



Paper to be presented at the DRUID Academy conference in Rebild, Aalborg, Denmark on January
21-23, 2015

A Closer Look at the Allocation of Entrepreneurial Activity: The Role of Employment Protection Legislation

Werner Liebrechts
Utrecht University
Utrecht University School of Economics
W.J.Liebrechts@uu.nl

Abstract

Name: Werner J. Liebrechts
Affiliation: Utrecht University School of Economics
Year of enrollment: 2013
Expected final date: August 31, 2017
E-mail address: W.J.Liebrechts@uu.nl

Already Known

Employment protection legislation (EPL) affects the allocation of entrepreneurial activity across established (intrapreneurship) and newly established organizations (independent entrepreneurship). Stricter EPL increases the opportunity costs of self-employment. At the same time, employers are less likely to hire new employees given the increased difficulty and (hence) costs of firing them. Empirical results are inconclusive regarding the effects of composite EPL indices on unemployment, employment and self-employment rates.

Research Gap

This study has a threefold contribution to the existing literature. First, I investigate the effects of EPL on individual-level employment status, whereas most research so far focused on macro effects, such as changes in employment levels. Second, intrapreneurs are only recently acknowledged as a separate category of entrepreneurially active individuals. Third, I make use of two major elements of EPL to estimate their separate effect.

Theory

Theoretically, severance pay requirements have no influence on employment levels in a perfect market, where labor contracts are properly designed (Lazear, 1990). Simulations also show that optimally chosen EPL does not reduce job creation (Pissarides, 2001). Together with the increase in opportunity costs of self-employment, I therefore expect that both the severance pay and notice period are positively related to an individual being entrepreneurially active as an employee. Both job security provisions are expected to be negatively related to individuals being self-employed.

Data and Methodology

I use multilevel analyses to unravel country- and individual-level determinants of an individual's employment status (or, occupational choice), which is either employed, employed and entrepreneurially active or self-employed. I have special interest in the effects of the average severance pay and notice period for workers with different years of tenure. Data mainly comes from the Global Entrepreneurship Monitor (GEM), a validated and frequently conducted survey in 52 countries, among more than 156k respondents. EPL data is available from the World Bank and the OECD.

Results

The severance pay is found to be negatively related to individuals currently being active and leading as an intrapreneur, whereas the notice period shows a positive relationship. These results are robust for several checks, and can be seen as evidence against the use of composite EPL indices. Policymakers willing to affect the allocation of individuals with entrepreneurial abilities might consider to adjust employers' obligations regarding the severance pay and notice period accordingly.

Key References

- Addison, J. T., & Grosso, J. (1996). Job Security Provisions and Employment: Revised Estimates. *Industrial Relations: A Journal of Economy and Society*, 35(4), 585-603.
- Addison, J. T., & Teixeira, P. (2003). The Economics of Employment Protection. *Journal of Labor Research*, 24(1), 85-128.
- Bosma, N., Wennekers, S., & Stam, E. (2013). Institutions and the Allocation of Entrepreneurship across New and Established Organizations. EIM Research Reports No. H201213. Zoetermeer: EIM Business and Policy Research.
- Lazear, E. P. (1990). Job Security Provisions and Employment. *The Quarterly Journal of Economics*, 105(3), 699-726.
- Pissarides, C. A. (2001). Employment Protection. *Labour Economics*, 8(2), 131-159.

A Closer Look at the Allocation of Entrepreneurial Activity: The Role of Employment Protection Legislation¹

W.J. Liebregts

Utrecht University School of Economics

Abstract

Employment protection legislation (EPL) affects the allocation of entrepreneurial activity across established organizations (i.e. intrapreneurship) and newly established organizations (i.e. independent entrepreneurship). This study uses multilevel analyses to examine the separate effect of two major elements of EPL on an individual's employment status. In general, severance pay is found to be negatively related to individuals being entrepreneurially active as an employee, whereas the notice period shows a positive relationship. The opposite is true for the effects on individuals being self-employed. Policymakers willing to affect the allocation of entrepreneurial individuals might consider to adjust the severance pay and notice period accordingly.

Keywords: employment status, entrepreneurial employee activity, intrapreneurship, employment protection legislation, severance pay, notice period

¹ This research is partly financed by the Enabling Technology Program (ETP) Behavior and Innovation 2014 of the Netherlands Organization for Applied Scientific Research (TNO).

1. Introduction

During the second half of the twentieth century, many European countries enacted laws on employment protection. The standard argument in favor of such laws is that they protect employees from unjust termination of their contracts by employers. Opponents argue that employment levels decrease, because employers are less likely to hire new employees. Given the difficulty and (hence) costs of firing employees, attracting new workers is risky, and so, employers are reluctant to hire more of them. Employment protection legislation (EPL) thus has an effect on the level of employment in anything less than a perfectly functioning labor market. At the same time, EPL imposes significant opportunity costs on self-employment. Employees willing to become an independent entrepreneur have to give up their legal rights as an employee, and will think twice before they choose to become self-employed. Labor mobility, in particular by workers with entrepreneurial abilities, is therefore likely to be affected by EPL.

In sum, EPL not only affects the level of employment, but also the allocation of entrepreneurial activity across established organizations (i.e. intrapreneurship) and newly established organizations (i.e. independent entrepreneurship). This study examines whether the strictness of EPL has an effect on an individual's employment status, which is either employed or self-employed. Here, the category containing employed also includes individuals undertaking entrepreneurial activities, referred to as entrepreneurial employee activity (EEA) or intrapreneurship. I use multilevel analyses to unravel country-level and individual-level determinants of an individual's employment status. I have special interest in the strictness of EPL, assessed by two of its major elements, the average severance pay and notice period for the redundancy dismissal of workers.

This study has a threefold contribution to the extant literature. First and foremost, I investigate the effects of EPL on individual-level employment status, whereas most studies so far focused on macro effects, such as changes in unemployment, employment and self-employment levels. Second, intrapreneurs are only recently acknowledged as a separate category of entrepreneurially active individuals. As such, I am able to take a closer look at the allocation of entrepreneurial activity across employed and self-employed individuals. Third, I make use of the two main elements of EPL, being the severance pay and the notice period, to estimate their separate effect. Many studies have used a composite index instead to measure countries' entire system of employment protection provisions. Given the complex multi-dimensional nature of EPL, it is hard to come up with a reliable one-dimensional measure though.

All regression models are multilevel in nature due to the inclusion of explanatory variables at different levels of analysis. Data mainly comes from the Global Entrepreneurship Monitor (GEM), a validated and frequently conducted survey in 52 countries, among more than 156k respondents. Other important data sources are the World Bank (WB) and the Organisation for Economic Co-operation and Development (OECD).

