Employment protection legislation and conversion temporary to permanent

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Abstract. Deze studie onderzoekt het effect van ontslagbescherming en regels rondom het gebruik van flexwerk op transities van tijdelijke naar vaste contracten. In de laatste decennia is in verschillende Europese landen het aandeel flexwerkers substantieel toegenomen. Een groot deel tijdelijke krachten blijft langdurig in de flexibele schil en er lijkt een tweedeling tussen tijdelijke en vaste werknemers te zijn ontstaan. Om deze tweedeling tegen te gaan hebben diverse landen arbeidsmarkthervormingen doorgevoerd. Het merendeel van deze hervormingen richt zich op het reduceren van de bescherming voor vaste werknemers en een het bemoeilijken van het in dienst nemen van tijdelijke werknemers. De Wet Werk en Zekerheid (WWZ) past binnen deze recente ontwikkeling. We verwachten dat het reduceren van bescherming voor vaste werknemers zal leiden tot meer transities van tijdelijke naar vaste contracten. Het effect van de regels omtrent het gebruik van tijdelijke contracten op transities is theoretisch onduidelijk: het kan leiden tot meer transities naar vast, maar ook naar een nieuw tijdelijk contract of werkloosheid. Met behulp van de OECD EPL index en panel data voor 20 Europese landen wordt de relatie tussen verschillende dimensies van ontslagbescherming en transities geschat. De resultaten laten zien dat het beperken van het gebruik van tijdelijke contracten leidt tot een daling in transities van flex naar vast: tijdelijke werknemers krijgen dan dus minder snel een vast contract. Minder bescherming voor vaste werknemers zal wel leiden tot meer transities van tijdelijke naar vaste contracten, maar of deze relatie tot uiting komt bij de invoering van de WWZ valt the betwisten.

Samenvatting

Er zijn belangrijke ontwikkelen gaande op het gebied van arbeidsverhoudingen en ontslagbescherming. Dit is het resultaat van een veranderende arbeidsmarkt betreffende het aandeel tijdelijke en vaste contracten. Op het gebied van de individuele arbeidsverhoudingen is er de groei van het flexwerk, terwijl de traditionele vaste arbeidsrelatie steeds meer onder druk staat. Een groot deel tijdelijke krachten blijft langdurig in de flexibele schil en er lijkt een tweedeling tussen tijdelijke en vaste werknemers te zijn ontstaan. Diverse landen hebben arbeidsmarkthervormingen op het gebied van ontslagbescherming doorgevoerd om deze tweedeling tegen te gaan.

Nederland, Spanje en Italië zijn voorbeelden van landen die hun ontslagbescherming hebben aangepast om de tweedeling tegen te gaan. Kort samengevat wordt het in dienst nemen van tijdelijke werknemers bemoeilijkt en wordt tegelijkertijd de bescherming van vaste werknemers versoepeld in Nederland en Spanje. Italië daarentegen, vervangt het huidige duale systeem door een enkelvoudige arbeidsovereenkomst. In dit onderzoek wordt het effect van veranderingen in ontslagbescherming op de transities van tijdelijke naar vaste banen onderzocht.

Gebaseerd op arbeidsmarktliteratuur wordt er verwacht dat het reduceren van bescherming voor vaste werknemers zal leiden tot meer transities van tijdelijke naar vaste contracten. Het effect van de regels omtrent het gebruik van tijdelijke contracten op de transities is theoretisch onduidelijk. Mechanismen die van invloed zijn op deze relatie zijn investeringen in de werknemer, onzekerheid van vraag op de markt en de proefperiode.

Met behulp van de OECD EPL index en panel data voor 20 Europese landen is de relatie tussen verschillende dimensies van ontslagbescherming en transities geschat. Het model is geschat met zowel OLS als FE. Bovendien is het model zowel geschat voor de algemene transities als voor de specifieke transities onder mannen en vrouwen.

Dit onderzoek toont aan dat het beperken van het gebruik van tijdelijke contracten leidt tot een daling in transities van tijdelijke naar vaste contracten. Dit geeft aan dat een verkorting van de maximale duur van tijdelijke contracten niet zal leiden tot een stijging in transities van tijdelijke naar vaste contracten. Hiermee wordt het gewenste effect van de implementatie van de WWZ niet bereikt. Dit onderzoek laat bovendien zien dat minder bescherming voor vaste werknemers zal leiden tot meer transities van tijdelijke naar vaste contracten.

