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FIRM DYNAMICS AND EMPLOYMENT PROTECTION: EVIDENCE FROM SECTORAL DATA

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Firm Dynamics and Employment Protection:

Evidence from Sectoral Data[1]

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Abstract

In this paper we analyse the impact of employment protection legislation (EPL) on firms' entry and exit rates for a large sample of industries of thirteen countries selected from the most recent version of the OECD Structural and Business Statistics Database. Using a differences-in-differences identification strategy, we find that more stringent EPL is associated to lower entry and exit rates, particularly in industries characterized by higher job reallocation intensity. We also find that both collective and individual dismissal regulations reduce firms' entry and exit rates. Interestingly, our results suggest that the negative effects of EPL is stronger in the case of firms between one and nine employees while, in the case of larger ones, results are not clear-cut. An extensive sensitivity analysis confirm the robustness of our findings.

Key words: entry & exit, turnover, employment protection legislation, reallocation.

JEL codes: J65, L11, L26.

1. Introduction

Recently, a large and growing empirical and theoretical literature has ascribed 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) and Poschke (2009), among the others). In particular, this literature has highlighted the importance of static allocative efficiency (i.e. the extent to which more productive firms tend to have larger market shares) as a driver of cross-country productivity level differentials (Bartelsman et al. (2013), Andrews and Cingano (2014)). Moreover, other authors (e.g. Foster et al, 2001) have found that, in many countries, a sizeable share of productivity growth derives from reallocation of resources, within narrowly defined sectors, from low productivity to high productivity establishments (dynamic allocative efficiency). The above literature suggests that the efficiency of the allocative process might be dampened by distortions induced by labour and product market regulations, taxation, subsidies, trade restrictions or non-competitive banking systems.

[1] We thank participants at the XXX AIEL Conference in Cagliari for comments and suggestions. We also thank Fabiano Schivardi for giving us access to his data. The usual disclaimer applies.

Reallocation of resources can work though expansion and contraction of existing firms, or via the entry-exit channel: indeed, some studies have found that exiting firms are in general low productivity ones, while, if a sufficient window of time is allowed for, entering firms on average tend to become high productivity producers (or rapidly shrink and exit). As a matter of fact, and 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. Some authors have found that, in the case of the US and over a five or ten-year horizon, at least one quarter of aggregate productivity growth is associated to the net entry component (Foster et al, 2008 and Foster et al, 2001), i.e. to the exit of low productivity firms and the entry and expansion of high productivity ones.[2] However, there are non-negligible differences across countries in the contribution of net entry to aggregate productivity growth: 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.[3]

In particular, some authors have studied the impact that labour and product market regulations, barriers to entry, taxation or financial development have 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.

As far as employment protection legislation (EPL) is concerned, a number of theoretical studies have considered its implications on firms' incentives to enter and exit. In the case of entry, the consensus generally acknowledges that more rigid labour markets tend to deter entry. For instance, Bertola (1994), by modelling firing costs as an adjustment friction, argues that they reduce the value of the firm and therefore firms' incentives to enter, ceteris paribus. Similarly, Koeniger and Prat (2007) show that firing costs reduce firm entry in their model because, by reducing the shadow value of labour, they increase the productivity threshold above which it is convenient to enter. However, Klapper et al (2006) note that rules that restrict employers' freedom to fire may reduce start-up costs because they protect employees, therefore giving the latter the confidence to join small and untested firms. Moreover, large firms might be more harmed by employment protection rules because the latter are in general tougher in the case of larger firms and this can give more space to start-ups, which are disproportionally small ventures. However, because the costs entailed by EPL have in general fixed components -that are more binding in the case of small firms- a rigid labour market might deter entry, especially in the case of small firms (Bartelsman et al, 2009).

The empirical evidence on entry and EPL is scant and generally referred to single country studies. In particular, Autor et al (2007) find, using US data, that, after the introduction of the good faith exception (a form of common law exception to the "employment-at-will" doctrine consisting in the prohibition to employers to fire workers for a bad cause) the number of entering firms fell significantly. Similarly, Kugler and Pica (2008) suggest that a 1990 reform in Italy -which increased EPL for small (below 15 employees) firms only- reduced entry of small firms relatively to larger ones. The only study using cross-country data is Aghion et al (2007) who find that EPL is associated to smaller entry rates particularly in industries that are naturally characterized by stronger labour reallocation.[4]

By way of contrast, the theoretical literature on EPL and exit does not offer clear-cut conclusions. For instance, Poschke (2009), building on Samaniego (2006), models firing costs as both an adjustment cost and

[2] 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 entry of high productivity firms and to the exit of low productivity ones. In general, the contribution of net entry to productivity growth is larger in more technologically advanced sectors (Martin and Scarpetta, 2012).

[3] 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 (see also Cabral, 2014).

[4] See also Scarpetta (2002).

as a tax on exit: his theoretical model shows that, if firing costs are charged only to continuing firms, firing costs reduce the value of continuing operations and therefore increases exit, thereby positively contributing to selection and productivity growth.[5] By way of contrast, if firing costs are levied also on continuing and exiting firms, they reduce the value of continuing but also the value of exit: however, the latter drops more because firing costs are to be borne immediately, thereby reducing exit, with respect to a benchmark economy with no firing costs.

However, there might be other reasons to believe that EPL tends to reduce exit: for instance, in countries with rigid labour markets firms will tend to experiment less because of the adjustment costs entailed by high EPL, especially in sectors where experimentation is more important (e.g. those sectors that naturally require more labour reallocation, or those that use ICT more intensively). If this is indeed the case, firms in high EPL countries will use more stable and already experimented technologies and therefore we might expect fewer failures so that the exit rate might be lower, particularly in sectors requiring high flexibility. Furthermore, by reducing exit and keeping more low productivity firms alive, EPL might also deter entry, because resources (capital and labour) are not liberated by firms that would have otherwise exited in more flexible labour market environments.[6]

The empirical literature on exit rates is really scant and does not offer clear cut predictions. To the best of our knowledge, the only studies available in the literature are the already mentioned single country studies by Autor et al (2007), who use US industry panel data at the state level, and by Kugler and Pica (2008), who use Italian firm level panel data. Both studies however do not find any statistically significant effect of EPL on exit rates.

In this paper, we use the latest version of the OECD Structural and Business Statistics Database (ISIC Rev 3) and the standard EPL indicators computed by OECD, in order to study whether firms' entry and exit decisions are affected by employment protection legislation (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) differences-in-differences approach as an identification framework in order to analyse whether firms' entry and exit rates are negatively impacted by firing restrictions, particularly in sectors that naturally require more flexibility in labour force adjustment, the latter proxied by industry level worker reallocation rates in the US.

The main result of this study is that EPL is associated to both lower entry and exit rates. Moreover, we find that the additional burden that firms have to bear in the case of collective dismissals has an additional negative effect on top of those that are associated to stricter individual dismissal regulations. In turn, difficulty of dismissals seems to be the most important regulatory determinant. Interestingly, we find that the negative effects of EPL are larger in the case of small firms (those between 1 and 9 employees) while, in the case of larger ones (these with 10 or more employees), our results do not allow us to draw firm conclusions.

This paper is related to different strands of literature. First, our paper is in line with Haltiwanger et al (2014) who find, using industry data for a set of emerging, industrial and transition economies observed over the 1990s, 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.

[5] A similar result is also found in the model of Koeniger and Prat (2007) where firing costs increase the productivity threshold below which it is convenient to exit, because they reduce the shadow value of labour and therefore the option of waiting.

[6] See Aghion et al. (2008).

Second, this paper 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 sectors.[7]
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 (Caves (1998) and Santarelli and Vivarelli (2007)).[8]
This paper contributes to the previous literature on 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 the recent empirical works on firm turnover. Second, unlike previous comparable studies, such as that of Aghion et al (2007), we disentangle the role of different regulatory provisions (e.g. individual versus collective dismissals) and, more importantly, to the best of our knowledge, this is the first paper that empirically analyses the link between employment protection legislation and firms' exit using a consistent cross country-cross industry source of data.
The remainder of the study is organized as follows. In Section 2, we discuss the dataset, while in Section 3 we describe our estimation and identification framework. Section 4 contains the empirical results while Section 5 concludes.

