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► **To cite this version:**

Pierre Cahuc, Marco G. Palladino. Employment Protection Legislation and Job Reallocation Across Sectors, Firms and Workers. 2024. hal-04673757

HAL Id: hal-04673757

<https://sciencespo.hal.science/hal-04673757v1>

Preprint submitted on 20 Aug 2024

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EMPLOYMENT PROTECTION LEGISLATION AND JOB REALLOCATION ACROSS SECTORS, FIRMS AND WORKERS

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SCIENCES PO ECONOMICS DISCUSSION PAPER

No. 2024-07

Employment Protection Legislation and Job Reallocation Across Sectors, Firms and Workers

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August 19, 2024

Abstract

This chapter provides a review of the existing literature on the effects of employment protection legislation (EPL) on job allocation across industries, firms, and workers, and its implications for innovation and economic growth. We analyze empirical studies to assess how EPL influences resource allocation, firm dynamics, and labor market segmentation. The review highlights the heterogeneous effects of EPL on different firms and workers' groups. Additionally, we discuss the channels identified in the structural literature through which EPL-induced job reallocation affects productivity, innovation, and overall growth. While existing evidence demonstrates the significant influence of EPL on all these outcomes, further quantification of these effects remains a research challenge.

Keywords: EPL, Job Allocation, Economic Growth, Productivity, Innovation,

1 Introduction

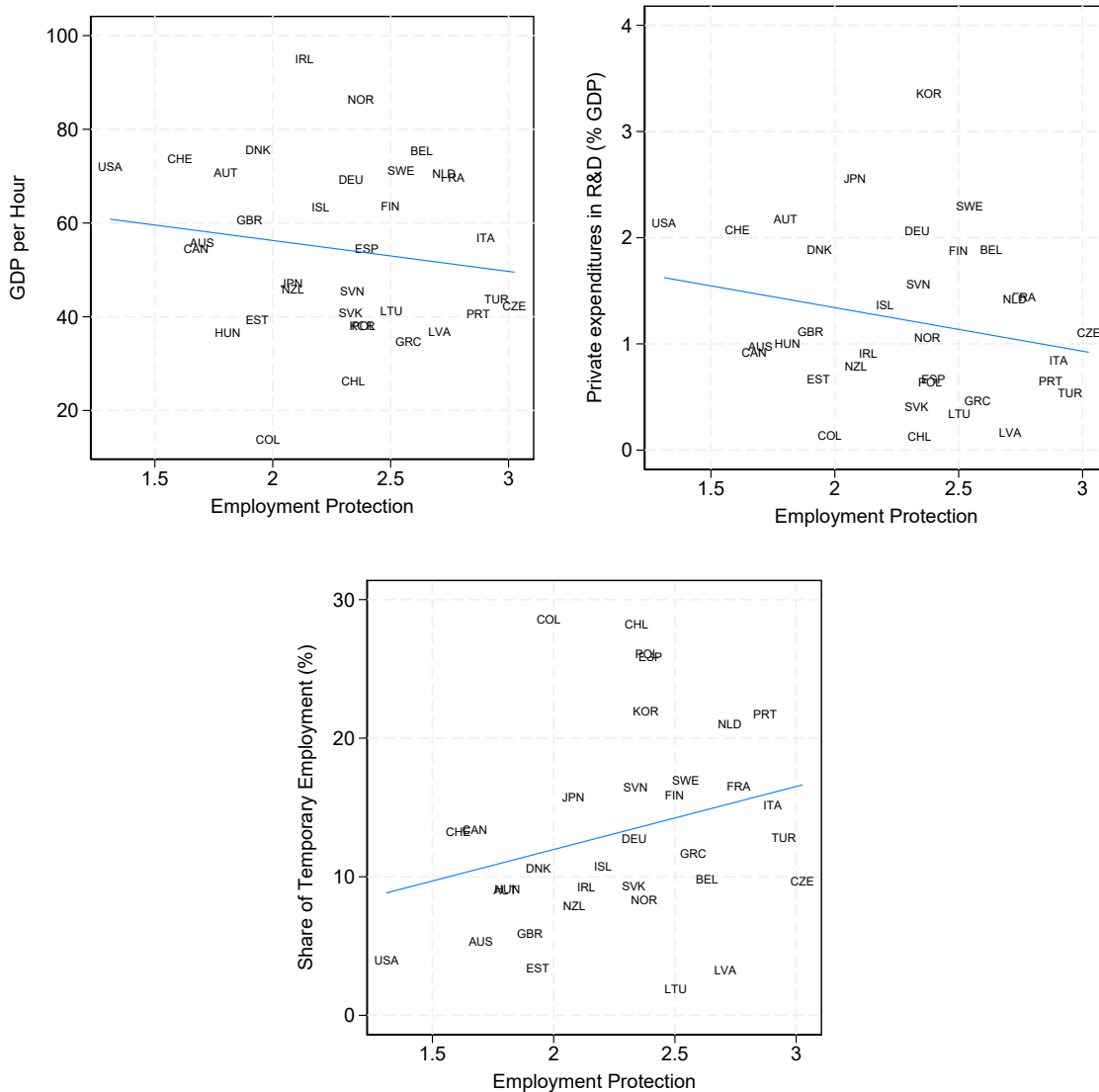
Employment protection legislation (EPL) is a widely discussed policy issue that aims to provide job security to workers by regulating the conditions of hiring and separation. As such, job protection affects the nature of jobs. While EPL can provide important benefits to workers, such as increased job security and protection against unfair dismissal, it can also have unintended consequences. One of the unintended consequences of EPL is that it can affect the allocation of jobs across sectors, firms, and workers. The impact of EPL on job allocation can vary across different types of workers, firms, and sectors. For example, young and older workers, male and female workers, large and small firms, high-performing and low-performing firms, and service and manufacturing industries can be differently impacted by EPL. Understanding how EPL changes the allocation of jobs across these groups is crucial for designing effective labor market policies that promote job creation and growth. To shed light on this issue, this chapter focuses on the relationship between EPL, job reallocation across sectors, firms and workers, innovation, and aggregate growth. In Figure 1, we plot some cross-country evidence on these relationships using a series of graphs, where we show how the degree of employment protection is negatively correlated with GDP per hour and expenditures in innovation, while positively correlated with the share of temporary employment.