De algehele conclusie naar aanleiding van dit onderzoek luidt dat voor een reductie van de negatieve gevolgen door het ontstaan van een duale arbeidsmarkt een enkelvoudig arbeidscontract moet worden ingevoerd. Hierbij moet rekening worden gehouden met tijdelijk werk en met zelfstandigen werkzaam in de arbeidsmarkt.

1. Introduction

Many European labour markets are dual labour markets considering the large differences in regulations across different types of labour contracts. During the 1980s, the European labour markets became more flexible due to international competition and high unemployment rates. Many European countries adopted a strategy of two- tier reforms, with strict employment protection on permanent contracts and relaxed restrictions on the use of temporary contracts (Cahuc & Postel- Vinay 2002; Akgündüz & Huizen, 2015). This resulted in a widespread use of temporary contracts in a number of OECD countries, even when permanent employment remained the most prevalent form of employment contract for wage and salary employees. During the recent economic crisis, there are growing concerns that large differences in regulations across contracts tend to concentrate any required labour market adjustments on temporary workers and that this may increase the labour market divide between temporary and permanent workers (OECD, 2014).

Employment protection legislation (EPL) is a key determinant of labour reallocation as suggested by previous research (Bassanini & Gernero, 2013). In most European countries, regulations concerning termination of temporary contracts are typically less costly for employers and less protective for workers than those applying to the dismissal of permanent workers. These differences in regulation lead to both less actual and perceived job security for employees with a temporary contract (OECD, 2014). Whether temporary work is a problem depends on several aspects, including the conversion rates from temporary to permanent contracts. If most workers make the conversion from temporary to permanent work then the cost of temporary work in terms of lower job security is less of a problem from both an individual and society perspective. High conversion rates from temporary to permanent jobs indicate that temporary contracts may serve as 'stepping stones' to permanent contracts (Fang & MacPhail, 2008). However, evidence from European countries shows that less than 50% of the workers that have temporary jobs in a given year were employed based on a permanent contract three years later. As a consequence to these claims, policy makers want to reduce the labour market divide between employees with a temporary and employees with a permanent contract (OECD, 2014). The Netherlands, Spain and Italy are examples of countries that changed recently their EPL in order to reduce the labour market divide. Generally, the Netherlands and Spain make hiring on temporary contracts more difficult and costly, while reducing dismissal costs for permanent workers. Italy changed their legislation in a more extreme way: it reformed the dual system by the establishment of a single contract for new workers that would gradually replace the old system. In this study, the effect of changes in EPL on the conversion rates from temporary to permanent jobs will be examined.

Investigating the impact of EPL on the conversion rates from temporary to permanent jobs is interesting because structural reforms may change the efficiency and equity of the reallocation process in the labour market (Bassanini & Gernero, 2013). The existence of relaxed legislation with respect to temporary contracts and strict legislation concerning permanent contracts may reduce the willingness of employers to hire on a permanent basis. Besides, the existence of temporary contracts may lead to

repeated unemployment spells. This again may lead to the fact that temporary workers are demanding more unemployment benefits than permanent workers (Heyma & Werff, 2013). Temporary contracts also tend to be associated with lower salaries and do not offer a realistic chance of promotion (Eichhorst, 2013). Furthermore, temporary workers are on average less likely to receive employer- sponsored training than people with a permanent contract, which in turn may depress productivity growth. To the extent that training increases the productivity skills of workers, this contributes over time to increase the skills gap between temporary and permanent workers, making the conversion to permanent jobs more difficult (OECD, 2014). Next to the economic outcomes, there seems to be a relation between temporary contracts and health outcomes. Although, the significant difference is small, it turns out that the longer a worker has a temporary contract the more likely this worker is to have health problems (Heyma & Werff, 2013). This shows that the position of the temporary workers is precarious and their well- being is undermined compared to permanent workers.