2. Data

2.1 Country-industry level

We use the last version of the "SDBS Business Demography Indicators (ISIC Rev. 3)" database from the OECD for our dependent variables.[9] From this dataset, we extract information on entry and exit rates based on the number of active employer enterprises (see more below) for a set of 13 European countries (Austria, Belgium, Czech Republic, Denmark, Spain, Finland, Hungary, Italy, Netherlands, Norway, Portugal, Slovakia and Sweden) for the period 2004-2007. The dataset provides information on births (entry) and deaths (exit) based on different sectors of economic activities at the ISIC Rev. 3 version of STAN including manufacturing, electricity and gas, wholesale and retail trade, hotels and restaurants, transport, financial intermediation and real estate activities (more details in Tables 1 and 2). The total number of industries at the 2 digit ISIC Rev 3 level is 36; however, we exclude the remaining countries/sectors available in the database as information was not reliable or missing for the observation period: we end up with 13 countries and 27 sectors. In order to minimize missing data problems, we calculate the average of our dependent variables over the period 2004-2007. The complete dataset should include 351 observations (13 countries x 27 sectors x 1 year); however, our baseline regressions are run on 332 (293) observations for entry (exit) rates, with data for exit rates for Sweden that are completely missing. For some countries, the number of sectors is below 27, but it never falls below 24. With the relevant exception of sector "Real estate activity" for which we have information available only for 8 countries, other sectors are equally represented across countries, ranging from 10 to 13 country observations (see Tables 1 and 2).
The main advantage of the SDBS dataset is that it allows us to compare cross-country data on entry and exit rates. As Bartelsman et al (2009) discuss, this is the most relevant problem when studying firm dynamics using aggregated sectoral data derived from business statistics and business registry. As pointed out in

[7] See, among the others, Bassanini et al (2009), Cingano et al (2010), Autor et al (2007) and Conti and Sulis (2015). However, see also Belot et al (2007) who found a positive effect of EPL on per capita GDP and Acharya et al (2010). See also Scarpetta and Martin (2012) for a literature review.
[8] See Klapper et al (2006) and Ciccone and Papaioannou (2007) for the role of entry costs and regulation; Da Rin et al (2011) on the effects of taxation of corporate income and Samaniego (2010) on the role played by technical change and entry costs, among the others.
[9] More information on the dataset is available at http://www.oecd.org/std/business-stats/eurostat-oecdmanualonbusinessdemographystatistics.htm.

Eurostat (2007), to ease comparability across countries, the statistical unit to be used for firm demography data is the enterprise. In this paper, we use indicators based on the population of "employer enterprises", i.e., enterprises that have paid employment or at least one employee.[10] For this population of employer enterprises, absolute numbers of births and deaths are provided, and entry and exit rates are easily calculated and directly made available by the OECD.[11]

Our regressions include a set of controls that are derived from the same source. In particular, after matching their (slightly) different sectoral classification, from Bassanini and Garnero (2013) we take the country-industry share of self-employed (Self-employed), share of medium educated (Med. educated), the share of low educated (Low. educated) and the share of temporary contracts (Temporary). We take the average values of these control variables over the period 2004-2007.[12]

In Tables 1 and 2 we report descriptive statistics for the main variables at the sectoral and country level respectively (more details on definitions and sources are discussed in next subsections). In Table 1, we observe a large degree of heterogeneity in terms of entry and exit rates across sectors. The average entry (exit) rate equals 9.83 (8.08) with a standard deviation of 3.19 (2.29), with a large variation in both entry and exit rates: by way of example, entry rates vary from 5.7 (Food, beverages and tobacco) to 15.39 (Other business activities). Note that non-manufacturing industries exhibit higher entry and exit rates with respect to manufacturing sectors. Similarly, the US reallocation rate has a significant range of variation, i.e. between 15 and 85%.

In the remaining columns of Table 1, we report the descriptive statistics for small (1 to 9 employees) and large (10 plus employees).[13] As expected, entry (exit) rates are higher for small than for large firms, with an average of 12.34 (10.18) against 2.13 (2.51). As a matter of fact, entry and exit are a small firm phenomenon: the average share of entry accounted for by large firms entrants across sectors is 4.5% (with a standard deviation of 3.2), ranging from 15% for utilities to 1% for activities related to financial intermediation. In turn, the average share of exit accounted for by large firms is about 5.6% (SD 3.8).

Descriptive statistics reported in Table 2 illustrate a similar picture across countries. Entry rates vary between 4% (Belgium) to 13% (Hungary), similarly, exit rates for Belgium are very low (less than 3%) while they are very high for Portugal (about 13%). When disentangling country level entry and exit rates by firm size, we still detect important differences across countries. In this case, the share of entry accounted for by larger firms varies from about 1% in Portugal and Sweden to about 5% (Czech Republic and the Netherlands), while the average share of large firm exit is equal to 4.3% across countries.

2.2 Industry level

Our measure of labour reallocation is directly taken from Bassanini and Garnero (2013), and it is the average level of sectoral worker reallocation over the period 2004-2007. This measure has been calculated by the authors as the sum of hiring and separations over employment using the Displaced workers/Job tenure supplement of the US Current Population Surveys. Similar measures of job or worker reallocations have been used by Haltiwanger et al. (2013) and Bassanini et al. (2009).

Other industry level control variables are obtained from different sources and, otherwise stated, refer to the US. In particular, we consider the share of employment in total economy in 2004 for each country-industry

[10] Moreover, there is recognition that this the population of employer enterprises is distinctly different from the population of non-employer businesses. Note that this is not the only possible unit of observations. For example, in a recent paper on the effect of taxation on firm dynamics, Kneller and Macgowan (2012) use the entire population of active enterprises derived from a previous version of the SBDS database, thus including self-employed.

[11] See Eurostat (2007) for more details concerning entry and exit events.

[12] These are originally obtained from the Labour Force Surveys micro data and are made directly available on their webpage.

[13] Originally, the dataset provides information on the following firm size categories: 1 to 4 employees, 5 to 9, 10 plus and 20 plus. However, the latter category is only available for the US, and we cannot disentangle the category "10 plus" in more detailed ways. We decided to jointly consider the first two categories of firm size.

pair from the STAN database (Employment), the turnover rate in the US calculated as the sum of entry and exit rates from the SDBS dataset (Turnover), a measure of financial development from Bravo-Briosca et al (2013) (Fin. Dep.), a measure of R&D intensity over value added from the same source (R&D), an index of industry specific technological change taken from Samaniego (2010) (Tech. Change), an index of industry level of volatility (Volatility), as a proxy of risk, taken from Michelacci and Schivardi (2013) the average growth rate 93_03 of full-time equivalents in the US from the STAN database (Empl. Growth), and a measure of capital intensity from Bravo-Briosca et al (2013) (Cap. Int.). These variables have been interacted with country level variables described in the next subsection.

2.3 Country level

Our preferred measure for employment protection legislation is version 2 of this indicator (*epvc_v2*) available from the OECD. It is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals (weight of 5/7) and additional provisions for collective dismissals (2/7). The overall index incorporates 12 detailed data items, and in our robustness checks, (see Table 6) we combine them to obtain different sub-indicators for EPL.[14] Moreover, as a robustness check, we also consider the EPL index from the Economic Freedom of the World database. In our IV regressions we use legal origin (taken from Bassanini et al, 2009) as instruments for EPL.

In our robustness checks we use the following controls at the country level: OECD indices of burden on start-ups e barriers to competition (Barriers) as in Andrews and Cingano (2014); a measure of financial development taken from the World Bank (Fin. Dev.), a measure of costs for resolving insolvency from the World Bank (Insolvency). Moreover we consider a set of controls for other labour market institutions from Bassanini and Garnero (2013): union density (UD), a measure of corporatism (Corp.), the tax wedge (Tax), and the gross replacement rate for unemployment benefits (Repl. Ratio.). In one regression specification, we check whether the effect of EPL varies with the distance from the technological frontier: the TFP level of each country (TFP), measured as a percentage of the US comes from the last release of the Penn World Table.