The empirical results can be seen as evidence against the use of composite EPL indicators, as severance pay is found to be negatively related to intrapreneurial individuals, whereas the notice period shows a positive relationship. The opposite is true for the effects on self-employed individuals. The results are fairly robust according to three types of checks. Policymakers willing to affect the allocation of individuals with entrepreneurial abilities might consider to adjust employers' obligations regarding the severance pay and notice period accordingly.

The remainder of the paper is organized as follows. First of all, I will give an overview of the current state of the literature regarding research on intrapreneurship as well as the effects of employment protection in general, followed by my theory-driven line of reasoning towards the hypotheses. Second, there will be a brief description of the different data sets that I use and the variables in there. The section thereafter explains the methodology. The findings are discussed in the fifth section. I will end the paper with conclusions and a brief discussion of its main findings.

2. Literature and Hypotheses

In his influential paper about productive, unproductive or even destructive entrepreneurship, Baumol (1990) already speculated that there might be a 'true' rate of entrepreneurship. This rate is said to be equal across countries, but its appearance, in established or newly established organizations, depends on the incentive structure created by the institutional framework. Bosma, Wennekers & Stam (2013b) do not find contradictory evidence for their idea of an entrepreneurial constant across societies. Bosma, Wennekers, Guerrero, Amorós, Martiarena & Singer (2013a) find that, apart from a few outliers, EEA and independent (early-stage) entrepreneurial activity are negatively related. This suggests that to some extent these two modes of entrepreneurship are substitutes at the national level. The authors also conclude that both formal and informal institutions affect the allocation of entrepreneurial activity. For example, social security favoring employment over self-employment positively affects the share of intrapreneurs in a country.

EPL is part of a country's formal institutional framework. Pissarides (2001: 136) defines employment protection as follows:

"Any set of regulations, either legislated or written in labor contracts, that limit the employer's ability to dismiss the worker without delay or cost."

Thus, employment protection are not only those provisions set out in country-level legislation, but it also includes regulations at lower levels. The OECD distinguishes between five categories of employment protection, namely (1) severance payment, (2) advance notice of termination, (3) administrative procedures, (4) difficulty of dismissal, and (5) additional measures for collective dismissals. My main interest is in the first and second category. Both can be viewed as some sort of transfer from the employer to the employee – a direct money transfer in case of severance payment, and an information transfer in case of advance notice of termination of one's contract – whereas the other three categories essentially seem to be ways to impede employers to dismiss a worker. Nonetheless, they might induce employers to delay a (collective) dismissal or to buy off employees in order to avoid lengthy negotiations, and in that sense they may act like a notice period or severance pay.

Most research so far only focused on the macro effects of employment protection. Empirical findings are inconclusive regarding the effects of composite EPL indicators on unemployment, employment and self-employment rates. Addison & Teixeira (2003) map part of the modern empirical literature on the labor market consequences of employment protection, and come to three main conclusions; stricter EPL increases structural unemployment, reduces employment on average, and is positively associated with self-employment. Cahuc & Postel-Vinay (2002) note that firing restrictions may or may not cut unemployment, with the impact being very limited in either direction. Micco & Pagés (2006) find more stringent EPL to be the cause of a decrease in employment, driven by a decline in the net entry of firms. Román, Congregado & Millán (2011) conclude that strict EPL promotes (dependent) self-employment, because employers are encouraged to contract-out work to self-employed, which used to be done by employees. Others, however, find no robust or even a negative relationship between EPL and self-employment (Robson, 2003; Torrini, 2005). Millán, Millán, Román & Van Stel (2013) show that the strictness of EPL is negatively related to labor mobility among small firms. The aforementioned studies all faced difficulties in formulating a satisfactory one-dimensional measure of EPL.

Clearly, the opportunity costs of independent entrepreneurship increase with stricter requirements regarding the dismissal of workers. Employed individuals will think twice before they actually decide to

make a step towards self-employment, since they have to give up their legal protection rights as an employee. So, employees rather stay employed, and there is a higher chance that they are able to do so. At the same time, employers are less likely to hire new employees given the difficulty and (hence) costs of firing them, lowering unemployed individuals' chance to become employed. However, using a theoretical model, Lazear (1990) shows that severance pay requirements do not have to influence employment levels in a perfect market. If labor contracts are properly designed, meaning that each government-ordered monetary transfer from employer to employee will be undone by a contractual transfer of the same size from employee to employer, then the severance pay has no effect on the level of employment. This is confirmed by a theoretical model of Pissarides (2001). Optimally chosen severance pay and notice period have no influence on employment levels. His simulations also show that optimally chosen EPL does not reduce job creation.

All in all, EPL does not necessarily reduce individuals' chances to become employed, but rather increases employees' chances to stay employed. Together with the increased opportunity costs of self-employment, it is more likely that people will stay or become employed as compared to self-employed. Focusing solely on entrepreneurial individuals, I expect a higher chance of them being entrepreneurially active as an employee. I therefore hypothesize that both the severance pay and notice period, as the two main elements of a country's legal system concerning employment protection, are positively related to intrapreneurially active individuals. This leads to the following two hypotheses:

H1a. *The severance pay is positively related to an individual being entrepreneurially active as an employee.*

H1b. *The notice period is positively related to an individual being entrepreneurially active as an employee.*

For similar reasons, both job security provisions are expected to be negatively related to individuals being self-employed. This leads to the following two hypotheses:

H2a. The severance pay is negatively related to an individual being self-employed.

H2b. The notice period is negatively related to an individual being self-employed.

The study by Lazear (1990) also tested the effects of severance pay and a notice period on the level of employment empirically. Using European data, he shows that higher severance pay requirements as well as a higher number of months' notice required before termination of a worker's contract significantly decreases the employment level. Revised estimates by Addison & Grosso (1996) confirm Lazear's findings as to the directional influence of severance pay, but not to that of the notice period.

3. Data

The data comes from a variety of sources with the GEM as the most important one. The GEM is an annual large-scale international study on the prevalence of entrepreneurship as of 1999. The 2011 edition of the GEM Adult Population Survey (APS) was the first and most recent one to include EEA as a special topic. More than 156k individuals coming from 52 countries completed the survey. The 52 participating countries include (1) six factor-driven economies (i.e. Algeria, Bangladesh, Iran, Jamaica, Pakistan and Venezuela), (2) 24 efficiency-driven economies (i.e. Argentina, Barbados, Bosnia and Herzegovina, Brazil, Chile, China, Colombia, Malaysia, Mexico, Panama, Peru, South-Africa, Thailand, Trinidad and Tobago, Uruguay and most of Eastern Europe), and (3) 22 innovation-driven economies (i.e. Australia, Japan, Korea, Singapore, Taiwan, the United Arab Emirates, the United States and most of Western Europe). This corresponds to a distinction between developing, transition and developed countries, respectively. As such, the data set covers a wide range of countries at different stages of economic development.