This research topic is not only interesting because of the societal effects on the equity and the efficiency in the labour market, but it is also relevant considering this specific research is nonexistent. There exists already a large body of literature and evidence on the effects of EPL on the static outcomes like employment and unemployment rates. However, there is no empirical evidence of EPL regarding both regulations concerning temporary and permanent workers on the dynamic conversion rates from temporary to permanent contracts. This study tries to fill this gap in the labour market literature. Furthermore, the empirical investigation of EPL remains interesting in the sense that theoretical analysis does not provide clear- cut answers to the effect of employment protection on labour market outcomes and opportunities (OECD, 2014).

A macroeconometric analysis considering 20 European countries will be performed using conversion rates from Eurostat (2015). I measure the effect on the conversion rates using the EPL index variables from the OECD (2015) and test the robustness of the results by estimating a model including interaction terms. The relationship will be estimated for the general model as well as separately for men and for women. This research builds upon the paper of Bassanini and Gernero (2013) by using the disaggregated EPL indexes in addition to the summary EPL indexes. The disaggregated EPL index will be used to investigate the specific effect of a particular regulation on the conversion rates. This will be interesting because it might better inform policy makers.

The paper is structured as follows. Chapter 2 will provide an overview of the theoretical framework and existing empirical evidence. In addition, chapter 3 provides a description of the dataset and explains the methodology of the empirical analysis. In the 4th chapter the results will be presented and chapter 5 ends with the discussion and the conclusion related to the empirical findings.

2. Theoretical framework

2.1 Conversion rates

The aim of this paper is to investigate the effect of EPL on the conversion rates from temporary to permanent contracts. The conversion rates from temporary to permanent contracts are defined as the percentage of workers in a temporary job in period *t* moving to a permanent job in period *t+1* (European Commision, 2010). It is important to keep in mind that transferring to a permanent contract is not the only way to leave the flexible labour market. Figure 1 shows the possible transfers from a temporary contract to another labour market position.

Figure 1: Transitions from temporary contracts
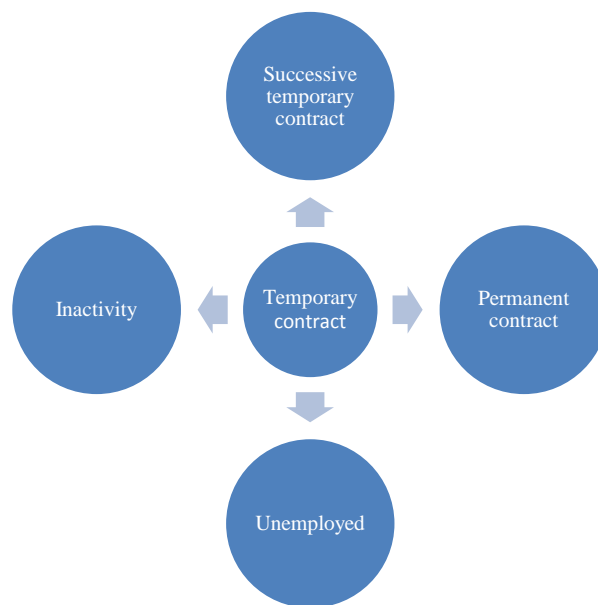
The decision to convert a temporary contract into a permanent contract is based upon several aspects influencing the behavior of the actors in the labour market. First of all, the stringency of employment protection may influence the decision of firms to convert a temporary contract to a permanent contract, which is of particular interest in this paper. EPL for workers under a permanent contract differs from workers under temporary contracts. In most countries, regulations concerning termination of temporary contracts are typically less costly for employers and less protective for workers than those applying to the dismissal of permanent workers (OECD, 2014). Grassi (2009) argues that once EPL on permanent workers is enforced the effect on the conversion rates is ambiguous. On the one hand, employers could tend to replace their permanent workers with temporary workers because of lower expected value of a filled job. However, on the other hand, firms might also prefer to stabilize part of their temporary workforce both to reduce the uncertainty of costly job- breakups and to increase the matching surplus (Grassi, 2009). In addition to the first argument of Grassi (2009), Cahuc & Postel- Vinay (2002) argue that it is obvious that the higher the firing costs of permanent workers, the lower the share of temporary

jobs transformed into permanent jobs. This is because large firing costs are an incentive for employers to use temporary jobs in sequence rather than converting to long- term contract, which are subject to firing costs.