3. Estimation and identification strategy

Our empirical framework is based on the difference-in-difference approach proposed by Rajan and Zingales (1998) and subsequently employed in many other empirical applications.[15] This approach implies the estimation of the following equation:

$$Y_{s,c} = \alpha\,(Reallocation_s * EPL_c) + \beta(W_s Z_c) + \lambda X_{s,c} + u_c + u_s + v_{s,c} \qquad (1)$$

Where Y_{sc} is the entry or exit rate in sector s of country c, Reallocation is the worker reallocation rate of sector s in the US, EPL is the level of Employment Protection Legislation in country c, W_s is a set of US industry characteristics, Z_c is a set of country level variables. X_{sc} is a set of variables that vary at both country and sector level, u_c is a country fixed effect, u_s is a sector fixed effect and u_{sc} is a standard error term.

A negative sign for the coefficient α of the interaction term Reallocation*EPL indicates that countries characterized by stronger EPL tend to have lower entry and exit rates, especially in industries characterized by high reallocation intensity.

The identification assumption behind equation (1) is that EPL is likely to be more binding in employment reallocation intensive sectors, where the flexibility requirements in the use of labour inputs are likely to play a

[14] For more details see http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm.

[15] For studies on the impact of EPL and other labour market institutions, see Bassanini et al (2009), Haltiwanger et al (2013), Bassanini and Garnero (2013) and Cardullo et al (2015).

more important role. The idea underlying the Rajan and Zingales (1998)'s approach is that there are industries (in this case those that naturally require more flexibility in the use of the workforce) that are more likely to be more "exposed" to a particular policy (employment protection legislation in this case): such industries can be considered as a sort of "treatment" group, while those that are less exposed may act as "control" group.

The use of US industry data to build a proxy for sectoral reallocation intensity is motivated by the fact that the US labour market is one of the most flexible an therefore it can approximate the "natural" industry need for employment reallocation that would have emerged also in other countries if they were not characterized by higher levels of EPL. It is important to note that for the US industry data to be a valid proxy for the "natural" exposure of an industry to a particular policy in a given country, it is not necessary that in each country the industry characteristics of interest takes on the same values as in the US. Indeed, it is sufficient that the ordering of the industries is about the same across countries. However, even this milder requirement could be violated because each industry is the aggregate of various sub-industries and if there are important differences across countries in the mix of sub-industries, then using US industry data might entail measurement error, resulting in attenuation bias. Moreover, Ciccone and Papaioannou (2010) have argued that in some circumstances also amplification bias might result, especially when the industry characteristics of interest in the benchmark country might be considered as a better proxy for the industry characteristics in more similar countries (e.g. in our paper in the case of countries with more lax employment protection legislation).

Therefore, because in principle both attenuation and amplification bias might occur in a given dataset, Ciccone and Papaioannou (2010) have proposed a "benchmarking bias" approach implemented through an IV method which instruments Reallocation*EPL_c with a two-step procedure. First, they propose to obtain the predicted industry slopes of EPL by estimating with OLS on all countries (but the US) the following equation:

$$Y_{s,c} = \rho_s \times EPL_c + e_c + e_s + e_{s,c} \qquad (2)$$

The authors showed that the "true" industry reallocation intensity could be built (netting out country effects) as the predicted industry reallocation intensity for the country with the most flexible labour market (the US) as follows:

$$\widehat{reallocation}_s = \hat{e}_s + \hat{\rho}_s * EPL_{US} \qquad (3)$$

Therefore, we use $\widehat{reallocation}_s * EPL_c$ as an instrument for Reallocation*EPL_c.[16]

It is however important to note that this approach only allows us to identify differential effects between higher and lower reallocation intensive industries. Still, this differential provides us some indication on the direction of the average effect of employment protection legislation, subject to the identification assumption that in less employment reallocation intensive sectors the effect of EPL is of the same sign and smaller than in high employment reallocation intensive industries or, alternatively, zero (Bassanini and Garnero, 2013).

In equation (1) country fixed effects should control for any omitted variable at the country level that has the same effect on the entry or exit rate in all industries, such as the quality of institutions, macroeconomic conditions over the period, social norms, etc. In turn, industry dummies may capture differences in technologies, or sector specific patterns of entry or exit, the different stage of an industry's life cycles, etc.

Our regression specification takes also into account other possible determinants of entry and exit by including the relevant country and sector interactions Z_c and W_s, such as the country barriers to competition or the cost of insolvency and the industry turnover rates, or the industry dependence on external finance and the country level of financial development. Controlling for the relevant country-industry interactions should allow us to

[16] See Bassanini and Garnero (2013) and Conti and Sulis (2015) for an application of this two-step estimator.

take into account the possibility that some industry characteristics are correlated with the US reallocation intensity or that country characteristics are correlated with EPL: in this case, the omission of the relevant country-industry interactions would tend to bias the OLS estimate of our coefficient of interest.
Furthermore, in order to consider the possibility that the employment protection legislation impact might be related to some industry characteristics, in some specifications we augment our regressions with interactions between EPL and sector level variables, such as R&D and physical capital intensity in the US. Moreover, there might be country-level variables, potentially correlated with EPL, that tend to affect entry and exit rates particularly in industries that have higher labour flexibility requirements. Hence, in some model specifications we also include additional interactions between Reallocation and country level variables, such as various labour market institutions, barriers to competition, quality of institutions, levels of economic development, among others.
Finally, there could be concerns that countries that specialize in low turnover rate as well as low reallocation intensity industries might also be less likely to have stricter employment protection legislation. In order to tackle this issue we estimate some IV regressions where we instrument EPL with variables related to the legal origin of each country (see the empirical results section).

4. Empirical results

4.1 Baseline results

In Table 3 we report empirical estimates of the baseline specification of equation 1 for both entry and exit rates. All regressions include the interaction between the US worker reallocation rate at industry level and EPL, country and sector fixed effects, as well as set of controls that vary at both country and sector level, namely the share of temporary workers, the percentage of self-employed and workers educational attainment (the share of medium and low skilled, with high skilled being the omitted category).[17]
In columns 1 and 6 we estimate the baseline difference-in-difference specification in equation (1) with OLS, while in columns 2 and 7 we weight each observation (i.e. each country-industry cell) by the (inverse of) average share of country level employment over the period 2004-2007. Indeed, sectoral data might suffer of measurement error, which is likely to be correlated with the dimension of the sector and by using Weighted Least Squares (WLS) we assess the robustness of OLS results.[18] As results displayed in Table 3 show, the interaction between US reallocation and EPL is negative and statistically significant at the 5% and 1% confidence levels in the case of the entry and exit regressions, respectively. In the case of the entry regression, the coefficient of -0.04 in the OLS regression implies that the difference in entry rates in an industry with high flexibility requirements (i.e. at the 90th percentile of US worker reallocation intensity, with a value of 57.9) and an industry with low flexibility requirements (i.e. at the 10th percentile of the US worker reallocation rate, with a value of 30) is reduced by about 0.9 percentage points in a country at the 90th percentile of EPL (Italy, with a value of 3.15) compared to a country at the 10th percentile (Norway, with a value of 2.38).[19] In the case of the WLS regression, the differential in entry rates is slightly larger, namely 1.1 percentage points.
In order to understand the magnitude of these effects, we can observe that the sample cross-country mean difference in entry rates between the industries at the 90th and 10th percentile of worker flexibility requirements is about 9 percentage points. Therefore, a differential of about 1 percentage point is equivalent

[17] We use standard errors robust to heteroscedasticity. We also checked that results are robust to using standard errors robust to clustering along both the country and industry dimensions: results are available from the authors upon request. If we drop the country-industry level controls, the magnitude of the OLS results is barely affected, while standard error are just slightly higher.
[18] We have also estimated the baseline regression with a robust regression technique that drops outliers and weight each observations according to absolute residuals and then re-estimates the regression in an iterative process. Estimation results are very similar to these reported in Table 3 and are available from the authors upon request.
[19] In order to ease the interpretation of this result, we can express the differential in entry rates as follows: D= a*(Reallocation_90-Reallocation_10)*(EPL_90-EPL_10), where a is the coefficient of the interaction between Reallocation and EPL.

to about 11% of the cross country mean difference, which might not look a particularly strong effect, although some of the next results point towards larger effects.