Other data sources are the World Bank and the OECD. These two organizations both gather data about countries' EPL, and thus serve as a source for information on countries' legal height of the severance pay and length of the notice period. Both the World Bank and the OECD data set contains time series – in case of some of the OECD indicators even ranging from 1985 to 2013 – but I only use 2011 data due to the restricted availability of the GEM data. However, it must be noted that institutional regimes are

often hard to change, and indeed, EPL remains fairly stable over time in most of the countries. The World Bank has EPL data on 214 countries, including 50 out of the 52 GEM countries, whereas the OECD data set only covers 43 countries, of which 29 are also covered by the GEM.

3.1 Dependent Variable

Amongst others, the GEM 2011 APS asked for the respondents' employment status, referring to whether someone is currently employed (either part-time or full-time), self-employed, unemployed, not working (i.e. retired or disabled), a student, or a full-time homemaker. A specific set of questions is then targeted at all adult employees in the sample in order to determine who can be regarded as entrepreneurially active. This is the case when individuals have been involved in the development of new activities for their main employer in the past three years, and have had a leading role in at least one of the two phases of the intrapreneurial process, being the phase of idea development (or, ideation) and the phase of preparation and implementation (Bosma et al., 2013a). When someone is also currently involved in such a development, he or she satisfies the more narrow definition of EEA. Those individuals are continuously active and leading as intrapreneurs. On average, only 2.8 percent of the adult population satisfies the latter definition. Sweden has the highest prevalence rate of EEA (13.5 percent), followed by Denmark (9.2 percent). Typically, innovation-driven economies demonstrate higher prevalence rates of EEA than less well-developed economies (Bosma et al., 2013a). Other stylized facts show that to a certain extent EEA is a substitute of independent entrepreneurial activity, since in general, the share of EEA in overall entrepreneurial activity declines with the level of independent entrepreneurial activity (Bosma et al., 2013b).

The dependent variable is a self-constructed unordered categorical variable, which specifies an individual's employment status. Individuals that are employed by others, either in part-time or full-time work, are treated as the base category. The second category consists of individuals involved in EEA according to the narrow definition. Finally, self-employed people belong to the third and last category. Table 1 presents the descriptive statistics of the dependent variable. Due to the focus on the working part of the adult population, all other kinds of occupational statuses are omitted, and I end up with a data set covering more than 91k individuals. It appears that a vast majority of the full sample, i.e. 67.1 percent, is employed (and not entrepreneurially active), whilst only 3.7 percent is employed and active and leading as intrapreneur. Approximately thirty percent of the sample is self-employed.

Table 1 – Descriptive Statistics of the Dependent Variable

Category	Frequency	Percent	Cumulative Percent
<i>0. Employed</i>	61,501	67.1	67.1
<i>1. Intrapreneur</i>	3,430	3.7	70.8
<i>2. Self-employed</i>	26,798	29.2	100,0
Total	91,729	100.0	

3.2 Independent Variables

The World Bank's Doing Business ranking incorporates a variety of measures of labor market policy, of which the Employing Workers indicators refer to EPL. These indicators cover (1) the difficulty of hiring, (2) the difficulty of firing, (3) firing costs, and (4) hours rigidity. My focus is on the two main items of the firing costs for employers, namely the severance pay and the notice period for redundancy dismissal (both measured in terms of salary weeks). Workers with more years of tenure are typically better protected against dismissal, and so, it might be useful to distinguish between workers with one, five and ten years of tenure, but the main conclusions are drawn based upon the averages of the severance pay and notice period for workers at different years of tenure.

The OECD measures EPL by looking at the procedures and costs involved in dismissing individuals or groups of workers, and the procedures involved in hiring workers on fixed-term or temporary work agency contracts. This is reflected in three main indicators, namely (1) individual dismissal of workers with regular contracts, (2) additional costs for collective dismissals, and (3) regulation of temporary contracts. Part of the first indicator are items indicating the severance pay and the length of the notice period (both measured in months). Both items distinguish between workers at nine months, four years and twenty years tenure, but also in this case I mainly focus on the averages for workers at different years of tenure.

It should be emphasized that none of the used elements of EPL, or a combination of those elements, fully covers a country's EPL. Each item addresses part of a country's full set of provisions regarding employment protection. Also think of collective agreements, agreed upon at the regional or sectoral level, and containing all kinds of provisions not covered by legislation imposed at the national level. I

argue, however, that the severance pay and notice period are among a country's most important provisions relating to employment protection. Moreover, in most countries, severance pay and notice periods in collective agreements are similar to those set out in national-level legislation (Venn, 2009).

The regression models take into account a number of controls at different levels. All of them stem from the GEM 2011 APS, except for countries' 2011 unemployment rate, which is provided by the World Bank. It is likely that the level of unemployment in a country affects the allocation of individuals over employment and self-employment. The GDP per capita is also considered to be an important control variable when predicting an individual's occupational choice. As mentioned before, countries in a higher stage of economic development typically have a higher prevalence of EEA, and vice versa. Demographic characteristics (like age and gender), characteristics capturing cognitive ability (like educational level) as well as the household income are included as control variables at the individual level.

Table 2 – Descriptive Statistics of the Independent Variables

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
<i>Severance Pay (WB)</i>	90,007	12.401	8.429	0	31.667
<i>Notice Period (WB)</i>	90,007	4.589	3.662	0	14.444
<i>Severance Pay (OECD)</i>	60,054	1.936	1.412	0	6.000
<i>Notice Period (OECD)</i>	60,054	1.970	1.174	0	5.667
<i>Age</i>	91,729	39.699	11.635	18	64
<i>Gender</i> ¹	91,711	0.560	0.496	0	1
<i>Educational Level</i>	90,767	3.521	1.342	0	6
<i>Household Income</i> ²	75,902	2.363	0.728	1	3
<i>Log GDP per Capita</i>	88,126	9.558	0.730	6.854	10.578
<i>Unemployment Rate</i>	90,447	9.903	5.797	0.7	27.6

¹ 0 = Female, 1 = Male; ² 1 = Lowest 1/3, 2 = Middle 1/3, and 3 = Highest 1/3.

Table 2 shows the descriptive statistics of all independent variables, including the controls. Note that the World Bank indicators are given in weeks, whereas the OECD indicators are measured in months. Nevertheless, the mean values of the indicators differ quite substantially. For example, the average notice period according to the World Bank is slightly more than a month, while it is almost two months

according to the OECD. This is likely to be the result of a different sample of countries; the World Bank also has information on less well-developed countries as compared to the OECD. Both job security provisions become more generous towards workers with more years of tenure (not shown here). The scatters plots in appendix A have countries' average severance pay on the horizontal axis and the average notice period on the vertical axis – according to World Bank and OECD data, respectively – and show that there is no apparent relationship between the two within countries. The average age of the sample is approximately forty years old, and the majority are men (56 percent). The 2011 unemployment rate ranges from 0.7 percent (in Thailand) up to 27.6 percent (in Bosnia and Herzegovina).