This chapter presents the results of recent research that may help to interpret these correlations. It shows that there is ample empirical evidence indicating that EPL affects the allocation of resources among industries, existing firms, and different groups of workers, as well as the intensity of firm creation and destruction. The impact of EPL on job reallocation has implications for productivity, as it affects the movement of jobs from low-productivity to high-productivity industries and firms. Empirical studies have found that EPL-induced job reallocation decreases total factor productivity and leads to changes in input choices. Assessing the extent of labor misallocation is important to understand the impact of EPL though. Measures of misallocation rely on the dispersion of marginal productivity among firms, but there are challenges in accurately measuring this dispersion, such as the choice of functional form and the presence of measurement errors. General equilibrium models

consider the behavior of heterogeneous firms to assess the impact of EPL on aggregate productivity. These models suggest that firing costs reduce steady-state productivity and have a greater impact on dynamic misallocation than static misallocation. Furthermore, EPL can influence innovation and growth by affecting the entry and exit of firms. Entrants experience decreased innovation due to firing costs and labor misallocation, while larger incumbent firms are incentivized to invest more in research and development under more stringent EPL. The impact of EPL on innovation varies depending on whether it affects entrants or incumbents more, leading to opposing effects on overall growth.

The rest of the chapter is organized as follows. Section 2 focuses on job reallocation across sectors, while Section 3 examines job reallocation across firms and its impact on firm-level productivity, misallocation of labor, aggregate productivity, innovation, and growth. Section 4 discusses job reallocation between worker types, with a focus on labor market segmentation and the impact on inequality. Section 5 concludes.

Figure 1: EPL, Productivity, Innovation and Temporary Employment across OECD countries



Notes: Employment Protection refers to the OECD strictness of employment protection legislation indicators for permanent contracts; GDP per Hour comes from The OECD Productivity Database; private expenditures in RD are taken from the OECD Main Science and Technology Indicators Database; the share of temporary employment (as a % of dependent employment) comes from OECD Labour Force Statistics. All country-specific values are averages over the period 2014-2019.

2 Job Reallocation across Sectors

Empirical studies of the impact of EPL at the sectoral level have documented its effects on the allocation of jobs between sectors and its consequences on productivity.