In the case of the exit rate, the differential in exit rates between the industry with high and low flexibility requirements is reduced by about 1.2 percentage points in a country with high with respect to a country with low values of EPL, which is a somewhat stronger effect, if we consider that the cross-country mean difference in exit rates between the industries at the 90^{th} and 10^{th} percentile of US reallocation intensity is about 6 percentage points.

In the next columns, we probe the robustness of these results along different dimensions. First, we take into account the possibility that EPL is endogenous. Indeed, it might happen that EPL and entry (exit) rates are jointly determined if a country that specializes in low turnover and reallocation intensity industries is less likely to adopt strict employment protection legislation rules. In order to address the possible endogeneity of EPL, we follow Bassanini et al (2009) and instrument it with legal origin dummies: in particular, it is expected that countries with a French legal origin are more likely to have adopted stricter employment protection rules with respect to countries with a German or Scandinavian legal origin. We report IV results in columns 4 and 9 in Table 3. First stage results, available from the authors upon request, show that in both regressions excluded instruments are statistically significant and with the expected sign. Moreover, the Hansen J test statistics rejects at least at the 5% level of confidence the hull hypothesis that the excluded instruments are correlated with the error term, while the Kleibergen-Paap rk Wald F statistics does not seem to indicate major signs of a weak instrument problem. As far as the magnitude of the effect of EPL is concerned, we note that the coefficient of the interaction terms increases (in absolute value) to -0.075 in the entry regression and to -0.089 in the exit regression, respectively. These coefficients suggest that the differential in entry (exit) rates of the industry with high and low flexibility requirements is reduced by about 1.6 (1.9) percentage points in a country with high with respect to a country with low values of employment protection legislation, which is a somewhat larger effect than that found in the case of the OLS regression.

In columns 5 and 10 we tackle another endogeneity issue associated to possible measurement error of Reallocation. As discussed in Section 3, we apply the two-step IV approach proposed by Ciccone and Papaioannou (2010) and regression results seem to suggest the existence of some form of attenuation bias, particularly in the case of the entry regression. Hence, we might consider the OLS estimates as a sort of conservative lower bound for the differential effect of EPL on entry and exit rates. Indeed, the coefficients reported in columns 5 and 10 suggest that the entry rate differential between the industries with high and low flexibility requirements would be reduced by about 4.9 percentage points in a country with high with respect to a country with low levels of EPL. This would be indeed a very large effect, given that the cross-country mean difference in entry rates between the industries with high and low flexibility requirements is about 9 percentage points. Although in the case of the exit regression the difference with the OLS results is less striking, the differential in exit rates would grow to about 2.6 percentage points against 1.3 in the OLS regression.

So far, we have assumed a linear relationship between entry (exit) rates and the independent variables; however, the linearity assumption can be problematic when the dependent variable is fractional, i.e. when it takes on values between zero and one.[20] In this case, following Pepke and Wooldridge (1996), we assume that the conditional mean of the entry (exit) rate is a logit function G of the independent variables and we estimate the following Generalized Linear Model (GLS) by quasi-maximum likelihood:[21]

[20] The quasi-likelihood function is the binary choice log-likelihood. The linearity assumption can be problematic in our case because of the large differences between entry and exit across industries and countries. See Bassanini and Garnero (2013) for a similar observation in the case of workers reallocation rates.

[21] See Bassanini and Garnero (2013) and Bassanini and Brunello (2011) for recent empirical applications and Wooldridge (2010) for a theoretical discussion.

$$Entry_{sc} = G\left(\alpha\ (Reallocation_s * EPL_c) + \beta W_s Z_c + \lambda X_{s,c} + u_c + u_s\right) + v_{sc} \quad (4)$$

Regression results reported in columns 3 and 8 suggest that dealing with the fractional response nature of the dependent variable does not seem to matter: indeed the interaction of reallocation with EPL is negative and statistically significant. Moreover, once we compute the marginal effects of the interaction term, we find values of -0.041 (-0.052) in the case of the entry (exit) rate regressions, very similar to the OLS coefficients reported in columns 1 and 6.

Overall, these results suggest that countries with stricter employment protection regulations tend to have lower firms' entry and exit rates, particularly in industries that naturally require more workers' flexibility. While the results for the entry rate are broadly in line with the previous empirical literature, the negative impact of EPL on exit rates is, to the best of our knowledge, a novel one. More importantly, our results for the exit rates fit well with the model of Poschke (2009) which predicts a negative effect of EPL on exit, provided that firing costs are levied also on exiting firms. In Poschke's (2009) model, by reducing exit, EPL hampers selection and reduces productivity growth, thereby contributing to undermine the creative destruction process.

The findings discussed so far also shed some interesting insights into the transmission channel between employment protection legislation and productivity growth. Indeed, various recent empirical studies have found that employment protection legislation is associated to lower total factor productivity growth at the industry level (Bassanini et al (2009) and Conti and Sulis (2015), among the others). In turn, the literature on misallocation cited above suggests that a sizeable share of sectoral productivity growth is associated to the net entry component (e.g. Foster et al (2008)). Therefore, our finding that higher firing costs are associated to lower firms' turnover rates is consistent with the hypothesis that employment protection legislation might indeed tend to affect sectoral productivity growth (also) through the net entry channel. Hence, besides impairing the degree of static allocative efficiency, by limiting the expansion and growth of more productive firms (as recently shown by Andrews and Cingano (2014)), employment protection legislation, by affecting the value of the firm and thereby altering the entry and exit thresholds, reduces firms' entry and exit rates and weakens dynamic allocative efficiency, thereby decreasing the level and, possibly, growth rates of total factor productivity.

4.2 Robustness checks

In this Section, we discuss a series of robustness checks whose results are shown in Tables 4 and 5. First, in columns 1 of both tables are reported estimates of an augmented model where we add the share of employment accounted for by each industry in its own country as of 2004 in order to take into account the possibility that the size of the sector plays a role in shaping entry and exit rates. Regression results suggest that this is not the case; moreover, the coefficient of our variable of interest is barely altered. In columns 2 of Tables 4 and 5 we consider the role of barriers to entry and exit. In particular, following Andrews and Cingano (2014) we consider in the entry regression the interaction between an indicator of barriers in the product market (defined as the average of the OECD indices of barriers to competition and burden on start-ups) and the US industry level of firms' turnover rates. Indeed, one could argue that barriers in the product market are more likely to display stronger effects in sectors that are naturally characterized by high levels of turnover and the US is in general the country with the most liberalized product market. Similarly, in the case of the exit rate regression, we consider the interaction of turnover rates in the US with an index of the cost of insolvency, as a measure of barriers to exit. Empirical results show that none of them is statistically significant; in turn, the interaction of Reallocation with EPL is negative and statistically significant.

In columns 3 of the two Tables we include the interaction between the US industry level of financial dependency with the country level of financial development, proxied by the ratio of private credit by domestic money banks and GDP (Aghion et al. (2007)). Again, our main results are confirmed, while we do not find any statistically significant effect of financial development.

