But while the model allows to assess a potential growth series, it does not explain its determinants. It includes no variable representing tensions on supply. The model does not include factors driving the economic cycle other than financial variables. It is based on the arguable assumption according to which production equals potential output when financial variables are at their average value.

The model can be generalized by introducing other cyclical variables (φ_t) as such as the fiscal impulse, the real exchange rate, or oil price shocks:

$$y_t - y_t^* = \beta(y_{t-1} - y_{t-1}^*) + \gamma\phi_t + \delta\varphi_t + \eta_t$$

But this remains a descriptive (and not explanatory) model of potential growth. Above all, the model relies on a non-demonstrated postulate: demand equals potential production, in the absence of external, financial, and economic policy shocks.

3.4. Empirical studies on the impact of the crisis on potential growth

Haltmaier (2012) asks: "Do Recessions Affect Potential Growth?". In our view, the answer is yes, if potential output is measured according to international institutions' methods (where potential output is affected by the slowdown in investment and rising unemployment); the answer is no, by definition, if potential output is corrected for cyclical effects. However, the recession may not be cyclical; it may signal the end of a period of unbalanced growth: so the question is ambiguous. In fact, the empirical study concludes that recessions have a negative impact of 2% on average on potential output in developed countries; the impact depends on the depth of the recession, but not on its financial characteristics. The author concludes that the actual recession would cost 3 percent of potential GDP for developed countries, which is relatively small given the observed slowdown.

For Fernald (2014), the United States experienced a period of strong labour productivity gains from 1996 to 2005, due to the industries producing or using ICT. The period has ended, and consequently potential growth has slowed down in the United States, but the author acknowledges that it is still difficult to distinguish this effect from the fall in demand induced by the burst of the financial bubble.

3.5. Potential growth: two studies from INSEE

On a medium-term horizon, Cabannes, Montaut and Pionnier (2013) provide an evaluation of French potential growth from 2015 to 2025. Potential growth would stand between 1.2% and 1.9% by year, 1.5% in the central scenario, decomposed as: 0.5% for labour contribution, 0.5% for capital contribution and 0.5% of pure TFP. However, the paper does not say what the output gap level was in 2013. Similarly, it does not explain the link between actual and potential growth. Stronger demand entails faster capital accumulation, encourages some people to enter (or to remain) on the labour market, authorizes larger immigration flows, allows to possibly increase working time and to postpone the retirement age. The two key issues are not addressed: what are the actual barriers to growth? Do we want higher growth at any cost?

The paper by Lequien and Montant (2014) defines potential GDP as the "GDP level which would be obtained if production factors (labour and capital) were used to a maximal extent without any tensions on prices", thus introducing a questionable symmetry between labour

and capital. Four methods are confronted. The paper concludes that potential growth ranges between 0.7% and 1.3% in 2014 (compared with 2% before the crisis), the output gap in 2014 ranging between -2.3 and -3.5 points, 70% of the output loss due to the crisis would be permanent.

The first method uses the production function. The capital stock is exogenous. The structural unemployment rate is calculated according to the equation: $\pi = a + b\pi_{-1} - c(U - U^*) + e$. It rises from 8.6% in 2007 to 9.5% in 2013, i.e. is only one percentage point below the effective rate. The TFP falls from 1% before the crisis to 0 afterwards. This induces a sharp slowdown of potential growth from 2.1% to 0.6% per year. This method signals but does not explain the slowdown in potential growth.

Table 5. French potential growth and output gaps according to Lequien and Montant (2014)

Method	PG 2000-06	PG 2008-13	OG 2007	OG 2013
Production function	2.1	0.6	0.9	-2.3
Labour market	2.0	0.75	0.8	-3.2
Semi-Structural	2.0	0.95	1.5	-3.5
Direct	1.85	0.7	0.7	-2.9
EC	1.8	1.15	3.4	-2.7
OECD	1.8	1.2	3.6	-2.9
IMF	2.0	0.9	2.5	-2.4

The second method is based on labour market developments. It allows not to incorporate the capital accumulation slowdown in the evaluation of potential growth. Potential growth depends on labour productivity trend, estimated to grow by 1.1% by year in normal times. Unfortunately, a questionable method leads to labour productivity structural growth of -0.5% in 2009-10. Should the gap (of around 3%) and labour hoarding during the great depression, be deducted from potential growth (as done by the authors) or will it disappear? Potential labour force grows by 0.2% only per year because of the rise in the equilibrium unemployment rate. Finally, the potential growth rate would return to around 1.3% in 2014.