2.1 The allocation of jobs

Empirical studies, such as [Bassanini and Garnero \(2013\)](#) and [ElFayoumi \(2020\)](#), examine the effect of labor market regulations on reallocation across industries by exploiting comparable cross-country information.

[Bassanini and Garnero \(2013\)](#) analyze hiring and separation rates by the type of transition for 24 OECD countries and 23 business-sector industries. They investigate whether dismissal regulations affect where labor resources are reallocated, specifically focusing on job-to-job transitions within the same industry, job-to-job transitions across industries, and transitions from employment to non-employment. The authors employ econometric techniques to analyze the data, controlling for various confounding factors, such as industry and country-level characteristics, and accounting for endogeneity issues that may arise in the analysis. They find that more restrictive regulations reduce job-to-job transitions within the same industry, especially for permanent jobs. [ElFayoumi \(2020\)](#) discusses the persistent productivity gap between countries at different income levels and the factors that influence it by making use of a panel of 44 countries covering developed, emerging, and frontier economies. The author uses a dynamic panel error correction model to estimate the level of policy distortions or institutional costs that restrict the fluidity of labor reallocation. He finds a significant positive association between the pace of labor reallocation across sectors and the freedom level of labor market regulations.

These two studies provide evidence that labor market regulations affect the fluidity of labor reallocation across industries and countries, which is a key factor influencing productivity growth ([OECD, 2009](#)). This is consistent with the findings of [Bassanini et al. \(2009\)](#) and the framework developed by [Bartelsman et al. \(2016\)](#).

2.2 Between sector reallocation and productivity

[Bassanini et al. \(2009\)](#) examine the impact of employment protection legislation on productivity in the OECD, using annual cross-country aggregate data on the degree of regulation and industry-level data on productivity from 1982 to 2003. They adopted a difference-in-differences framework, which exploits likely differences in the productivity effect of

dismissal regulations in different industries. Their identifying assumption is that stricter employment protection influences worker or firm behavior, and thereby productivity, more in industries where the policy is likely to be binding than in other industries. The advantage of this approach is that, in contrast to standard cross-country analyses, it can control for unobserved factors that, on average, are likely to have the same effect on productivity in all industries. They found that mandatory dismissal regulations depress productivity growth in industries where lay-off restrictions are more likely to be binding. [Bartelsman et al. \(2016\)](#) develop a two-sector matching model to explain the cross-country relationship between EPL, reallocation across industries, and ultimately productivity growth. The main intuition of their framework is that – in a time of structural transformation – the extent to which an economy benefits from innovative and risky technologies depends on its labor market institutions: the higher the EPL, the higher the cost of job destruction or firm exit option, which both become more important when new technologies become available. The simulated data from the calibrated model and an empirical country/industry panel data analysis show that exploiting new risky opportunities in low-EPL countries is more advantageous. Consequently, they find that countries with strict EPL have relatively small high-risk sectors and low productivity growth.

Although the studies mentioned above shed light on how labor market regulations affect the movement of workers across different sectors, it is crucial to delve deeper into the effects on job reallocation across individual firms. Doing so would provide a more comprehensive understanding of the microeconomic mechanisms that underpin the macro consequences of EPL.

3 Job Reallocation across Firms

Harmonized firm-level databases including 16 industrial, emerging, and transition countries over the 1990s shows that EPL reduces job reallocation across firms ([Haltiwanger et al., 2014](#)). Stringent labor regulations reduce the intensive margin by reducing hiring and separations in continuing firms. The decrease in separations arises from fewer layoffs. Empirical evidence suggests that it also arises from fewer quits: workers are less likely

to quit their job in countries with more job protection (Gielen and Tatsiramos, 2012) and lower severance pay make workers who may expect to be displaced in the near future more likely to voluntarily leave their employers (Garcia-Louzao, 2022). The drop in recruitment comes from the anticipation of the cost of separation which increases the discounted cost of labor. But Haltiwanger et al. (2014) find that the larger quantitative impact of EPL is on the extensive margin, i.e. on the creation and destruction of firms, which fall when EPL is more stringent.