In the next columns, we explore the possibility that EPL is simply picking up the effect of other country level variables, potentially correlated with EPL, that could affect entry and exit rates particularly in sectors that naturally require more flexibility. In columns 4 we jointly consider the interaction of reallocation intensity with various labour market variables that have been previously considered as possible confounding factors for EPL, namely union power (measured by union density), the degree of corporatism in the economy, the tax wedge and the gross replacement rate of unemployment benefits. In the case of the entry regressions, we find that the effect of EPL is larger than in the OLS case and that, among the other variables, only the tax wedge seems to matter by reducing entry rates particularly in industries characterized by high flexibility requirements. In turn, in the exit regression we find that union density is associated to higher exit rates in high flexibility requirement sectors, while countries with higher levels of corporatism tend to have lower exit rates. Moreover, we find a slightly smaller effect of EPL, which is also somewhat poorly estimated, with a p value of 0.16.

In columns 5 we include an interaction term between reallocation intensity and the OECD indicator of barriers in the product market and the costs of insolvency in the entry and exit regressions, respectively. Reassuringly, the interaction between EPL and industry reallocation in the US is always negative and statistically significant; moreover, we find, somewhat counterintuitively, that countries with larger costs of insolvency tend to have higher exit rates in high employment reallocation industries.[22]

In the remaining columns, we instead examine whether EPL continues to display a negative and statistically significant effect when we interact it with other industry characteristics that can be thought to influence entry and exit rates, such as firm turnover intensity (column 6), the growth opportunities in the industry (column 7), physical capital intensity (column 8) and financial dependency (column 9). Reassuringly, we find that the negative effect of the interaction of employment reallocation and EPL is robust, with an order of magnitude very similar to the OLS one.[23] Finally, in column 10 we consider the possibility of a differential effect of employment protection legislation depending on the country distance from the technology frontier. Indeed, previous works have found that the negative effect of EPL on labour productivity and TFP growth is higher in the case of countries near the technology frontier.[24] Regression results suggest that, in the case of the entry regression, the effect of EPL is stronger in the case of countries with high levels of TFP. For instance, at the 25th percentile of the relative TFP distribution, the coefficient of the reallocation-EPL interaction is -0.028 and statistically insignificant, while at the 75th percentile the coefficient takes on a value of -0.14 and highly significant. This result could be explained by arguing that EPL discourages drastic innovation (Saint Paul, 2002) and that drastic innovation is more likely to come from new entrants. Indeed, if drastic innovation is more important in the case of countries near the technology frontier, then one might expect that entry is more likely to be discouraged by higher levels of EPL in countries near the technology frontier. In turn, in countries far from the frontier firms might realize that imitation of foreign best practice technologies is likely to make productivity growth easier and therefore might be less discouraged by high levels of EPL.

[22] In unreported regressions, but available from the authors upon requests, we have controlled for interactions between real and country per capita GDP, the ICGR index of the quality of institutions and the degree of openness to trade. Our main results are confirmed.

[23] In regressions not reported but available from the authors upon request, we have controlled for the interaction between employment protection and US industry volatility (taken from Michelacci and Schivardi, 2013), an US index of industry technological change used in Samaniego (2010), and the R&D intensity in the US. In addition, in this case our main results are unaffected.

[24] See, for instance, Conti and Sulis (2015) and van Schaik and van de Klundert (2013) for empirical evidence and Aghion and Howitt (2006) for a theoretical discussion.

4.3 Disentangling employment protection legislation

As noted in the data section, the OECD employment protection index that we have been using so far is the weighted average of different legislative provisions related to severance pay, notification procedures, procedural inconveniences, difficulty of dismissals as well as the additional regulations concerning collective versus individual dismissals. Bassanini and Garnero (2013) have found that only some of these provisions matter in shaping the effects of EPL on worker flows; therefore it might be worth trying to disentangle the effects of the main provisions behind the OECD EPL indicator on firms' entry and exit rates.

We start in columns 1 and 5 of Table 6 by breaking down the OECD EPL index into its individual (EPL Individual) and collective (EPL Collective) regulation components. Empirical results show that both components have a negative and statistically significant effect: this suggests that regulations of collective dismissals do impose an additional burden on firms and that therefore should receive by policymakers at least as much interest as regulations on individual dismissals.

In columns 2 and 6 we break down the individual dismissal index into three components, namely procedural inconveniences (Proc. Inconv.), notice and severance payments (Severance Pay.) and difficulty of dismissals (Diff. Dismissal). Empirical results show that neither procedural inconveniences nor notice and severance payments seem to influence entry and exit rates, while difficulty of dismissal has a negative and statistically significant effect on exit rates and a weakly significant negative effect (the p value is 0.11) on entry rates. Moreover, the indicator for collective dismissals is still negative and statistically significant. If we further disentangle the effect of difficulty of dismissal into its main components (columns 3 and 7), namely definition of unfair dismissal (Unfair Dismissal), possibility of reinstatement (Restatement), compensation for unfair dismissal (Compensation) and length of trial period (Trial Length), we find that it is only the latter that matters in reducing entry rates, while in the case of exit rates it is the definition of unjust or unfair dismissal that is relevant. While we should be cautious in our ability to accurately distinguish the effect of these separate provisions on entry and exit rates, our results suggest it might be important for policymakers to focus on the difficulty of dismissal as perhaps the main element of EPL that impose a significant burden on firms.

Finally, in columns 4 and 8 we assess the robustness of previous results by using a different EPL indicator (EPL_b), namely the hiring and firing regulation index of the Economic Freedom of the World database. Reassuringly, we find that yet again a more regulated labour market is associated to lower entry and exit rates particularly in industries with more labour flexibility requirements.

4.3 Firm size

Our results so far suggest that EPL might indeed deter firms' entry and exit; however, it is possible that the effect we have found masks some heterogeneity along the firm-size dimension. Indeed, it might be the case that firms react to the burden imposed by EPL either reducing entry (and exit) or by entering in the market with a larger scale in order to spreading the fixed costs component of EPL on a larger capital base. By way of contrast, in a few countries some regulations are imposed only on large firms, therefore EPL might reduce firm turnover particularly in the case of large firms. While it would be interesting to be able to split the sample into many different size classes, data availability and sample size considerations allow us a meaningful split into two size classes only, namely 1-9 employees and 10 plus employees. Nevertheless, our data, as well as those of Klapper et al (2006), suggest that in most countries and industries the bulk of entering firms falls into the 1-9 category. In fact, in the descriptive section of the paper we showed that entry and exit are mostly a small firms phenomenon, with an average share of small firms' entry and exit of about 95%.

In Tables 7 and 8, we report the baseline regressions for both entry and exit rates. Regression results for the 1-9 category (Table 7) suggest that EPL has a negative and statistically significant effect on both entry and exit rates: interestingly, the magnitude of the effect is, especially in the case of entry rates, substantially larger

than in the whole sample, suggesting that EPL tends to reduce firm turnover particularly in the case of small firms.[25] This fits quite well with previous literature, which has highlighted how firms in the US tend to enter on a smaller scale than in the case of most continental European countries.

Regression results in Table 8 show that, in the case of larger firms, the coefficient of EPL displays a negative sign only when we take into account the benchmarking bias. Moreover, it is also possible that the 10 plus category includes too much heterogeneity in firms' dimensions to allow us to draw any firm conclusion. Indeed further sample splits based on different sizes would help to understand such findings, but unfortunately we miss the relevant information.

5. Conclusions

In this paper, we have studied the role of employment protection legislation in shaping firms' incentives to enter and exit. Our main empirical result is that both entry and exit rates are reduced by stricter EPL, particularly in industries that are characterized by higher employment reallocation intensity. These results are robust to various sensitivity checks such as those addressing reverse causality or measurement error issues associated to using US data as a proxy of an industry's employment reallocation rates. We also find that both individual and collective dismissal regulations have negative effects on entry and exit rates and that difficulty of dismissal seems to be the component of EPL most likely to affect firms' turnover. This in turn raises an important point that deserves further scrutiny in empirical studies that use aggregate indices of EPL, namely that different provisions might have different effects on firms' behaviour. Moreover, we also find that these results are mainly associated to firms in the 1-9 category, the bulk of firms that enter or exit in most countries and industries. By way of contrast, in the case of larger firms, the evidence is less clear-cut, perhaps for the heterogeneity characterizing that group in our sample.