4. Methodology

Both EEA and independent entrepreneurship are not only affected by the national context, but also by individual characteristics. This implies that disentangling the causes of the allocation of entrepreneurial activity necessitates a multilevel analysis. In this way, I am able to unravel the direct effects of determinants at different levels as well as possible cross-level interactions. More specifically, I am both able to investigate the effects of the severance pay and notice period on an individual's employment status and, for example, whether or not this effect depends on his or her age.

The composed data set indeed has a hierarchical data structure; it includes variables on the individual as well as the national level. Traditional approaches to deal with hierarchical data include either disaggregating all variables to the lowest level or aggregating all variables to the highest level, followed by standard analyses like multiple regression analyses. However, with hierarchical data, observations are not independent, errors are not independent, and different observations may have errors with different variances (i.e. heteroscedastic errors), whilst multiple regression analysis assumes exactly the opposite. Observations of individuals within the same group (or, country in this case) tend to be more similar as compared to observations between different groups. This may be due to selection issues or a shared history of the individuals within a group. Multilevel techniques account for the fact that most variables have both within-group and between-group variation, and that the effect of an individual level explanatory variable may well be different across different groups.

In general, the lowest level of a basic multilevel regression model is represented by the following equation:

$$y_{ij} = \beta_{0j} + \beta_{1j}x_{ij} + \varepsilon_{ij} \quad (4.1)$$

At the second level, we have

$$\beta_{0j} = \gamma_{00} + \gamma_{01}z_j + u_{0j} \quad (4.2)$$

and

$$\beta_{1j} = \gamma_{10} + \gamma_{11}z_j + u_{1j} \quad (4.3)$$

Substitution of equations 4.2 and 4.3 into equation 4.1 and rearrangement of terms leads to the following single-equation version of a two-level regression model, with only one explanatory variable per level:

$$y_{ij} = \gamma_{00} + \gamma_{10}x_{ij} + \gamma_{01}z_j + \gamma_{11}z_jx_{ij} + u_{1j}x_{ij} + u_{0j} + \varepsilon_{ij} \quad (4.4)$$

Here, y_{ij} is the dependent variable, where the subscript i refers to individuals ($i = 1, \dots, n_j$), and the subscript j refers to groups ($j = 1, \dots, J$). The right-hand side of the equation is split up into a fixed (or, deterministic) and a random (or, stochastic) part, respectively. The term x_{ij} is an individual-level independent variable, whereas z_j is a group-level independent variable. Note that the model indeed contains a cross-level interaction term z_jx_{ij} .

Usually, as is the case in this study, one deals with more than one explanatory variable at both levels. Assume that there are P explanatory variables x at the lowest (individual) level, indicated by the subscript p ($p = 1, \dots, P$), and Q explanatory variables z at the highest (group) level, indicated by the subscript q , ($q = 1, \dots, Q$). The more general equation than equation 4.4 is then given by:

$$y_{ij} = \gamma_{00} + \gamma_{p0}x_{pij} + \gamma_{0q}z_{qj} + \gamma_{pq}z_{qj}x_{pij} + u_{pj}x_{pij} + u_{0j} + \varepsilon_{ij} \quad (4.5)$$

My basic model consists of four individual-level explanatory variables representing an individual's age, gender, educational level and household income, and two country level explanatory variables, namely a country's log GDP per capita and unemployment rate. The full multilevel regression model also includes the average severance pay and notice period for workers with different years of tenure, and hence, $p = 1, \dots, 4$ and $q = 1, \dots, 4$.² Due to the specific form of the dependent variable (i.e. unordered categorical), I estimate so-called multilevel mixed-effects multinomial logistic regression models.

5. Results

5.1 Correlation Coefficients

The correlation coefficients between the dependent variable, the independent variables of interest, and the control variables, given in Table 3, already provide us with some insight in their relationships. Both World Bank indicators correlate significantly with *Employment Status*, but, surprisingly, in opposite directions. The severance pay appears to be positively correlated with an individual's employment status, whilst the notice period is negatively related. The magnitude of the coefficients is relatively low though. A correlation between the dependent variable and the two OECD indicators is virtually absent. In case of both World Bank and OECD data, the severance pay and notice period are significantly and negatively correlated. So, on average, the higher the severance pay, the shorter the notice period, and vice versa. This is remarkable, because in the worst case, employers can treat the notice period as if it is a severance payment by allowing employees not to be present during the notice period and paying them anyway. The highest correlations can be found among the severance pay and notice period variables coming from different sources. For example, the correlation between the World Bank and OECD indicator of the average severance pay is 0.743, and highly significant. This strengthens my confidence in that both data sources assess the strictness of a country's EPL in a fairly similar way, and thereby my confidence in the comparability of the variables. Other correlation coefficients that are worth mentioning are those between the log GDP per capita and the severance pay, both in case of World Bank and OECD data. The highly significantly negative relationships (-0.575 and -0.594, respectively) point at richer countries having less strict EPL in terms of severance pay requirements. The coefficients are inconclusive regarding its relationship with countries' legislated notice period.

² Hence, potentially the model contains sixteen cross-level interaction terms, but in the analysis I will limit myself to cross-level interactions that are interesting given the theoretical framework and previous research.

Table 3 – Correlation Coefficients

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	1.000										
2.	0.185 ***	1.000									
3.	-0.168 ***	-0.281 ***	1.000								
4.	0.055 ***	0.743 ***	-0.142 ***	1.000							
5.	-0.045 ***	-0.195 ***	0.636 ***	-0.180 ***	1.000						
6.	0.092 ***	-0.076 ***	0.064 ***	-0.102 ***	0.011 **	1.000					
7.	0.067 ***	0.037 ***	-0.041 ***	0.008 *	-0.009 *	-0.022 ***	1.000				
8.	-0.126 ***	-0.171 ***	0.042 ***	-0.151 ***	-0.038 ***	-0.057 ***	-0.065 ***	1.000			
9.	0.013 ***	0.031 ***	-0.022 ***	0.014 **	-0.034 ***	0.011 **	0.077 ***	0.287 ***	1.000		
10.	-0.194 ***	-0.575 ***	0.199 ***	-0.594 ***	-0.089 ***	0.143 ***	-0.061 ***	0.182 ***	0.027 ***	1.000	
11.	-0.002 ***	0.095 ***	-0.287 ***	0.314 ***	-0.352 ***	0.064 ***	-0.018 ***	0.026 ***	0.083 ***	0.214 ***	1.000

1. Employment Status, 2. Severance Pay (WB), 3. Notice Period (WB), 4. Severance Pay (OECD), 5. Notice Period (OECD), 6. Age, 7. Gender, 8. Educational Level, 9. Household Income, 10. Log GDP per Capita, and 11. Unemployment Rate. Significance levels: ⁺ 0.05<p≤0.10; * 0,01<p≤0,05; ** 0,001<p≤0,01; *** p≤0,001.