The semi-structural approach uses information on the capacity utilisation rate, on inflation, on the business climate, to evaluate the output gap, potential GDP being the sum of the output gap and of the actual GDP. This method is questionable: the capacity utilisation rate may return to normal levels after a prolonged period of recession, as firms do not have any reason to maintain excessive production capacity. This does not mean that production is at its potential level from the labour market perspective; unemployment fluctuations have no impact on inflation when unemployment is high and inflation already low. So, there is a risk that the method underestimates the output gap. Here also, the method is purely descriptive.

The so-called direct approach uses a large number of short-term indicators to build a synthetic indicator representing the economic cycle. The output gap evaluation method

consists in standardizing the synthetic indicator using the mean and the standard deviation of the output gap assessed under the first method, which has no justification: the method is not autonomous. Since 2008, the economic situation has deviated from usual cyclical fluctuations. This method leads to unstable potential growth estimates, since it adds effective growth to the output gap evaluated by the method (2.3% in 2002, 1.5% in 2003, and 2.6% in 2004, for example).

3.6. Potential growth: three studies from the Banque de France

The paper by Chetouane, Lemoine and de la Serve (2011) described a slowdown in French potential growth from 1.7% in 2007 to 0.7% in 2012, due to a decline in TFP growth (from 0.3% to 0.2%), the lowering of capital accumulation (from 0.9% to 0.6%) and even more to the decline in labour contribution (from 0.4% to -0.1%), due to an increase in the structural unemployment rate and a decline in the participation rate. But the method provides no explanatory factors. With regard to the labour market, the rise in the structural unemployment rate is due to the fact that the rise in unemployment has not induced a sufficient significant slowdown in inflation, but this could perhaps also be explained by non-linearity in the Phillips curve.

The paper by Chouard, Castro, Irac and Lemoine (2014) estimates an equation explaining TFP growth. Apart from trends and dummy variables, the only explanatory variables are the average age of capital and the capacity utilization rate. The paper concludes that the crisis induced permanent (although gradual) losses in the factors productivity level by 6.2% (3.3% being a direct effect, 2.9% the effect induced by the increase in the age of capital). The crisis has no effect on TFP growth (which remains at 1%). The increase in the age of capital is not obvious if firms, during low demand periods, use only the latest equipment. In this approach, potential production was hit by a negative shock in the crisis, which contradicts the usual method of long-term trends obtained by filtering.

Bank of France (2015) writes that potential output and potential growth are theoretical variables, which are complex to identify. "Growth may be unsustainable even without imbalances in the real economy, in the case of major imbalances in the financial sphere". The text calls for a "production function with crisis" method, incorporating a break of TFP in level. The text suggests the loss of employability of the long-term unemployed, the mismatch between jobs demand and supply, capital inadequacy, the decline in investment. For France, the Bank of France takes the view of a positive output gap from 1999 to 2007, followed by a potential growth of 1% by year, resulting in an output gap of -2.2% in 2013-2014.

3.7. Potential growth: three points of view from OFCE

Insofar as it is difficult to estimate an equilibrium unemployment rate, insofar as there is no reason why capital stock fluctuations should be incorporated in potential output estimates, some OFCE economists have kept an empirical practice which consists in estimating that the

equilibrium unemployment rate was achieved in 2006-07; then to prolong potential output according to labour force expected developments, trends in activity rates, and apparent labour productivity growth. The working age (15-65) population growth would decelerate from 0.8% per year in 2006 to 0.4 per cent in 2015, but the activity rate would increase by 0.2% per year due to women and older people; labour productivity would continue to grow by 1% per year. In such conditions, the output gap would have been in the order of -6% in 2010; -10% in 2014 (table 6, columns 2 and 3). This large gap is reflected in 2014, both in a high rate of unemployment, a fall in activity rates as compared to their trend, a decline in labour productivity growth (due to labour hoarding and to the Kaldor-Verdoorn effect), which could be reversed. According to this point of view, it is difficult to assess *potential output* (if this concept makes sense) in times of economic depression, insofar as a strong increase in demand would increase production factors levels, also because of non-linearity of wages and prices equations in times of large excess in supply.