Overall, the results presented in this paper offer new indirect evidence that the entry and exit channel is likely to be an important mechanism underlying the negative impact of employment protection legislation on productivity growth often found in the empirical literature and suggested by theoretical models.

[25] However, the cross-country differentials in entry and exit in the sectors with low and high employment reallocation rates are also higher, so that, in relative terms, the effect of EPL is quite similar to that identified in the case of the overall sample.

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Table 1. Descriptive Statistics (Industry level)

	Total sample					Size 1-9				Size 10 Plus			
Industry	**Obs**	**Entry**	**Obs**	**Exit**	**Reallocation**	**Obs**	**Entry**	**Obs**	**Exit**	**Obs**	**Entry**	**Obs**	**Exit**
15_16	13	5.7	12	6.45	39.22	12	7.94	12	8.63	12	1.49	12	2.21
17_18	12	7.23	11	10.08	41.87	12	9.13	11	12.86	12	1.9	11	3.51
21_22	13	7.06	12	7.41	34.37	11	9.51	11	9.75	11	1.57	11	2.56
27_28	13	7.18	12	6.19	32.43	13	9.55	12	7.98	13	1.7	12	1.92
30_33	13	6.41	12	6.67	31.61	12	8.76	11	8.85	12	1.35	11	1.97
34_35	12	6.63	11	5.6	27.64	12	10.55	11	8.66	11	1.53	10	1.85
36_37	13	6.8	12	7.36	45.21	12	8.48	12	9.25	11	1.51	11	2.38
40	10	9.04	5	4.22	15.51	8	14.34	4	6.45	8	1.73	3	2.94
41	10	5.53	5	3.11	15.51	8	9.02	5	5.73	9	1.42	4	3.5
45	13	11.44	12	9.24	57.3	13	13.15	12	10.42	13	2.61	12	3.1
50	12	7.36	11	6.44	57.89	12	8.46	11	7.31	12	1.44	11	1.71
51	12	9.1	11	7.93	38.04	12	10.66	11	9.22	12	1.43	11	1.76
52	13	9.55	12	9.11	62.64	13	10.4	12	9.94	13	2.06	12	2.22
55	13	11.66	12	10.66	85.87	13	12.81	12	11.69	13	3.15	12	2.8
60	13	9.43	12	8.5	41.17	13	10.99	12	9.78	13	1.71	12	2.33
61	13	10.3	11	9.75	41.17	12	12.67	10	12.33	13	2.44	10	2.54
62	13	9.56	11	8.18	41.17	11	14.09	10	13.09	11	1.9	11	2.04
63	13	9.6	12	7.22	41.17	13	11.71	12	8.73	12	2.42	12	2.33
64	12	16.5	11	12.83	30.09	12	20.41	10	15.94	12	3.14	10	3.46
65	13	10.64	12	6.47	39.35	12	14.59	11	9.5	12	2.07	11	2.27
66	13	5.97	12	4.67	39.35	11	11.85	10	9.88	12	2.14	11	1.2
67	13	12.76	12	9.91	39.35	13	13.85	11	11.3	13	2.73	11	3.21
70	8	13.79	7	9.36	45.91	7	15.99	6	10.83	7	3.66	6	4.8
71	13	12.11	12	9.91	43.14	12	14.2	11	11.69	13	2.41	12	2.64
72	13	13.37	12	9.57	43.14	12	15.24	12	10.65	13	2.24	12	2.16
73	13	15.27	12	11.08	43.14	12	20.61	11	14.56	12	1.93	10	1.93
74	10	15.39	7	10.32	43.14	2	14.2	2	9.88	2	3.96	1	2.36

Notes: Descriptive statistics have been calculated on the sample used in baseline regressions (Tables 3, 7, 8, col. 1). Industries codes follow the ISIC Rev 3 Classification (see http://www.oecd.org/sti/ind/40729523.pdf) Definitions: Entry is the average entry rate of employer enterprises, Exit is the average exit rate of employer enterprises; Reallocation is directly taken from Bassanini and Garnero (2013), and it is the average level of US sectoral worker reallocation over the period 2004-2007. See Section 2 for more details.

Table 2 Descriptive Statistics (Country level)

Total Sample					
Country	**Obs.**	**Entry rate**	**Obs.**	**Exit rate**	**EPL**
AUT	27	8.11	27	7.64	2.62
BEL	24	3.98	22	2.69	2.76
CZE	26	8.92	24	8.1	2.92
DNK	26	10.21	26	10.89	2.45
ESP	27	10.2	27	7.54	2.76
FIN	27	9.95	24	8.57	2.08
HUN	22	13.12	20	11.4	2.4
ITA	27	10.49	27	7.78	3.15
NLD	27	11.55	25	8.51	2.92
NOR	24	6.75	24	4.43	2.38
PRT	24	13.1	24	13.94	3.98
SVK	24	10.77	23	7.13	2.66
SWE	27	9.99	0		2.58
Size 1-9					
Country	**Obs.**	**Entry rate**	**Obs.**	**Exit rate**	**EPL**
AUT	27	10.13	27	9.59	2.62
BEL	18	4.38	14	2.58	2.76
CZE	25	12.24	25	11.08	2.92
DNK	26	13.37	26	13.55	2.45
ESP	21	11.65	20	9.18	2.76
FIN	27	12.46	25	9.8	2.08
HUN	21	15.16	19	13.16	2.4
ITA	26	13.38	25	9.65	3.15
NLD	26	14.91	24	11.78	2.92
NOR	24	9.21	24	5.95	2.38
PRT	23	15.52	23	16.4	3.98
SVK	23	12.58	23	8.27	2.66
SWE	18	12.28	0		2.58
Size 10 Plus					
Country	**Obs.**	**Entry rate**	**Obs.**	**Exit rate**	**EPL**
AUT	27	1.82	27	1.44	2.62
BEL	18	0.66	15	0.61	2.76
CZE	25	2.42	23	1.83	2.92
DNK	26	2.2	26	4.55	2.45
ESP	22	2.31	19	2.5	2.76
FIN	27	1.82	24	3.63	2.08
HUN	21	2.46	19	3.17	2.4
ITA	26	1.84	25	1.56	3.15
NLD	26	2.64	24	2.45	2.92
NOR	24	1.51	24	0.89	2.38
PRT	23	2.11	23	2.43	3.98
SVK	23	4.03	23	3.6	2.66
SWE	19	0.67	0		2.58

Notes: Descriptive statistics have been calculated on the sample used in baseline regressions (Tables 3, 7, 8, col. 1). Average Values for Entry and Exit rates; EPL (average) is the OECD indicator calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals. See Section 2 for more details.

Table 3. Baseline Regressions

Dep. Var. :	**Entry rate**					**Exit rate**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	WLS	GLM	IV	Bench. Bias	OLS	WLS	GLM	IV	Bench. Bias
Reallocat.*EPL	-0.0403**	-0.0502**	-0.0048**	-0.0747*	-0.231**	-0.060***	-0.052***	-0.0072***	-0.088***	-0.122***
	(0.0199)	(0.0216)	(0.00202)	(0.0427)	(0.0936)	(0.0196)	(0.0174)	(0.00167)	(0.0292)	(0.0351)
Self employed	0.0144	0.0243	0.00154	0.0247	0.103*	0.00453	-0.0160	0.000921	0.0137	0.0166
	(0.0326)	(0.0379)	(0.00350)	(0.0327)	(0.0550)	(0.0231)	(0.0215)	(0.00290)	(0.0223)	(0.0251)
Med. educated	-0.00133	-0.0637	1.81e-05	-0.00554	-0.109**	0.0387	0.00543	0.00580*	0.0349	-0.0147
	(0.0426)	(0.0465)	(0.00454)	(0.0393)	(0.0515)	(0.0284)	(0.0256)	(0.00331)	(0.0261)	(0.0245)
Low educated	0.00502	-0.0332	0.00272	0.00476	-0.0442	0.0403	0.0190	0.00716**	0.0394	0.0121
	(0.0398)	(0.0378)	(0.00416)	(0.0372)	(0.0347)	(0.0315)	(0.0293)	(0.00324)	(0.0288)	(0.0262)
Temporary	0.114*	0.0712*	0.00846	0.119*	0.113***	0.120**	0.0476*	0.0114**	0.125**	0.0680**
	(0.0684)	(0.0430)	(0.00586)	(0.0640)	(0.0395)	(0.0551)	(0.0283)	(0.00478)	(0.0512)	(0.0283)
Constant	16.85**	24.78***	-1.595***	19.90***	34.16***	2.026	20.54***	-2.051***	15.10***	18.11***
	(6.956)	(6.438)	(0.429)	0.119*	(11.76)	0.120**	0.0476*	(0.288)	0.125**	(4.496)
Country dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	332	328	332	332	328	293	293	293	293	293
R-squared	0.602	0.702		0.601	0.633	0.732	0.823		0.730	0.807
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1										

