



# Firm dynamics and employment protection: Evidence from sectoral data<sup>☆</sup>



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## ABSTRACT

We analyze the impact of employment protection legislation (EPL) on firms' entry and exit rates in a set of industries in thirteen OECD countries from the most recent version of the OECD Structural and Business Statistics Database. Using a difference-in-differences identification strategy, we find that more stringent EPL is associated to both lower entry and exit in industries characterized by higher worker reallocation intensity. We decompose the overall effect of EPL and find that both collective and individual dismissal regulations reduce the entry and exit rates. The negative effects of EPL are stronger for small firms. An extensive robustness analysis confirms our main findings.

## 1. Introduction

The economic literature suggests that employment protection legislation (EPL) can affect the efficiency of the resources allocation process. Some recent papers by Messina and Vallanti (2007), Bassanini and Garnero (2013) and Haltiwanger et al. (2014) explicitly focus on the effect of EPL on job/worker flows dynamics and find that firing regulations have a determinant role in reducing the efficiency of the (re)allocation process. As a matter of fact, resource reallocation can work through expansion and contraction of existing firms, or via the entry-exit channel. In this paper we contribute to this strand of literature by providing empirical evidence on the relationship between EPL and firm entry and exit rates.

More generally, this study is associated to the large and growing empirical and theoretical literature that ascribes to the misallocation of resources, potentially associated to the institutional and regulatory environment where firms operate, an important share of the cross-country differences in incomes and productivity (Restuccia and Rogerson, 2008; Hsieh and Klenow, 2009; Bartelsman et al., 2013; Hopenhayn and Rogerson, 1993; Poschke, 2009 among the others). On

the one hand, static allocative efficiency (i.e., the extent to which more productive firms tend to have larger market shares) might help to explain cross-country productivity level differentials (Bartelsman et al., 2013; Andrews and Cingano, 2014). On the other hand (e.g., Foster et al., 2001), a sizeable share of productivity growth is associated to the reallocation of resources within narrowly defined sectors, from low productivity to high productivity establishments (dynamic allocative efficiency).

In this work we use the latest version of the OECD Structural and Business Statistics Database (ISIC Rev 3) and the standard OECD EPL indicators in order to study whether firms' entry and exit decisions are affected by EPL, in a cross section of 27 sectors of 13 OECD (EU) countries observed over the 2004–2007 period. In particular, we use the Rajan and Zingales (1998) difference-in-differences approach as an identification framework in order to analyze whether countries with stricter EPL have relatively lower firms' entry and exit rates in sectors that naturally require more flexibility in labour force adjustment, the latter proxied by industry level worker reallocation rates in the US.

Our identification strategy stems directly from theoretical predictions on the effects of EPL on firms' entry and exit. For example, in the

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model of Micco and Pagés (2007), EPL, by increasing labour adjustment costs, induces a suboptimal labour allocation that reduces the value of entering into the market. Moreover, since adjustment costs are more binding in sectors characterized by higher shocks volatility, EPL should lower entry relatively more in such sectors. Similarly, in the model of Poschke (2009) EPL might reduce exit by acting as a tax on it, and this effect is expected to be stronger in the case of high-volatility sectors. Within this theoretical framework, we proxy industry intrinsic volatility with the worker reallocation rate in the US. The use of US data is ubiquitous in the literature that analyzes the impact of EPL on various firm and labour market outcomes using cross-country cross-industry data. Indeed, the US has one of the most flexible labour markets in the OECD, so that its industry worker reallocation rate is less likely to reflect the impact of EPL or other labour market institutions.<sup>1</sup>

The main result of this study is that stringent EPL reduces entry and exit rates in reallocation-intensive industries. Additional burdens imposed on firms in cases of collective dismissals have further negative effects on top of the individual dismissal regulations. Difficulty of dismissals is the most important regulatory factor. Additional evidence suggests that the negative impact of EPL on exit rates may be particularly strong when exiting firms also carry the burden of firing costs, as predicted by Poschke (2009). Finally, we show that the negative effects of EPL are more pronounced for smaller firms (between 1 and 9 employees). Among larger firms, the results are more muted (but statistically significant) for exits, and generally insignificant for entry.

Our analysis contributes to the previous literature along different dimensions. First, it uses the latest version of the OECD Structural and Business Statistics Database, which measures entry and exit on a consistent basis across countries, and for a more recent period than virtually all recent empirical works on firm turnover. Second, to the best of our knowledge, this is the first paper that empirically analyses the link between EPL and firms' exit using cross-country cross-industry data. Related to this, this is the first study that provides a test of the main theoretical insight of Poschke's (2009) model. Third, we consider a different sample and time period with respect to previous empirical evidence and, more importantly, we disentangle the role of different regulatory provisions (e.g., individual versus collective dismissals and their disaggregated components) and provide a more extensive battery of robustness checks. Fourth, in order to take into account cross country variations in the degrees of law enforcement, in most specifications we adjust the OECD EPL indicators with a variable that captures the efficiency and reliability of the law system.