Table 6. French potential growth estimates, in %

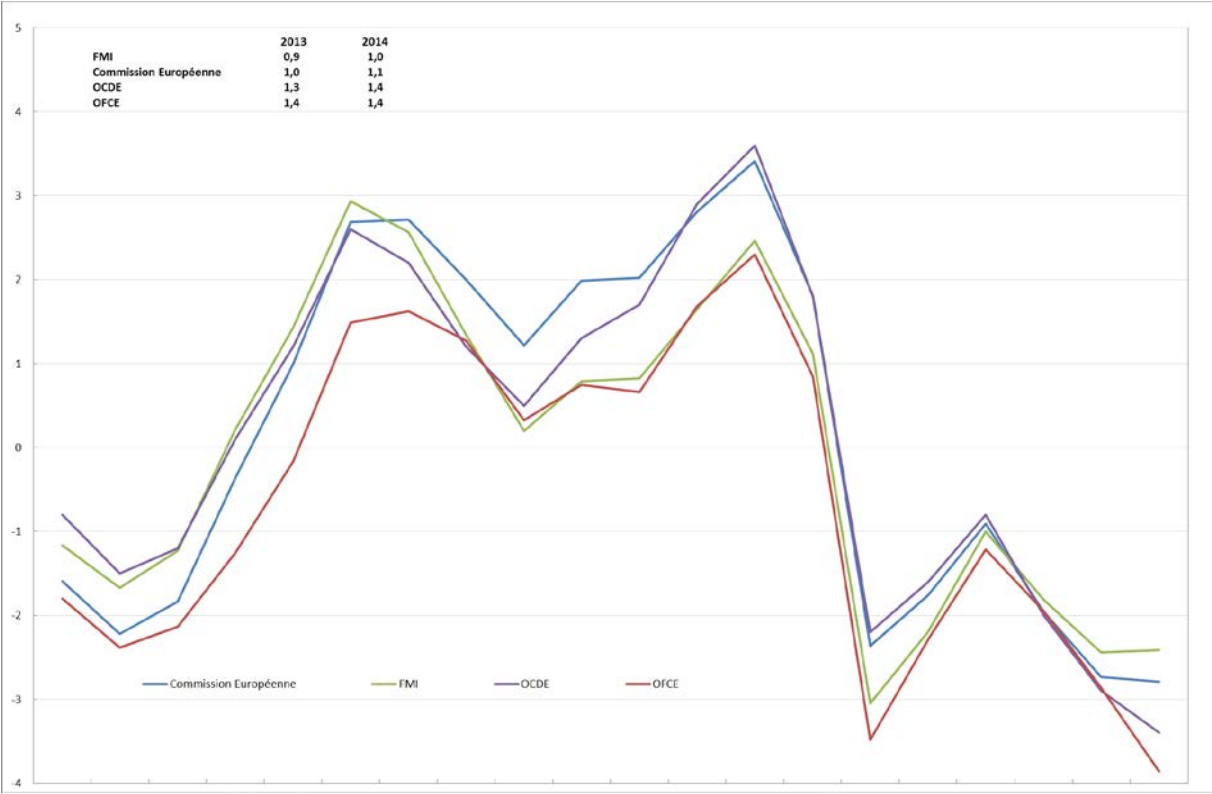
	GDP growth	Trend		Compromise		Break	
		Potential growth	OG	Potential growth	OG	Potential growth	OG
2006	2.4	2.0	0	2.0	0	2.0	0.0
2007	2.4	1.9	0.5	1.9	0.5	1.9	0.5
2008	0.2	1.9	-1.2	1.9	-1.2	1.4	-0.7
2009	-2.9	1.9	-6.0	1.4-3.0	-2.5	1.4-3.0	-2.0
2010	2.0	1.8	-5.8	1.4	-2.1	1.0	-1.0
2011	2.1	1.8	-5.5	1.4	-1.7	1.0	0.1
2012	0.3	1.7	-6.9	1.4	-2.8	1.0	-0.6
2013	0.3	1.7	-8.3	1.4	-3.9	1.0	-1.3
2014	0.3	1.6	-9.6	1.4	-4.4	1.0	-2.0
2015	1.2	1.6	-10.0	1.4	-5.4	1.0	-2.0