Notes: Dependent variable in columns 1-5 (6-10) is Entry (Exit) rate of employer enterprises over the period 2004-2007. Reallocation is sectoral US worker reallocation and it is taken from Bassanini and Garnero (2013). EPL is the OECD indicator for Employment Protection Legislation; it is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals and additional provisions for collective dismissals. Other controls are the country-industry share of self-employed (Self-employed), the share of medium educated (Med. Educated), the share of low educated (Low Educated) and the share of temporary contracts (Temporary) from Bassanini and Garnero (2013) and are calculated as average values over the period 2004-2007. Country and industry dummies included. In columns. 1 and 6 estimation method is OLS. In cols. 2 and 7, weights are share of employment in 2004. In cols. 3 and 8 estimation is GLM. In cols. 4 and 9 instruments are legal origins, and are taken from Bassanini et al (2009). In cols. 5 and 10, estimation method is the two-step IV estimator proposed by Ciccone and Papaioannou (2011).

Table 4. Robustness analysis for Entry Rate

Dep. Var.: Entry Rate	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Reallocation*EPL	-0.0441**	-0.0406**	-0.0401*	-0.0678*	-0.0421**	-0.0510*	-0.0489**	-0.0483**	-0.0406**	0.272**
	(0.0200)	(0.0202)	(0.0221)	(0.0368)	(0.0207)	(0.0287)	(0.0244)	(0.0221)	(0.0196)	(0.127)
Reallocation*Tax				-0.00521**						
				(0.00246)						
Reallocation*Corp.				-0.00550						
				0.0279)						
Reallocation*UD				-0.000275						
				(0.000990)						
Reallocation*Repl. Ratio				0.000933						
				(0.00147)						
Employment	-0.00813									
	(0.204)									
Turnover*Barriers		0.0140								
		(0.104)								
Cap. Int.*Fin. Dev			-0.000574							
			(0.0218)							
Reallocation*Barriers					0.0109					
					(0.0312)					
Turnover*EPL						0.0692				
						(0.128)				
Empl. Growth*EPL							14.97			
							(35.68)			
Cap. Int.*EPL								0.241		
								(0.344)		
Fin. Dep.*EPL									-4.928***	
									(1.750)	
Reallocation.*EPL*TFP										-0.426**
										(0.167)
Reallocation*TFP										0.962**
										(0.417)
Constant	9.928***	16.15*	16.79**	12.45**	15.17*	13.76*	18.29***	14.22	17.22**	-13.00
	(3.514)	(8.605)	(7.715)	(4.879)	(8.652)	(8.006)	(6.100)	(9.292)	(6.878)	(14.38)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	301	332	332	305	332	332	332	319	332	332
R-squared	0.694	0.602	0.602	0.628	0.602	0.603	0.603	0.647	0.628	0.610

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes: Reallocation is sectoral US worker reallocation; EPL is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals and additional provisions for collective dismissals. Controls are the country-industry share of self-employed (Self employed), share of medium educated (Med. educated), share of low educated (Low. educated) and the share of temporary contracts (Temporary). Other controls: the share of employment in total economy in 2004 for each country-industry pair (Employment), the turnover rate in the US calculated as the sum of entry and exit rates (Turnover), a measure of financial development (Fin. Dev.), the average growth rate 93_03 full-time equivalents in the US (Empl. Growth) and a measure of capital intensity (Cap. Int.). These variables have been interacted with country level variables: indices of burden on start-ups e barriers to competition (Barriers); a measure of financial development (Fin. Dev.); a measure of costs for resolving insolvency (Insolvency); a set of controls for other labour market institutions: union density (UD), a measure of corporatism (Corp), the tax wedge (Tax), and the gross replacement rate for unemployment benefits (Repl. Ratio). The TFP level of each country (TFP), measured as a percentage of the US.

Table 5. Robustness analysis for Exit Rate

Dep. Var.: Exit Rate	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Reallocation*EPL	-0.0753***	-0.0622***	-0.0548***	-0.0395	-0.0703***	-0.0729***	-0.0742***	-0.0672***	-0.0621***	-0.0305
	(0.0199)	(0.0196)	(0.0201)	(0.0284)	(0.0190)	(0.0260)	(0.0212)	(0.0198)	(0.0192)	(0.089)
Reallocation*Tax				0.000996						
				(0.00186)						
Reallocation*Corp.				-0.0483**						
				(0.0212)						
Reallocation*UD				0.00140**						
				(0.00068)						
Reallocation*Repl. Ratio				-0.000241						
				(0.00147)						
Employment	0.0993									
	(0.116)									
Turnover*Insolvency		0.00204								
		(0.00441)								
Cap. Int.*Fin. Dev			-0.0152							
			(0.0122)							
Reallocation*Insolvency					0.00228*					
					(0.00131)					
Turnover*EPL						0.0846				
						(0.125)				
Empl. Growth*EPL							26.31			
							(23.22)			
Cap. Int.*EPL								0.0292		
								(0.240)		
Fin. Dep.*EPL									-2.483**	
									(1.117)	
Reallocation.*EPL*TFP										-0.0770
										(0.112)
Reallocation*TFP										0.0194
										(0.273)
Constant	8.910***	2.679	0.939	2.654	0.947	0.178	4.171	21.48***	1.607	16.44*
	(2.644)	(2.747)	(2.627)	(3.305)	(2.479)	(3.650)	(2.573)	(5.176)	(2.410)	(9.701)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	276	293	293	268	293	293	293	281	293	293
R-squared	0.755	0.732	0.735	0.750	0.734	0.732	0.734	0.779	0.742	0.741

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes: Reallocation is sectoral US worker reallocation; EPL is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals and additional provisions for collective dismissals. Controls are the country-industry share of self-employed (Self-employed), share of medium educated (Med. educated), share of low educated (Low. educated) and the share of temporary contracts (Temporary). Other controls: the share of employment in total economy in 2004 for each country-industry pair (Employment), the turnover rate in the US calculated as the sum of entry and exit rates (Turnover), a measure of financial development (Fin. Dev.), the average growth rate 93_03 full-time equivalents in the US (Empl. Growth) and a measure of capital intensity (Cap. Int.). These variables have been interacted with country level variables: indices of burden on start-ups e barriers to competition (Barriers); a measure of financial development (Fin_Dev); a measure of costs for resolving insolvency (Insolvency); a set of controls for other labour market institutions: union density (UD), a measure of corporatism (Corp), the tax wedge (Tax), and the gross replacement rate for unemployment benefits (Repl. Ratio). The TFP level of each country (TFP), measured as a percentage of the US.

Table 6. Robustness analysis on EPL indicators.