Finally, even if this study is strictly related to Haltiwanger et al. (2014), it differs along some dimensions. In fact, they study the effects of EPL on job flows associated to firm entry and exit, while we directly focus on firm entry and exit *per se*. Indeed, although in some country-industry cells job flows associated to firm entry (exit) might be large, the actual number of entering (exiting) firms might be relatively low, if firms tend to enter (exit) on a relatively large scale. Given the existence of cross country differences along this dimension, it becomes important to assess the impact of EPL on firm entry and exit. Moreover, we consider a very different sample and time period (more geared towards OECD countries) with respect to Haltiwanger et al. (2014) and we provide a more extensive battery of robustness checks.

The remainder of the study is organized as follows. Section 2 discusses the related literature. In Section 3 we describe our estimation and identification framework. In Section 4 we present the data. Section 5 contains the empirical results while Section 6 concludes. Additional results are available in the Appendix.

<sup>1</sup> However, the use of US industry data in order to capture an "intrinsic" industry-specific need for labour flexibility is surely not without problems: we refer to the following sections for an extensive discussion of the limitations of the Rajan and Zingales (1998) approach as well as for a description of the robustness checks we undertake.

## 2. Related literature

This paper is related to different strands of literature. First, it is in line with studies analyzing the impact of EPL on job reallocation, like Messina and Vallanti (2007) that analyze 14 European countries and 24 industries observed over the period 1992–2001 and find that firing restrictions dampen the volatility of the job creation/destruction process over the cycle, particularly in declining sectors. Also Haltiwanger et al. (2014), using industry data for a set of emerging, industrial and transition economies observed over the 1990s, suggest that stricter EPL reduces job reallocation (job creation plus job destruction), particularly in those industries and firm size classes that require "more frequent" labour adjustment. Interestingly, they find that this effect is particularly strong in the case of job reallocation originated by entry and exit of firms (the extensive margin) with respect to that due to reallocation among continuing firms. A similar study is that of Bassanini and Garnero (2013) on a set of OECD countries, who find that countries with stricter EPL tend to display lower within industry job-to-job transitions. This work also is associated to the empirical literature analysing the link between EPL and productivity growth, which generally finds a negative correlation between labour market rigidity and total factor productivity, particularly in sectors with higher reallocation intensity or in more innovative ones.<sup>2</sup> Finally, this study is linked to the empirical literature that has sought to study the impact of government regulations on entry rates, as well as to the industrial organization literature on entry and exit (Dunne et al., 1988; Caves, 1998; Santarelli and Vivarelli, 2007).

More broadly, our paper contributes to the burgeoning literature on resource misallocation. Indeed, the entry-exit process can impact the efficiency of resource reallocation: some studies have found that exiting firms are in general low productivity ones, while the entering ones tend on average to become high productivity producers (or rapidly shrink and exit). Leaving aside any measurement error issue (Foster et al., 2001), the "net entry" (i.e., entry less exit) component of reallocation seems to account for a non-negligible share of aggregate productivity growth. In the case of the US, at least one quarter of aggregate productivity growth is associated to the exit of low productivity firms and the entry and expansion of high productivity ones (Foster et al., 2008, 2001).<sup>3</sup> Moreover, there are non-negligible differences across countries: Bartelsman et al. (2009) show that net entry accounts for between one-fifth and one-half of aggregate productivity growth in a sample of OECD countries. This in turn suggests that such cross-country differences might be associated to country-level heterogeneity in government policies and institutions.<sup>4</sup>

As far as EPL is concerned, a number of theoretical studies have considered its implications on firms' incentives to enter and exit. In a seminal paper, Hopenhayn and Rogerson (1993) suggest that high labour adjustment costs reduce the present discounted value of profits and induce a lower pace of job and firm turnover. Bertola (1994), by

<sup>2</sup> See, among the others, Bassanini et al. (2009), Cingano et al. (2010), Autor et al. (2007) and Conti and Sulis (2016). However, see also Belot et al. (2007) who found a positive effect of EPL on per capita GDP and Acharya et al. (2013). See also Martin and Scarpetta (2012) for a literature review.

<sup>3</sup> In some sectors, its contribution can be even higher. Foster et al. (2006) found that virtually all productivity growth in the US retail sector was due to the entry of high productivity firms and to the exit of low productivity ones. In general, the contribution of net entry is found to be larger in more technologically advanced sectors (Martin and Scarpetta, 2012).

<sup>4</sup> Although cross country differences in average entry and exit rates are not large (Bartelsman et al., 2009), this could be due to different regulations and/or institutions in place in different countries that have opposite impacts on entry and exit rates. Some authors have studied the effects of labour and product market regulations, barriers to entry, taxation or financial development on average entry and exit rates. For example, Klapper et al. (2006) and Ciccone and Papaioannou (2007) examine the impact of entry costs and regulation, Da Rin et al. (2011) study the effects of taxation of corporate income, while Samaniego (2010) focuses on the role played by technical change and entry costs.

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