Source: Authors' estimates

In December 2011, OFCE's forecast is based on a negative output gap of 5% for 2011. It assumes that this gap will be closed in 2 years, so that spontaneous growth for the next two years would be around 4%. In December 2012, the forecast is based on an output gap of -6% for 2012. The assumption then is that the output gap will close by 1.5% per year at maximum, so that spontaneous growth would be 3.2% per year, during 4 years. In spring 2013, the forecast opts for an intermediate scenario, with a break in potential production of around 3% at the beginning of the crisis and a potential growth of 1.4% since then. The output gap would be around -4% in 2013. A spontaneous growth of 2.6% would close the gap in 3 years. At the same time, a study by Cochard *et al.* (2013) shows that the output gap widened by 6.5 percentage points from 2007 to 2012, by examining the deviations in unemployment rate, activity rate and labour productivity with their trends. In the autumn 2014, the forecast comes closer to conventional estimates (chart 1). It accepts the idea of a positive output gap from 1999 to 2008. The output gap is about -2% in 2012, -3% in 2013. But the authors suggest a potential for spontaneous growth of 2.4% from 2010 to 2014.

Should we accept a positive output gap from 1999 to 2007? Should potential growth be slowed down when actual growth is low? This is probably for the sake of credibility, but this undermines the usefulness of the potential growth concept. Was there a break in potential production in 2009? This implies to consider that the fall in demand translates into permanent and irreversible losses in terms of equilibrium unemployment rates and labour productivity growth.

Chart. Autumn 2014 estimates



Source: OFCE

The analysis is often based on the unproven implicit assumption that production automatically returns to its potential level, or at a rate of x percentage points per year, or in n years, so that forecasts may rely on the notion of spontaneous growth. If $n = 3$, an output gap of -4% and a potential growth of 1.4% imply a spontaneous growth of 2.7%. If $x = 1.5\%$, spontaneous growth is 2.9%. But this assumes that the output gap and potential growth can be defined and measured without ambiguity, which is wrong. It also implies that there are spontaneous forces to return to the equilibrium. These mechanisms should be clarified: in the euro area, this can hardly be through a decline in real interest rates adjusted for growth, or through competitiveness gains. Deflation is slow and its effects can be both positive (increases in households' real incomes, real wealth effects) and negative (increases in debt ratio). Unemployment certainly leads real wages to decrease, but here also the effects are ambiguous. Finally, fiscal policy may be forced to become pro-cyclical.

In a recent work, Heyer and Timbeau (2015) estimate potential growth for France using the method described by Borio *et al.* (2013, see equation 3). Observed production departs from potential output due to financial shocks (interest rates, stock prices), external shocks (oil price), fiscal impulses, the average output gap of the French trade partners, the competitiveness level and the real estate prices level. It tends to come back to it automatically. According to the econometric estimation, French potential growth was 1.85% by year from 1982 to 2014; the output gap was - 4.5% in 2014; 7% of the output gap would be automatically filled every quarter. However, this method does not allow to explain or even to describe potential growth developments; the foreign countries' output gap is measured by the OECD method, which makes the estimation inconsistent; the mechanism which would allow to return to potential growth is not explained; tensions on supply are omitted (inflation, firms profitability); private demand fluctuations are not taken in account. Let us imagine, using the model in box 1, that private demand falls by 1, the Government responds with a fiscal impulse of 1, production remains at its potential level, so that the fiscal impulse seems to have no impact. This method therefore underestimates the fiscal multiplier (which is evaluated to be 0.6).

3.8. Potential growth and the French government

The French government must include in the documents sent to European Institutions an assessment of potential output and potential growth, a strange operation which combines economic science and political compromises.

At the end of 2013, the Government estimates that the output gap for 2012 is -2% and that potential growth for the next 5 years is 1.5%. This -2% is amazing since France lost 7% of growth compared to the pre-crisis trend. As compared to 2007, the loss is 2.5% in terms of unemployment rate, 3.5% in terms of labour productivity, 1% in terms of participation rates. With a negative output gap of 7%, France could say that no additional fiscal effort should be made (especially as a structural deficit of 2% of GDP stabilizes the debt-to-GDP ratio at 60%, or to meet the true "golden rule of public finances"), but France did not wish to get into conflict with the Commission

At the end of 2014, the Government accepts the Commission's figures. The output gap was only -2.7% in 2013. Potential growth is 1% in 2013-15, 1.2% in 2016-18. Compared with a potential growth of 1.6 per cent, this requires an additional fiscal effort of 0.25% per year in 2013-2015.