5.2 Regression Results

Table 4 shows the results of the main multilevel mixed-effects multinomial logistic regression models. Model 1 and 2 only include controls as explanatory variables, starting with individual-level controls only, and subsequently adding country-level control variables. The other two models alternately include the World Bank and OECD variables regarding the average severance pay and notice period.

Table 4 – Results of the Multilevel Mixed-Effects Multinomial Logistic Regression Models¹

	Model 1						Model 2					
	1. Intrapreneur			2. Self-Employed			1. Intrapreneur			2. Self-Employed		
	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.
<i>Constant</i>	-7.151	0.133	***	-1.445	0.057	***	-12.662	0.948	***	3.927	0.894	***
<i>Age</i>	0.023	0.002	***	0.022	0.001	***	0.012	0.002	***	0.023	0,001	***
<i>Gender</i>	0.302	0.040	***	0.247	0.018	***	0.302	0.041	***	0.250	0.018	***
<i>Educational level</i>	0.454	0.017	***	-0.145	0.007	***	0.364	0.018	***	-0.135	0.007	***
<i>Household Income</i>	0.580	0.037	***	0.053	0.013	***	0.665	0.037	***	0.031	0.013	*
<i>Log GDP per Capita</i>							0.630	0.099	***	-0.584	0.094	***
<i>Unemployment Rate</i>							-0.024	0.016		-0.001	0.015	
<i>Severance Pay (WB)</i>												
<i>Notice Period (WB)</i>												
<i>Severance Pay (OECD)</i>												
<i>Notice Period (OECD)</i>												
Model Summary												
Number of individuals	75,440						72,324					
Number of countries	50						48					
Log likelihood	-51,597.806						-49,267.775					
Deviance	103,195.612						98,535.550					
σ_{u0}^2	0.542 (0.043)						0.322 (0.065)					

¹ Base outcome: 0. Employed; Significance levels: + 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001.

Table 4 (ctd.) – Results of the Multilevel Mixed-Effects Multinomial Logistic Regression Models¹

	Model 3						Model 4					
	1. Intrapreneur			2. Self-Employed			1. Intrapreneur			2. Self-Employed		
	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.
<i>Constant</i>	-10.275	1.398	***	1.916	1.329		-16.007	3.214	***	5.670	3.179	+
<i>Age</i>	0.010	0.002	***	0.024	0.001	***	0.012	0.002	***	0.027	0.001	***
<i>Gender</i>	0.346	0.041	***	0.242	0.018	***	0.349	0.045	***	0.398	0.023	***
<i>Educational level</i>	0.418	0.019	***	-0.138	0.008	***	0.414	0.022	***	-0.082	0.010	***
<i>Household Income</i>	0.667	0.037	***	0.028	0.013	*	0.714	0.042	***	0.041	0.016	*
<i>Log GDP per Capita</i>	0.342	0.134	*	-0.357	0.127	**	0.858	0.319	**	-0.775	0.316	*
<i>Unemployment Rate</i>	0.011	0.015		-0.008	0.015		0.011	0.028		0.033	0.028	
<i>Severance Pay (WB)</i>	-0.020	0.011	+	0.021	0.011	+						
<i>Notice Period (WB)</i>	0.037	0.019	+	-0.069	0.018	***						
<i>Severance Pay (OECD)</i>							-0.024	0.146		-0.135	0.146	
<i>Notice Period (OECD)</i>							0.216	0.055	***	-0.166	0.053	**
Model Summary												
Number of individuals	71,333						48,061					
Number of countries	46						28					
Log likelihood	-48,265.447						-32,322.228					
Deviance	96,530.894						64,644.456					
σ_{u0}^2	0.274 (0.057)						0.249 (0.058)					

¹ Base outcome: 0. Employed; Significance levels: + 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001.

The base outcome category of the four models is *Employed*, such that all coefficients should be interpreted relative to this employment status. All control variables are highly significant, except for countries' unemployment rate, and this remains so throughout all estimated models. Their coefficients have the expected sign. Someone's age is positively related with being entrepreneurially active, either as an employee or as an independent entrepreneur. The same holds for the relationship with being a man; men have a much higher probability of being entrepreneurially active than women as compared to being employed and not entrepreneurially active. A higher educational level as well as a higher household income are especially beneficial for being an intrapreneur. The educational level is even negatively related to self-employment as compared to non-entrepreneurial employment. The higher a country's GDP per capita, the greater the probability that an individual is entrepreneurially active as an employee. The reverse holds for people being self-employed. This finding is in line with prior research, stating that intrapreneurship rates are typically higher in high-income countries.

Contrarily to what I hypothesized in hypothesis 1a, the severance pay is found to be negatively associated with intrapreneurial individuals, although the coefficient of the OECD variable is insignificant. Hypothesis 1b is not rejected, since the notice period does have a significantly positive effect on individuals being an intrapreneur. This effect is even relatively strong and highly significant in case of the sample with OECD countries only. Hypothesis 2a must be rejected, since a country's legislated severance pay seems to be positively related to self-employed; the coefficient of the World Bank indicator is positive and weakly significant. However, the OECD data cannot confirm this finding. The notice period again shows the expected sign, and is indeed negatively associated with being self-employed, as hypothesized in hypothesis 2b.

In any case, both provisions have an opposite effect on the different outcome categories, i.e. intrapreneur and self-employed. One can say that these findings are in line with the empirical results of the analyses by Addison & Grosso (1996), who revised Lazear's (1990) estimates, and concluded that the severance pay has a negative effect on the employment level, whilst a longer notice period increases employment. If the latter is true, then the probability of people being entrepreneurially active as an employee will increase. The opposite is true regarding the severance pay; if higher government-ordered severance payments decrease employment, entrepreneurial types tend to become self-employed earlier, since the opportunity of being entrepreneurially active within established organizations decreases. The results remain remarkable though, and the use of one-dimensional measures of EPL in future research should be reconsidered.

5.3 Robustness Checks

Robustness checks include the estimation of similar models, but (1) now using the World Bank and OECD variables of the severance pay and notice period for workers at different years of tenure³, (2) selecting the 22 innovation-driven economies only, and (3) selecting the 29 OECD countries only, but then using the World Bank indicators of the severance pay and notice period.