The impact of EPL on job reallocation is likely to have effects on productivity by reducing job flows from low-productivity to high-productivity firms. This issue has motivated many contributions in several directions in the last two decades. A first series of works directly assesses the impact of employment protection using reduced-form estimates that consist of comparing firms, sectors, or regions directly affected by EPL with others that are not. This approach makes it possible to highlight part of the causal impact of EPL on reallocations and on productivity. But it cannot assess its consequences in the economy as a whole, because EPL has effects that potentially spread throughout the entire economy, in the short-medium term and in the long term. These considerations motivate work that develops models to assess the extent of the misallocation of factors of production, including labor, and the impact of EPL on this misallocation, to explore its consequences on productivity and growth.

3.1 EPL and Firm-Level Productivity

Several studies relying on natural experiments have found that the reallocation of jobs induced by EPL affects the productivity of firms. From the 1970' to the 1990' US states introduced wrongful-discharge protection, which raised the stringency of EPL. EPL reduced annual employment fluctuations and the entry of new establishments in adopting states (Autor et al., 2007). It raised capital investment and increased the share of non-production workers. These changes in input choices led to a decline in total factor productivity. Caggese et al. (2022) exploits a natural experiment to study the impact of firing costs on productivity in Belgium, where a 2013 law increased firing costs for blue-collar

workers, but made them more ambiguous for white-collar workers. The authors find that blue-collar firms experienced a significant decline in revenue TFP, averaging 5.6%, compared to white-collar firms. The effect is mainly driven by a distortion in optimal firing and hiring policies rather than capital deepening and capital-labor substitution. In Italy, a reform that introduced unjust-dismissal costs for firms below 15 employees, leaving firing costs unchanged for larger firms, induced an increase in the capital-labor ratio and a decline in total factor productivity in small firms relative to larger firms. Capital deepening was more pronounced at the low end of the capital distribution, where the reform hit arguably harder, and among firms endowed with a larger amount of liquid resources (Cingano et al., 2016).

Insofar as EPL leads to a reallocation of jobs that can affect all firms, including those that are not directly affected by EPL, the evaluations comparing groups directly and indirectly affected by EPL only partially shed light on the consequences of EPL. From this point of view, it is important to examine the contribution of studies that assess the impact of EPL on the economy as a whole.

3.2 The Extent of Misallocation of Labor

Assessing the extent of labor misallocation is a prerequisite to examining how it is impacted by EPL. In principle, markets that work perfectly induce an efficient allocation of labor for which the marginal productivity of labor is equal in all firms. Starting from this observation, a strand of research evaluates the extent of misallocation by measuring the dispersion of marginal productivity among firms (Restuccia and Rogerson, 2017). According to Restuccia and Rogerson (2008) the main insight of this literature is that for misallocation to have large effects, it needs to depress inputs systematically at high-productivity producers. However, besides this finding, the insight of this approach is quite limited insofar as the measurement of marginal productivity is difficult and suffers several limitations.

First, this measurement relies on the choice of a functional form for the production function and the assumption of homogeneity of some parameters of the production function across firms (Hsieh and Klenow, 2009). In particular, using Cobb-Douglas production

functions (unit elasticities) instead of accounting for low input substitutability (less-than-one elasticities) leads to overestimating the productivity loss induced by the misallocation of inputs by a large factor that can go to 1.8 according to [Osotimehin and Popov \(2023\)](#).

Second, how measurement errors are taken into account can have a significant impact on the results. For instance, [Bils et al. \(2021\)](#) propose a way to estimate the dispersion of marginal products across plants in the presence of additive measurement errors in revenue and inputs (labor, capital and intermediate products). Accounting for correction errors with this method implies that the average potential gains from reallocation fell by 60% on US data.

Third, in the presence of transitory firm-specific shocks and adjustment costs of inputs, the marginal product of labor can optimally differ across firms. Therefore differences in the dispersion of marginal productivity can be consistent with efficient allocations ([Asker et al., 2014](#)).