Boeri (2011) also predicts the relationship between EPL and conversion rates from temporary to permanent contracts. In his paper, Boeri (2011) argues that a large asymmetry between the employment protection provisions applying to the two types of contracts will reduce the conversion rates of temporary to permanent contracts, thereby transforming temporary contracts into a trap rather than a stepping stone into more stable employment (OECD, 2014; Boeri, 2011). Dolado et al. (2011) also predict the relationship between the difference in regulations concerning the two types of contracts and the conversion rates from temporary to permanent jobs. They predict that in the case severance pay cannot be fully neutralized in the wage bargaining, unless permanent workers respond to a higher difference in regulation concerning the two types of contracts, a rise in the difference in regulations will reduce the conversion rates from temporary to permanent contracts. The line of reasoning behind this prediction is that, absent a strong response by permanent workers, a larger difference in regulations concerning the two types of contracts reduces the profitability of permanent jobs and hence lowers firms' conversion rates (Dolado et al., 2011). Overall, these theoretical predictions imply that high employment protection on permanent contracts and a large difference in regulations concerning the two types of contracts will lead to lower conversion rates from temporary to permanent contracts.

Hypothesis 1: Higher employment protection on permanent jobs leads to lower conversion rates from temporary to permanent contracts.

The effect of a change in regulations concerning the use of temporary contracts on the conversion rates from temporary to permanent contracts is unclear. To increase the conversion rate from temporary to permanent contracts, many countries imposed restrictions on the number of renewals and maximum duration of temporary contracts under which a worker can be employed by the same firm without interruption. This is one example of stricter regulation concerning the use of temporary contracts. These provisions may also include a minimum waiting period between two contracts (OECD, 2014). 'The existence of such a cooling- off period between contracts is an important element for firms' hiring decisions, but it has also important implications for workers: while such provisions are typically introduced to prevent abuses, they may actually generate the perverse effect of increasing job insecurity as perceived by the workers they originally intended to protect' (OECD, 2014, p. 161). This makes the outcome of this restriction unclear. On the one hand, the conversion rate from temporary to permanent jobs could increase because it is not allowed to be indefinitely employed under a temporary contract. One the other hand, however, increasing restrictions on hiring and firing regulations might induce perverse effects on temporary workers by reducing the duration of employment spells and their re- employment probabilities after the job loss (OECD, 2014). A mechanism behind this relationship might

be the level of human capital investment (Becker, 1962). Shortening the duration of a temporary contract may result in a lower level of human capital investment. This makes it easier for a firm to terminate the employer- employee relationship. In addition, uncertain demand makes it difficult for a firm to decide on a shorter period whether to convert the temporary contract into a permanent contract. This uncertainty may in turn lead to lower conversion rates from temporary to permanent contracts. Furthermore, temporary contracts may function as a extended probation period (Wang & Weiss, 1998). Shortening the probation period may inform the firm less about the productivity of the worker. When the temporary contract duration is too short for the firm to know the productivity level of the worker, the conversion rates from temporary to permanent contracts may decline. Therefore, while attaining the objective of increasing conversion rates, the regulations concerning the use of temporary contracts might have the adverse consequence of increase the degree of job insecurity for those temporary employees who have limited perspectives of conversion (OECD, 2014).

Next to EPL, economic conditions will influence the conversion from temporary to permanent contracts. Relative good economic conditions during the inflow to temporary contracts may increase the probability to transfer from a temporary to permanent contract. However, when the economic conditions deteriorate after the inflow to a temporary contract, the conversion probabilities from temporary to permanent contracts may decrease. This indicates that the probability to transfer from a temporary to permanent contract is dependent on both the economic conditions during the inflow to temporary contracts as well as on the economic conditions during the stay in temporary contracts (Heyma & Werff, 2013). Next to economic conditions macro- economic institutions like unemployment benefits, ALMPs, tax wedge and the presence of trade unions affect the conversion rates from temporary to permanent contracts. These variables will be added as control variables to the model.