Usually, the employment protection is less strict for workers with less tenure, and so, any change in the strictness of regulations affects them more than workers with more years of tenure. In that sense, one would expect the effects of the severance pay and notice period variables for workers with less years of tenure to be stronger. Recall that the World Bank data allows for differentiation between workers with 1 year, 5 years and 10 years of tenure. The OECD distinguishes between employment protection for employees working 9 months, 4 years and 20 years for their current employer. The findings reveal that the direction of the effects does not depend on tenure length, but the magnitude of the effects indeed does. World Bank data shows that a change in the employment protection regulations for those with less years tenure has a stronger effect on the allocation of entrepreneurial activity. The OECD variables, however, create a less clear picture.

A prior selection of the 22 innovation-driven (or, developed) economies almost fully confirms the direction of the effects on entrepreneurial employees and self-employed individuals. It only appears that, based on OECD data, the severance pay is significantly negatively related to self-employment, which actually is in line with hypothesis 2a. The size of the effects is larger in almost all cases, but especially in case of OECD indicator of the notice period. Hence, the longer the notice period, the higher the probability of someone being an intrapreneur, and the lower the probability of him being self-employed, as hypothesized, and these effects are much stronger in a set of countries excluding less developed countries. The findings are similar for the group of 29 OECD-countries only.

6. Conclusions and Discussion

The way the effects of EPL have been studied to date is largely unsatisfactory. Most research so far only focused on effects at the national level, such as changes in the employment level. Moreover, and despite EPL's complex nature, previous studies frequently used a composite index to determine its

³ The results of this robustness check can be found in appendix B.

strictness. This study, however, focuses on two of its main elements separately, i.e. the severance pay and notice period, and finds opposing effects on the allocation of entrepreneurially active individuals over established and newly established organizations. The higher the state-mandated severance payments from employer to employee, the lower the probability that somebody ends up as an entrepreneurial employee, but the higher somebody's chances to be self-employed. These results, however, are somewhat weakly significant and not confirmed by the OECD indicators. The estimation results involving countries' notice period do show highly significant coefficients, and in the hypothesized direction. That is, a longer notice period is positively related to individuals being intrapreneurially active, and negatively related to self-employed individuals. The results are fairly robust according to three types of checks. A change in the employment protection regulations for those with less years tenure seems to have a stronger effect on the allocation of entrepreneurial activity. Prior selection of subsets of countries almost fully confirms the findings as to the direction of the effects.

The findings are remarkable in the sense that different elements of countries' EPL have opposite effects on an individual's decision where to be active as an entrepreneur. The results can therefore be seen as evidence against the use of composite indicators for EPL, which, so far, is a common thing to do in empirical research. Different kinds of employment protection regulations might have contradictory effects, as is shown here. It is puzzling though. At worst, employers might treat the notice period as if it were the severance pay by allowing employees not to be present during the entire notice period, but still paying them their usual wage. So, one would expect the coefficients to have the same sign, with a less strong effect of the notice period. A somewhat speculative explanation for the opposite effects that I find is that a notice period encourages job search, whereas severance payments lead to workers delaying their active job search. Then, a longer notice period induces higher (re-)employment levels, and eventually a higher number of intrapreneurially active people. As long as one receives severance payments, there is less or even no need to have a paid job again, thereby lowering the probability of being an intrapreneur. A high severance payment may even be used for the startup of a new firm, explaining its positive relationship with self-employment.

6.1 Policy Implications

Policy recommendations regarding EPL should be formulated with care, because of its complex multi-dimensional nature. Besides, institutional regimes are often hard to change, partly because of the path

dependency involved in the way countries' legislation evolves over time. Nevertheless, policymakers might consider to adjust employers' obligations regarding the notice period and severance pay in accordance with the results. That is, if policymakers are willing to increase the number of individuals with entrepreneurial abilities to reveal these within established organizations, then the notice period should be set longer, while the severance pay should become less generous, and vice versa.

6.2 Limitations and Future Research

This study is not without limitations, which are discussed here. First, it might be the case that strict EPL is embedded in a culture of certainty. In that sense, one may expect more people willing to become an employee, ultimately engaging in EEA, instead of becoming an independent entrepreneur. In other words, there might be some endogeneity present in this study. Second, I use a cross-sectional data set, which usually implies that it is hard to exclude reverse causality. Ideally, I would have had a longitudinal data set covering more than the year 2011 only. Nonetheless, it is unlikely that causality runs from an individual's choice about where to be entrepreneurially active to country-level EPL, leaving the conclusions drawn in the previous section unaltered. Third, the severance pay and notice period only capture part of a country's EPL. Even though these two provisions are among the most important elements of EPL, future research might consider the inclusion of all kinds of other regulations that are part of a country's legislation on employment protection. One can think of the maximum length of fixed-term contracts, whether or not redundancy dismissal is allowed by law, and whether or not third-party notification and approval are needed. Finally, there is a focus on employment protection legislated at the country level, because of the difficulty of obtaining information on privately or collectively negotiated contracts (often at the regional or sectoral level). This might be misleading though, e.g. in case of the Netherlands, where most employment protection regulations are laid down in collective agreements, on top of the prevailing national laws.

References

- Addison, J. T. & Grosso, J. (1996). Job Security Provisions and Employment: Revised Estimates. *Industrial Relations: A Journal of Economy and Society*, 35(4), 585-603.
- Addison, J. T. & Teixeira, P. (2003). The Economics of Employment Protection. *Journal of Labor Research*, 24(1), 85-128.
- Baumol, W. J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *The Journal of Political Economy*, 98(5), 893-921.
- Bosma, N., Wennekers, S., Guerrero, M., Amorós, J. E., Martiarena, A. & Singer, S. (2013a). *The Global Entrepreneurship Monitor. Special Report on Entrepreneurial Employee Activity*. London: Global Entrepreneurship Research Association.
- Bosma, N., Wennekers, S. & Stam, E. (2013b). *Institutions and the Allocation of Entrepreneurship across New and Established Organizations*. EIM Research Reports No. H201213. Zoetermeer: EIM Business and Policy Research.
- Cahuc, P. & Postel-Vinay, F. (2002). Temporary Jobs, Employment Protection and Labor Market Performance. *Labour Economics*, 9(1), 63-91.
- Lazear, E. P. (1990). Job Security Provisions and Employment. *The Quarterly Journal of Economics*, 105(3), 699-726.
- Micco, A. & Pagés, C. (2006). *The Economic Effects of Employment Protection: Evidence from International Industry-Level Data*. IZA Discussion Papers No. 2433. Bonn: Institute for the Study of Labor.
- Millán, A., Millán, J. M., Román, C. & Van Stel, A. (2013). How Does Employment Protection Legislation Influence Hiring and Firing Decisions by the Smallest Firms? *Economics Letters*, 121(3), 444-448.
- Pissarides, C. A. (2001). Employment Protection. *Labour Economics*, 8(2), 131-159.
- Robson, M. T. (2003). Does Stricter Employment Protection Legislation Promote Self-Employment? *Small Business Economics*, 21(3), 309-319.