Depenedent Variables:	**Entry Rate**				**Exit Rate**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reallocation*Proc. Inconv.		-0.0292 (0.0209)	-0.0335 (0.0224)			-0.0178 (0.0134)	-0.00666 (0.0143)	
Reallocation*Severance Pay		0.0105 (0.00963)	0.00743 (0.0103)			-0.00460 (0.00827)	-0.00904 (0.00928)	
Reallocation*Unfair Dismissal.			-0.00253 (0.00908)				-0.0248*** (0.00636)	
Reallocation*Reinstatement			-0.0277* (0.0147)				-0.00880 (0.00891)	
Reallocation*Compensation			-0.0152 (0.0127)				0.0104 (0.00914)	
Reallocation*Trial Lenght			0.000710 (0.00522)				(0.00363)	
Reallocation*EPL Collective.	-0.0195* (0.0114)	-0.0364** (0.0168)	-0.0358** (0.0174)		-0.0262** (0.0104)	-0.0334*** (0.0121)	-0.0431*** (0.0130)	
Reallocation.*Diff. Dismissal.		-0.0209 (0.0131)				(0.00952)		
Reallocation*EPL Individual.	-0.0265* (0.0145)				-0.0416*** (0.0150)			
Reallocation*EPL_b				-0.0212** (0.00858)				-0.0209*** (0.00570)
Constant	18.41** (7.108)	29.14*** (10.66)	37.56*** (11.64)	-1.053 (5.406)	2.330 (2.390)	5.166* (2.834)	4.458 (2.911)	-1.462 (2.197)
controls	yes	yes	yes	yes	yes	yes	yes	yes
country dummies	yes	yes	yes	yes	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes	yes	yes	yes	yes
Observations	332	332	332	332	293	293	293	293
R-squared	0.603	0.606	0.609	0.606	0.732	0.734	0.739	0.734
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1								

Notes. dependent variable in columns 1-4 (5-8) is the average entry (exit) rate of employer enterprises over the period 2004-2007. Controls and other main variables are defined in Table 3. Reallocation is sectoral US worker reallocation. For more details on different items of employment protection legislation indicator see http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm. See also section 4.3 in the paper. In cols. 4 and 8, EPL index is from Economic Freedom of the World database.

Table 7. Baseline Regressions. Firms 1-9 employees.

Dep. Var. :	**Entry rate**					**Entry rate**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	WLS	GLM	IV	Bench. Bias	OLS	WLS	GLM	IV	Bench. Bias
Realloc.*EPL	-0.0718**	-0.0505**	-0.00624**	-0.185***	-0.342***	-0.0849***	-0.0621***	-0.0078***	-0.0954***	-0.136***
	(0.0318)	(0.0237)	(0.00272)	(0.0682)	(0.126)	(0.0204)	(0.0187)	(0.00157)	(0.0293)	(0.0384)
Self employed	0.00531	0.0249	-0.000186	0.0415	0.170**	-0.00775	-0.0253	-0.00129	-0.00426	0.0127
	(0.0390)	(0.0317)	(0.00350)	(0.0435)	(0.0717)	(0.0286)	(0.0212)	(0.00303)	(0.0275)	(0.0265)
Med. educated	0.0256	-0.00602	0.00239	0.00967	-0.0906*	0.0547	0.00438	0.00625*	0.0532*	-0.0190
	(0.0523)	(0.0346)	(0.00473)	(0.0482)	(0.0494)	(0.0338)	(0.0240)	(0.00351)	(0.0311)	(0.0240)
Low educated	-0.00760	-0.00288	0.00127	-0.00948	-0.0267	0.0404	0.0212	0.00564*	0.0400	0.0129
	(0.0543)	(0.0408)	(0.00470)	(0.0509)	(0.0413)	(0.0347)	(0.0268)	(0.00332)	(0.0318)	(0.0239)
Temporary	0.116	0.0698**	0.00814	0.131*	0.153***	0.0747	0.0242	0.00562	0.0768	0.0519**
	(0.0797)	(0.0354)	(0.00610)	(0.0742)	(0.0475)	(0.0532)	(0.0271)	(0.00436)	(0.0492)	(0.0258)
Country dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	305	301	305	305	301	275	275	275	275	275
R- squared	0.587	0.728		0.575	0.527	0,708	0,827		0,707	0.810
Robust standard errors in parentheses			*** p<0.01, ** p<0.05, * p<0.1							

Notes: Dependent variable in columns 1-5 (6-10) is Entry (Exit) rate of employer enterprises over the period 2004-2007. Reallocation is sectoral US worker reallocation and it is taken from Bassanini and Garnero (2013). EPL is the OECD indicator for Employment Protection Legislation; it is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals and additional provisions for collective dismissals. Other controls are the country-industry share of self-employed (Self employed), the share of medium educated (Med. Educated), the share of low educated (Low Educated) and the share of temporary contracts (Temporary). The above are taken from Bassanini and Garnero (2013) and are calculated as average values over the period 2004-2007. Country and industry dummies included. In columngs. 1 and 6 estimation method is OLS. In cols. 2 and 7, weights are share of employment in 2004. In cols. 3 and 8 estimation is GLM. In cols. 4 and 9 instruments are legal origins, and are taken from Bassanini et al (2009). In cols. 5 and 10, estimation method is the two-step IV estimator proposed by Ciccone and Papaioannou (2011).

Table 8. Baseline Regressions. Firms 10 plus employees.

Dep. Var. :	**Entry rate**					**Exit rate**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	WLS	GLM	IV	Bench. Bias	OLS	WLS	GLM	IV	Bench. Bias
Realloc.*EPL	0.00120	0.00179	-0.000184	0.0265	-0.135	-0.00459	-0.0114	-0.00194	0.00784	-0.101**
	(0.00892)	(0.00718)	(0.00356)	(0.0180)	(0.116)	(0.0111)	(0.00931)	(0.00370)	(0.0186)	(0.0480)
Self employed	0.00218	-0.0171	-0.00302	-0.00583	0.0514	-0.0226	-0.0325***	-0.00888	-0.0267*	0.0146
	(0.0172)	(0.0106)	(0.00806)	(0.0168)	(0.0521)	(0.0148)	(0.0118)	(0.00736)	(0.0143)	(0.0253)
Med. educated	-0.0377**	-0.0331***	-0.0181**	-0.0342**	-0.0725**	-0.0353*	-0.0337**	-0.0157**	-0.0336**	-0.0606***
	(0.0148)	(0.0122)	(0.00739)	(0.0136)	(0.0343)	(0.0188)	(0.0141)	(0.00670)	(0.0168)	(0.0206)
Low educated	-0.0146	-0.0223	-0.00786	-0.0142	-0.0331*	-0.00280	-0.0122	-0.00247	-0.00258	-0.0204
	(0.0145)	(0.0136)	(0.00677)	(0.0134)	(0.0193)	(0.0173)	(0.0156)	(0.00624)	(0.0158)	(0.0173)
Temporary	0.0671***	0.0786***	0.0310***	0.0637***	0.118***	0.0606***	0.0605***	0.0205***	0.0584***	0.0929***
	(0.0234)	(0.0227)	(0.00699)	(0.0215)	(0.0369)	(0.0230)	(0.0126)	(0.00731)	(0.0209)	(0.0177)
Country dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dum.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	307	303	307	307	303	276	276	276	276	272
R- squared	0.455	0.682		0.448	0.301	0.560	0.720		0.559	0.588
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1										

Notes: Dependent variable in columns 1-5 (6-10) is Entry (Exit) rate of employer enterprises over the period 2004-2007. Reallocation is sectoral US worker reallocation and it is taken from Bassanini and Garnero (2013). EPL is the OECD indicator for Employment Protection Legislation; it is calculated as the weighted sum of sub-indicators concerning the regulations for individual dismissals and additional provisions for collective dismissals. Other controls are the country-industry share of self-employed (Self employed), the share of medium educated (Med. Educated), the share of low educated (Low Educated) and the share of temporary contracts (Temporary). The above are taken from Bassanini and Garnero (2013) and are calculated as average values over the period 2004-2007. Country and industry dummies included. In columngs. 1 and 6 estimation method is OLS. In cols. 2 and 7, weights are share of employment in 2004. In cols. 3 and 8 estimation is GLM. In cols. 4 and 9 instruments are legal origins, and are taken from Bassanini et al (2009). In cols. 5 and 10, estimation method is the two-step IV estimator proposed by Ciccone and Papaioannou (2011).

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