To conclude, the review of these different studies leads to rather negative conclusions. It is not credible to find a positive output gap in France like in the Euro area from 1999 to 2007; it is strange that potential growth estimates have been so substantially revised *ex post* after the 2008-09 crisis. Studies generally show a decrease in potential output in 2009, a break in potential growth, but do not explain them. One may think that when the fall in output is large, potential output is not measurable. One should clearly choose between three points

of view: 1) potential output is a short-term concept, it reflects actual production developments; it cannot be used to measure and guide economic policy. 2) It is a long-term concept which reflects pure supply constraints, it does not vary with demand-driven production fluctuations. 3) The potential production concept accounts for all constraints that weigh on the economy (factors availability, firms' profitability, solvency of public finances, competitiveness), which makes the calculation method much more demanding.

4. What potential growth in the future?

At mid-2015, two views can be opposed. For the European Commission, the IMF, the OECD, for many economists (for instance, CAE, 2014, OECD, 2014a, IMF, 2015), the substantial slowdown in potential growth they believe to have seen since 2009 will last in the future, and the issue of potential growth is crucial already today because of the ageing of populations (which reduce labour force growth), the slowdown in capital accumulation and the slowdown in TFP growth.

Future TFP growth is of course an issue: it will slow down under the effects of environmental constraints, rising raw materials and energy prices; ICT innovations should speed it up, but as demonstrated by Gordon (2012, 2014) and Fernald (2014), their effects on overall productivity appear to be less and less substantial. According to Gordon, the same applies to efforts in education. If annual potential growth in the euro area is spontaneously no more than 1% in the coming years, if the objective of public debt reduction to 60% of GDP is maintained, while social spending (health, pensions) are on a rising trend, the euro area would have no choice but cut strongly public spending. So, the priority should be to increase potential growth by structural reforms, to deregulate goods and labour markets, by education and research efforts, by firms' incentives for innovation and R & D, by incentives for labour market participation of women and older workers, by fiscal consolidation and drastic cuts in public expenditure (OECD, 2014).

However, recent experience has shown that fiscal consolidation strategies, generalised at the euro area level, are very costly in terms of growth and not effective in terms of debt-to-GDP ratios. The recommended policy would include substantial transfers in favour of companies, and at the expense of households (tax and social contributions cuts funded by lower public spending and benefits, wage cuts for unskilled workers in the services sector). It would be socially costly; it would lead demand to fall in the short term; it would be uncooperative in Europe where each country should reduce domestic demand and wages. It is somewhat hypocritical to claim to safeguard the European social model by strongly reducing social spending.

Besides, measuring TFP is problematic (Mokyr, 2014). How to integrate the dematerialization and free access permitted by Internet?

More fundamentally, with this strategy, developed economies would be sentenced to a perpetual search for growth and innovation, with no reflection on the growth content. Should we encourage the largest number of people to keep market sector jobs as long as they can, when mechanization/computerization tends to make them disappear, without questioning even the content of these jobs? No social control of innovation and of growth content would be desirable or even possible. The society should rely on entrepreneurs. This search for growth would end, one day, in an ecological catastrophe.

Several studies claim to evaluate the gains that a set of structural reforms could bring. Their point of view is often to deny all positive aspects of regulation, as well as public and social expenditure and to consider that any move towards a hypothetical pure market economy liberalism would increase growth. Thus, the OECD (2014 b) estimates the potential gain for France at 3.7% after 10 years. This figure may seem high; it should, however, be compared with the 10% loss that the crisis cost France. The study is considering no reform of the banking and financial system, responsible for the crisis; the issues of poor euro area governance, the break-up of the French industrial model, or ecological transition are not discussed. The reforms are essentially limited to increase competition in the energy sector (but are lower energy prices compatible with energy transition?) and in regulated professions (but should France facilitate the development judiciary professions?); to reform unemployment insurance (but the French problem is the lack of jobs, not the reluctance of workers to get a job).

According to a study by the European Commission (Varga and In 't Veld, 2014), structural reforms could increase GDP in the euro area (France) by 6.3% (7.7%) in 10 years. But some proposals are difficult to implement in high unemployment situation. For instance, the rise in the participation rate of women, low-skilled workers, elderly people, would increase GDP by 2.3% in the case of France, but how would these people find a job?; same problem for the unemployment benefits reform (+0.8% of GDP). Other reforms need a very long time, such as the increase in the share of high-skilled workers and the decrease in the share of low-skilled workers (+0.9% of GDP). Some are economically and socially questionable: raising consumption taxation while lowering labour taxation, would increase GDP by + 1.7% according to the EC, but it would be neutral, according to us, unless wage and social benefits indexation were abolished (Sterdyniak, 2015).