Román, C., Congregado, E. & Millán, J. M. (2011). Dependent Self-Employment as a Way to Evade Employment Protection Legislation. *Small Business Economics*, 37(3), 363-392.

Torrini, R. (2005). Cross-Country Differences in Self-Employment Rates: The Role of Institutions. *Labour Economics*, 12(5), 661-683.

Venn, D. (2009). *Legislation, Collective Bargaining, and Enforcement: Updating the OECD Employment Protection Indicators*. OECD Social, Employment and Migration Working Papers No. 89. Paris: OECD Directorate for Employment, Labour and Social Affairs.

Appendix A

Figure 1 – Countries' EPL according to World Bank Data (N=50)

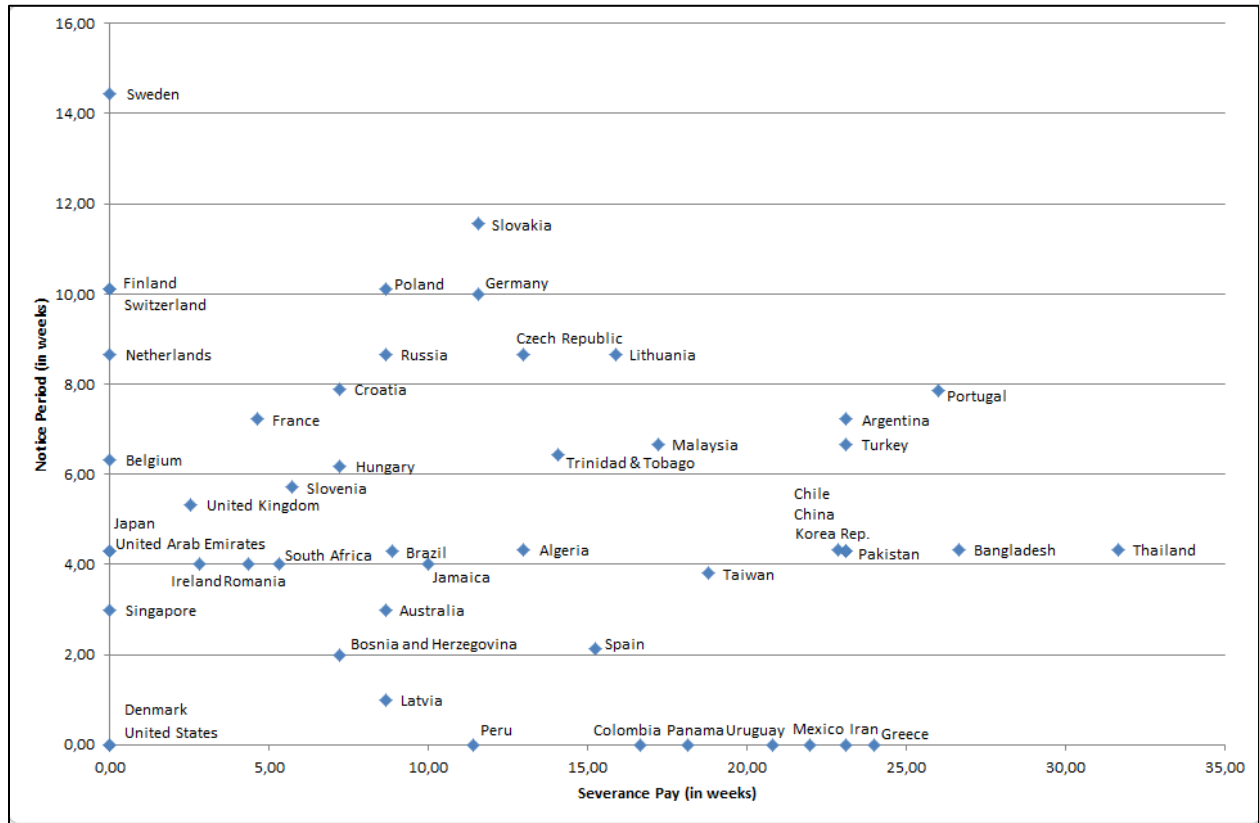
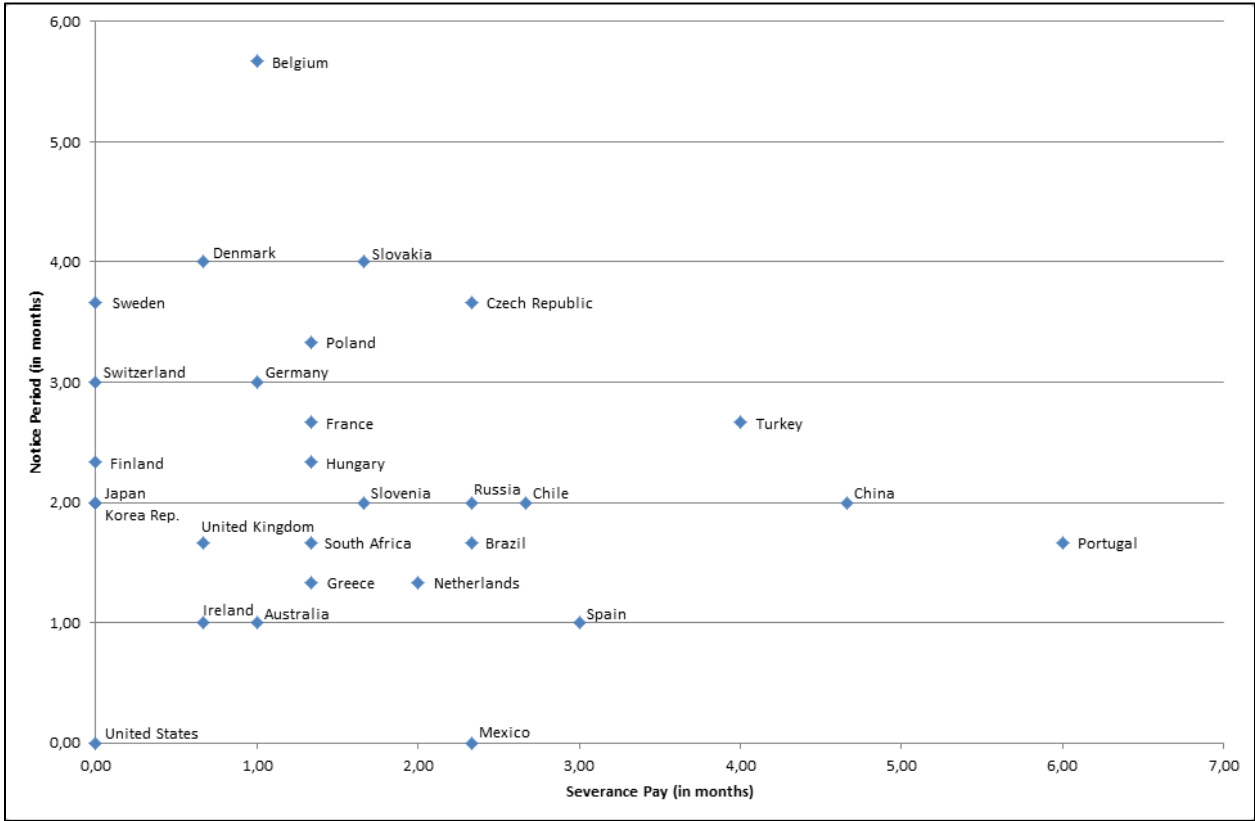