[Bartelsman et al. \(2013\)](#) provide an alternative approach to evaluate the extent of misallocation of labor. They show that firm-level labor and total factor productivity on one hand, and firm size on the other hand exhibit a positive correlation. Following [Olley and Pakes \(1996\)](#), they decompose the (firm size) weighted average firm-level log of industry productivity as the sum of an unweighted firm-level average and a covariance term between firm size and firm productivity. In this framework, the covariance term measures the gap between the observed average productivity of the industry and the average productivity if employment shares were randomly allocated across firms. To put it differently, the extent of misallocation of labor is larger when the covariance term – which can be negative – is smaller. They find that the average US manufacturing industry is 50 percent higher than it would be if employment shares were randomly allocated within industries, and that this gap is smaller in countries of Continental, Central and Eastern Europe. However, the calibration of a model yields mixed evidence about the link between labor market distortions induced by regulations that increase labor costs and the extent of misallocation.

3.3 EPL and Aggregate Productivity

In order to assess the impact of EPL on aggregate productivity, it is possible to use general equilibrium models that take into account the behavior of heterogeneous firms. In this context, [Hopenhayn and Rogerson \(1993\)](#) elaborate a model with entries and exits of firms and find that firing costs equal to one year's wages reduces steady-state productivity by roughly 2 percent compared with a situation without firing costs. In the same vein, [Da-Rocha et al. \(2019\)](#) find that, relative to the benchmark economy with no firing costs, aggregate TFP in the economy with a firing cost of 6 months' wages is reduced by 3 percent; and by 21 percent in the economy with 5 year's wages. The decomposition of the total effect of firing costs on aggregate TFP between static misallocation and dynamic misallocation (as changes in the productivity distribution of establishments), suggests that dynamic misallocation accounts for around 80% of the total effect.

3.4 EPL and Innovation and Growth

EPL can impact the steady state level of productivity through the induced reallocation of labor across firms. Another possible channel is the impact on innovations, which triggers consequences for the reallocation of inputs across firms and growth. This issue is explored by [Poschke \(2009\)](#) who analyzed the effect of firing costs on productivity growth in a model of growth through firm selection accounting for job turnover, firm heterogeneity, and the contribution of entry and exit to aggregate productivity growth. In the model, growth occurs endogenously due to selection among incumbents and imitation by entrants. In this setting, firing costs induce a misallocation of labor, reduce firm value and discourage entry, and discourage exit of low-productivity firms. This congests the selection process and slows down growth. However, as first remarked by [Samaniego \(2006\)](#), if exiting firms are exempt from firing costs, the exit of low-productivity firms is promoted, strengthening selection, and increasing growth relative to the frictionless economy. Calibration of the model to the U.S. business sector shows that introducing firing costs of one year's wages only to continuing firms promotes selection and raises growth by 0.1 percentage points. Charging them to exiting firms, too, reduces growth by the same amount compared to the

benchmark, showing that the treatment of exiting firms is crucial for the growth effects of EPL. The impact of EPL on innovation and growth has also been analyzed by [Mukoyama and Osotimehin \(2019\)](#) who model innovation as a process of creative destruction: entrants displace the incumbent producers when they successfully innovate. Firms decide on entry, production, employment, and on investments that enhance their productivity. In this framework, firing costs can have opposite effects on entrants' innovation and incumbents' innovation. Firing costs reduce entrants' innovation whereas they may enhance incumbents' innovation. The entrants' innovation declines because firing costs and misallocation of labor reduce expected future profits. For incumbent firms larger than their optimal size, innovating has the added benefit of allowing them to reduce the risk of paying the firing tax. Accordingly, these firms invest more in RD when EPL is more stringent. By contrast, for firms that are smaller than their optimal size, the drop in expected profits and the misallocation induced by EPL discourage innovation. In addition, the rate at which entrants innovate affects the incumbents' incentive to innovate. As a result, firing costs change the composition of innovation. The quantitative results show the overall effect of EPL on growth is negative when entrants' innovation is the main driver of growth but can have opposing effects if incumbents' innovation is the main driver.

4 Job Reallocation across Worker Types

The ultimate aim of EPL is to provide workers with job security and bargaining power. For political economy reasons, many countries in Europe developed a dual EPL system over the years: while the regulation of temporary contracts was largely relaxed, the employment protection measures associated with permanent positions remained unchanged ([Bentolila et al., 2020](#)). Intuitively, in these contexts, stringent regulation of permanent jobs makes them more protected at the expense of higher instability of temporary jobs, with an ambiguous impact on overall job security which is detrimental to labor market entrants.