The collection of papers on secular stagnation (Teulings and Baldwin, 2014) shows that problems are similar in the US and in the EU. Most economists, such as Gordon (2014) or Lo and Rogoff (2015), mix supply arguments (potential growth will decelerate due to the waning of technical progress, the slowing down of innovation and the ageing of populations) and demand ones (growth in inequalities, private and public debts). According to Summers (2014), the world economy suffers from an excess of savings over investment, it cannot be managed by monetary policy, given the zero lower bound for nominal interest rates; secular stagnation is inevitable. Many advocate for liberal structural reforms to promote growth at

any cost. Most recognize the responsibility of increasing inequalities and financialization in the current crisis, but refuse to question the neo-liberal model. Very few advocate a redistributive taxation, the development of social protection and pas-as-you-go retirement schemes (to minimise the financialization induced by pension funds). No one calls into question the multinational firms' strategy of producing in countries with low wages and putting pressure on wages in developed countries.

According to us, the European economy is currently far from its potential output, as shown by the threats of disinflation and the low level of interest rates. The financial crisis led to a fall in demand, the public debt crisis in Southern countries, austerity fiscal policies provoked a surge of unemployment, a stagnation (and sometimes a decrease) in activity rates (especially for the young and for women), a decrease in labour productivity growth due to labour hoarding, to the Kaldor-Verdoorn effect, to the low-skilled employment incentive policy. At firms' level, labour-saving innovations are difficult to introduce in a stagnation period. It is difficult to know what the potential output level would be after a strong rise in demand.

Europe suffers from four related problems:

- Trade globalization (which allows to produce in emerging countries) like financial globalization (which allows to choose between productive and financial investment) increased the profitability required by firms. At the same time firms invest less in Europe because of the growth slowdown and of investment in emerging countries. The relative price of capital goods decreases when services sectors develop, where capital needs are limited.
- A significant part of the population saw its industrial jobs disappear as a result of both mechanization/computerization and competition from emerging countries. Conversely, a very small share of the population benefits from globalization. Large companies and wealthy people can increasingly be exempt from the public expenditure burden. Their share in wealth increases while their savings rate is high. There is a substantial difference between the income distribution resulting from current power relations between capital and labour, and competition between countries and the one which would be required to allow a balanced growth.
- The resulting demand deficit has been filled in by financial bubbles and households' indebtedness (the Anglo-Saxon solution), by competitiveness gains (the German strategy), or by public debt. After the burst of the financial bubble, after the public debt crisis in Southern countries, after the Fiscal Compact, Europe suffers from a lack of demand and excessive competitiveness in Northern countries, in particular in Germany.
- The lack of demand requires an expansionary monetary policy. Short-term interest rates have been brought down to zero, but this remains insufficient in light of the weakness of demand and of low-inflation prospects (Summers, 2014). There is a risk in developed countries of a fragile recovery relying on financial bubbles or over-indebtedness.

According to this point of view, the current problem is not potential growth but the capacity to grow at a sufficient rate to use all available labour, taking into account constraints imposed by globalization and financial capitalism. The relevant policy should include a decrease in the profitability requested by firms and financial markets, the increase in wage share in enterprises value added, in particular in Northern Europe countries; the end of tax competition to attract richest people and large firms; supporting ecological investment, via public spending, but even more by the banking and financial sector, cleared of speculation, an industrial policy aiming at redefining the place of Europe in future labour international division, the development of the European social model. Fiscal policies should renounce to set arbitrary targets in terms of government balance or debt. Monetary policy should maintain low interest rates as long as necessary, but be accompanied by a macro-prudential supervision to avoid speculative bubbles. Today, this policy is a utopia, in view of the political situation in Europe.

The issue of trends in productivity growth, the measure of which is largely a statistical convention, has little importance after all. It is difficult to evaluate what would be the TFP trend in the euro area nearer full-employment, with stronger demand, where firms would be encouraged to save labour, energy, and avoid ecological damages. Europe may, in the years to come, if it wishes to do so, raise women and older workers participation rates, reduce involuntary part-time jobs, increase the number of immigrant workers. There is no evidence today that potential growth will be an effective constraint in a medium-term future. However, the question is whether, accounting for the already achieved GDP level and ecological constraints, EU countries should aim at reaching the highest growth and market-sector employment possible or whether the objective should not be to account for the needed limitation of material production growth and to see how our societies may adapt to it.

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