Figure 2 – Countries' EPL according to OECD Data (N=29)



Appendix B

Table B1 – Results of Robustness Check 1¹

	Model 3						Model 4					
	1. Intrapreneur			2. Self-Employed			1. Intrapreneur			2. Self-Employed		
	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.
<i>Constant</i>	-11.221	1.021	***	3.952	0.954	***	-16.069	1.656	***	4.956	1.570	**
<i>Age</i>	0.011	0.002	***	0.023	0.001	***	0.012	0.002	***	0.026	0.001	***
<i>Gender</i>	0.315	0.041	***	0.245	0.018	***	0.339	0.045	***	0.399	0.023	***
<i>Educational level</i>	0.393	0.019	***	-0.137	0.008	***	0.406	0.022	***	-0.081	0.010	***
<i>Household Income</i>	0.646	0.037	***	0.031	0.013	*	0.713	0.041	***	0.039	0.016	*
<i>Log GDP per Capita</i>	0.481	0.109	***	-0.550	0.103	***	0.883	0.176	***	-0.722	0.169	***
<i>Unemployment Rate</i>	-0.013	0.016		-0.010	0.015		-0.001	0.015		0.027	0.015	+
<i>Severance Pay 1y (WB)</i>	-0.044	0.012	***	0.022	0.011	*						
<i>Notice Period 1y (WB)</i>	0.008	0.028		-0.105	0.027	***						
<i>Severance Pay 9m (OECD)</i>							-0.073	0.080		-0.157	0.077	*
<i>Notice Period 9m (OECD)</i>							0.161	0.060	**	-0.083	0.059	
Model Summary												
Number of individuals	71,333						48,061					
Number of countries	46						28					
Log likelihood	-48,432.990						-32,379.031					
Deviance	96,865.980						64,758.062					
σ_{u0}^2	0.275 (0.055)						0.225 (0.057)					

¹ Base outcome: 0. Employed; Significance levels: + 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001.

Table B1 (ctd.) – Results of Robustness Check 1¹

	Model 5						Model 6					
	1. Intrapreneur			2. Self-Employed			1. Intrapreneur			2. Self-Employed		
	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.
<i>Constant</i>	-10.451	1.983	***	2.116	1.946		-16.488	0.853	***	3.484	1.104	**
<i>Age</i>	0.010	0.002	***	0.024	0.001	***	0.012	0.002	***	0.027	0.001	***
<i>Gender</i>	0.342	0.041	***	0.243	0.018		0.350	0.045	***	0.398	0.023	***
<i>Educational level</i>	0.411	0.019	***	-0.138	0.008	***	0.391	0.021	***	-0.080	0.010	***
<i>Household Income</i>	0.665	0.037	***	0.028	0.013	*	0.719	0.042	***	0.040	0.016	*
<i>Log GDP per Capita</i>	0.376	0.185	*	-0.371	0.182	*	0.925	0.082	***	-0.574	0.016	***
<i>Unemployment Rate</i>	0.008	0.017		-0.005	0.016		0.001	0.011		0.021	0.010	*
<i>Severance Pay 5y (WB)</i>	-0.021	0.018		0.021	0.018							
<i>Notice Period 5y (WB)</i>	0.021	0.016		-0.077	0.015	***						
<i>Severance Pay 4y (OECD)</i>							-0.019	0.042		-0.038	0.038	
<i>Notice Period 4y (OECD)</i>							0.191	0.048	***	-0.090	0.046	*
Model Summary												
Number of individuals	71,333						48,061					
Number of countries	46						28					
Log likelihood	-48,306.716						-32,367.150					
Deviance	96,613.432						64,734.300					
σ_{u0}^2	0.296 (0.058)						0.265 (0.069)					

¹ Base outcome: 0. Employed; Significance levels: + 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001.

Table B1 (ctd.) – Results of Robustness Check 1¹

	Model 7						Model 8					
	1. Intrapreneur			2. Self-Employed			1. Intrapreneur			2. Self-Employed		
	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.	Coef.	Std. Err.	Signif.
<i>Constant</i>	-10.425	0.458	***	1.687	0.410	***	-15.804	0.660	***	3.003	0.952	**
<i>Age</i>	0.009	0.002	***	0.024	0.001	***	0.012	0.002	***	0.026	0.001	***
<i>Gender</i>	0.350	0.041	***	0.242	0.018	***	0.349	0.045	***	0.397	0.023	***
<i>Educational level</i>	0.421	0.019	***	-0.138	0.008	***	0.407	0.022	***	-0.082	0.010	***
<i>Household Income</i>	0.671	0.037	***	0.029	0.013	*	0.713	0.042	***	0.043	0.016	**
<i>Log GDP per Capita</i>	0.344	0.051	***	-0.342	0.026	***	0.843	0.069	***	-0.534	0.028	***
<i>Unemployment Rate</i>	0.013	0.016		-0.005	0.016		0.003	0.018		0.028	0.017	
<i>Severance Pay 10y (WB)</i>	-0.007	0.005		0.012	0.005	*						
<i>Notice Period 10y (WB)</i>	0.030	0.011	**	-0.044	0.011	***						
<i>Severance Pay 20y (OECD)</i>							0.070	0.048		-0.046	0.043	
<i>Notice Period 20y (OECD)</i>							0.215	0.082	**	-0.127	0.082	
Model Summary												
Number of individuals	71,333						48,061					
Number of countries	46						28					
Log likelihood	-48,242.868						-32,352.383					
Deviance	96,485.736						64,704.766					
σ_{u0}^2	0.289 (0.051)						0.256 (0.069)					

¹ Base outcome: 0. Employed; Significance levels: + 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001.