Furthermore on a micro level, job characteristics may influence the probability of a conversion from a temporary to a permanent contract (Heyma & Werff, 2013). If a temporary worker has obtained a relative large amount of firm- specific knowledge needed to perform the job, the temporary worker is more likely to get a permanent contract compared to a temporary worker who has to perform tasks that could be easily done by a new temporary worker. In addition, personal characteristics of a temporary employee influence the probability to convert to a permanent contract. If workers under temporary contracts display low ability the firm might decide to terminate the employment relationship (Booth et al., 2002). Furthermore, Güell and Petrongolo (2007) argue that a worker under a temporary contract is more likely to get a permanent contract in the case the temporary employee can exert a credible threat to quit under the condition of a good job- match quality. The discussion whether a temporary contract will be converted into a permanent contract so far relates to the decision of a firm whether to convert the temporary contract into a permanent contract or not. However, after the termination of a temporary contract an employee could also decide voluntarily to leave the firm or the entire labour market.

2.2 Empirical evidence

Although a specific cross- country research on the relationship between the different types of EPL and the conversion rates from temporary to permanent contracts is not done yet, Basannini and Gernero (2013) investigated this issue by building a unique dataset. They used a difference- in difference approach for 23 business- sector industries. They find that the more restrictive the regulations, the smaller the rate of job- to- job transitions within the same industry- and in particular of transitions towards permanent jobs. However, in their paper, they do not consider regulations concerning temporary contracts (Basannini & Gernero, 2013).

Furthermore, Dolado et al. (2011) analyzed the impact of changes in the firing- cost gap between permanent and temporary workers on firm's conversion rates in a dual labour market. They test these implications trough a microanalysis by using a large panel of Spanish manufacturing firms. Their model shows that, under plausible conditions, firms' temporary to permanent conversions rates decreases when the gap in protection between the two types of contracts increases (Dolado et al., 2011).

Another microeconomic analysis is performed by Grassi (2009). In his paper, a natural experiment was exploited yielded by the 1990 Italian reform, which introduced unjust dismissal costs for small business to identify the effect of EPL on the conversion rates of temporary and training contracts into permanent contracts in the same firm. They find that the more stringent EPL acts positively on the conversion rates, and that their estimates stay the same after applying different robustness checks (Grassi, 2009).

By performing a macroeconometric cross- country analysis in the next sections of this paper, a contribution will be made to the microeconomic analysis performed by Dolado et al. (2011) and Grassi (2009). Furthermore, regulations concerning temporary contracts are an important aspect that will be taken into account in this research, which makes this research a contribution to the paper of Basannini and Gernero (2013).

3. Data and methodology

3.1 Data

To test the relationship between EPL and conversion rates from temporary to permanent jobs empirically, I will make use of data from Eurostat (2015) and the OECD (2015). Using data from these data sources a panel dataset for twenty European countries will be created. The European countries included in the dataset are Austria, Belgium, Czech Republic, Germany, Spain, Estonia, Finland, France, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia and Sweden. Data about conversion rates are retrieved from Eurostat (2015). Eurostat provides data on income and living conditions that are extracted from the EU SILC instrument. The European Union Statistics on Income and Living Conditions is an instrument aiming at collecting timely and comparable cross- sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. Aggregated data for the European Union and Euro area, which will be used in this paper, are computed as the population- weighted average of national indicators (Eurostat, 2015). For this research, the OECD provides data about the EPL indexes and control variables. Labour and Public governance statistics from the OECD are used in this research.
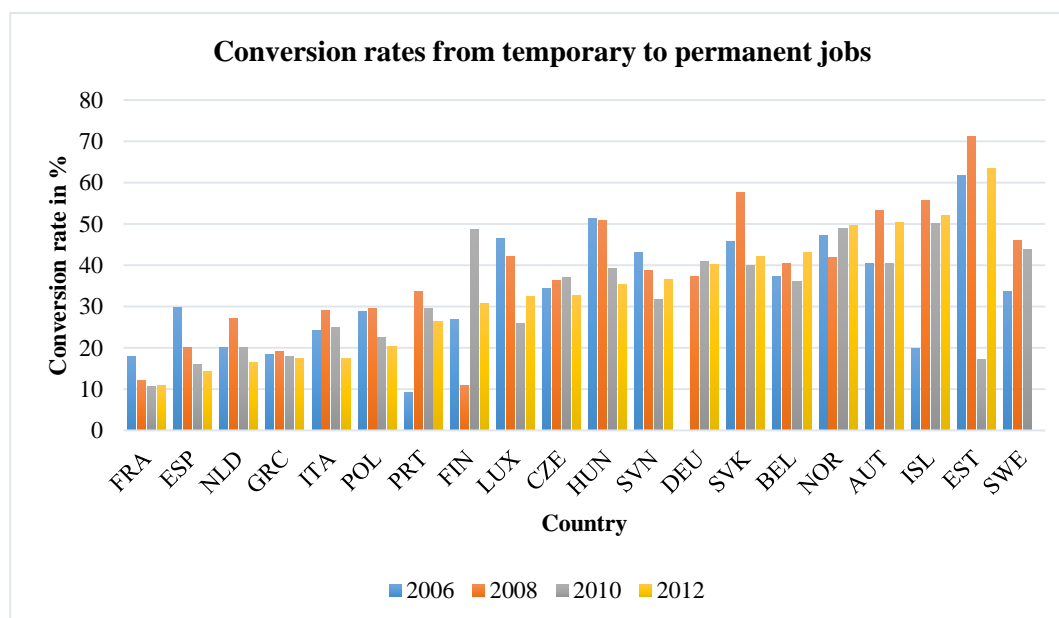
3.2 Variables