4.1 Reallocation Across Workers of Different Tenures

Hijzen et al. (2017) use a regression discontinuity design to exploit the variation in EPL provisions on permanent jobs between small and large firms in Italy. They find that EPL increases the use of temporary contracts, which raises the turnover of low tenured worker. This mechanism has been illustrated in search and matching models with temporary and permanent jobs in place (Blanchard and Landier, 2002; Cahuc and Postel-Vinay, 2002; Cahuc and Carcillo, 2006). This contributes to inequalities between low and high wage workers, as temporary jobs generally have lower wages and provide less training compared to permanent positions. Moreover, individuals in temporary employment tend to report lower levels of job satisfaction compared to their counterparts in permanent jobs (Booth et al., 2002).

Clearly, one of the dimensions of this duality is tenure, particularly when firing costs are increasing in it. Cingano et al. (2016) exploit the same discontinuity as in Hijzen et al. (2017) and find that stricter EPL in Italy raises the share of high-tenure workers as well as average seniority in larger firms. Cahuc et al. (2019) exploit a discontinuity in the relationship between employees' job tenure and the compensation they receive for unfair dismissals to study and quantify the procedural costs faced by firms in the event of a firing. In their empirical context, job protection reduces the expected duration of employment at the time of hiring. The negative impact of employment protection on job tenure is induced by the anticipation effect: firms, anticipating that they will have to bear higher costs in the future, prefer to bring forward the decision to lay off rather than take the risk of continuing the relationship. The anticipation effect, which leads to the destruction of low-seniority jobs – predominantly for low-skilled workers – is counterbalanced by labor retention, which reduces the separation rate for long-term jobs.

4.2 Reallocation Detrimental to Labor Market Entrants

Importantly, theoretical models further suggest that the allocation of temporary jobs within the labor force is not random. When substantial firing costs are associated with permanent positions, employers tend to be less willing to hire new entrants for these positions. As

a result, new entrants are more likely to be placed in temporary jobs, so that their productivity can be assessed before considering a permanent employment offer. [Kahn \(2007\)](#) examines the impact of employment protection mandates on the demographic patterns of temporary employment. The findings show a positive association between the strength of regular employment protection and the prevalence of temporary employment, with a particular concentration among young workers, native women, immigrant women, and low cognitive ability workers. Reforms that widened the gap in EPL between permanent and temporary workers have been found to disproportionately harm labor market entrants, particularly women, youth, and low-skilled workers who experience intermittent employment ([Barbieri and Cutuli, 2016](#); [Cazes and Tonin, 2010](#)), resulting in higher rates of youth unemployment and an increase in precarious forms of employment ([Bentolila et al., 2012](#); [Boeri and Garibaldi, 2007](#)).

To sum up, higher EPL – and particularly a high-EPL gap between temporary and permanent jobs – affects the composition of employment and unemployment. These findings highlight the distributional effects of EPL reforms, indicating non-negligible costs for certain segments of the workforce. This labor market segmentation contributes to inequality by disproportionately impacting vulnerable groups, such as women, youth, and low-skilled workers.

5 Conclusion

A significant portion of recent research has centered around the potential effects of EPL on overall employment and unemployment rates, yielding mixed findings ([Bentolila et al., 2020](#)). In contrast, this chapter summarizes the state of knowledge on the impact of EPL by examining its impact on labor market dynamics, particularly its connection to job and worker movements across sectors and firms, and the resulting impact on aggregate growth. There is ample evidence that EPL has a significant impact on the allocation of jobs across industries, firms and workers. It is clear that EPL raises labor market segmentation between stable jobs and unstable ones, more frequently occupied by young people and low-skilled individuals. Research has also documented the channels through which the reallocation of

jobs induced by EPL can influence productivity, innovation and growth. EPL-induced job reallocation hinders the movement of jobs from low- to high-productivity firms, leading to a decrease in total factor productivity and influencing input choices. Assessing labor misallocation is crucial for understanding the effects of EPL, although accurate measurement poses challenges. General equilibrium models indicate that firing costs associated with EPL reduce steady-state productivity and have a greater impact on dynamic misallocation. Additionally, EPL can affect innovation and growth by influencing the entry and exit of firms. The impact is negative when entrants' innovation is the primary driver, but it can have divergent effects if incumbents' innovation plays a more significant role. We conclude that the quantification of these effects remains to a large extent an open question.

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