Conversion rate

The main dependent variable in this empirical research is the conversion rate from temporary to permanent jobs provided by Eurostat. Data about the conversion rates is available for the years 2006 until 2013. Eurostat calculated the percentage of workers in a temporary job in year *t-1* that have moved to a permanent job in year *t*. This means that data available for the year 2006 gives the percentage of workers with a temporary contract in year 2005 who had a permanent contract in 2006. The conversion rates are calculated for the population aged between 16 and 64 and living in private households. People with missing values for current economic status, employment status, type of contract and living in collective households and in institutions are generally excluded from the target population (Eurostat, 2014).

As shown in Table 1, on average 33.82 percent of the workers with a temporary contract made the transition towards a permanent contract within a year in the period between 2006 and 2013. The average conversion rate is stable over time. However, Figure 2 shows that the conversion rates vary widely between and within the different European countries, ranging from a conversion rate of 7.6 percent in Finland in 2007 to a rate of 71.2 percent in Estonia in 2008. This relative large difference might be related to the difference in the share of temporary workers across countries (Table 1). In addition, Table 1 shows that the conversion rates among men and women do not differ significantly. Furthermore, the average conversion rate from temporary to permanent jobs is higher than the average conversion rate from temporary contracts to unemployment.

Table 1: Summary statistics

	Obs	Mean	Std. Dev.	Min	Max
General conversion rate	155	33.82	13.622	7.6	71.2
Conversion rate men	154	34.207	13.666	6.2	71.5
Conversion rate women	154	33.361	14.344	5.8	77.9
Conversion to unemployment	154	10.556	5.732	1	33.9
Share of temporary workers	160	13.46	6.562	2.1	34
Overall strictness EPL	152	4.573	0.980	2.861	6.539
Permanent protection	152	2.474	0.536	1.587	4.417
Permanent protection 2008	20	2.536	0.571	1.73	4.417
Permanent protection 2013	20	2.309	0.439	1587	3.185
Regultion temporary contracts	152	1.900	0.879	0.625	3.75
Regulation temporary 2008	20	1.900	0.920	0.625	3.750
Regulation temporary 2013	20	1.938	0.891	0.625	3.750
ALMPs	148	0.699	0.494	0	1.95
Unemployment benefit exp.	127	0.816	0.563	0	2.97
GDP growth rate	160	1.061	3.872	-14.7	10.7
Trade union density	142	31.984	22.344	6.414	91.541
Tax wedge	160	42.605	6.128	30.53	56.09

Figure 2: Conversion rates temporary to permanent jobs

Employment protection legislation index

The main independent variables in the model are the EPL indexes provided by the OECD. To carry out international comparisons of employment protection regimes, the OECD developed synthetic measures of the strictness of EPL, ranging from 0 to 6, where higher numbers denote more rigid regimes. The OECD measures the EPL strictness of countries the first of January every year. Data is available from 1998 until 2013. The OECD uses three main indicators: the strictness of protection of permanent workers against (individual) dismissal, the strictness of specific requirements for collective dismissal and regulations on temporary forms of employment (OECD, 2004). These three main indicators are a summary indicator based on, for each country, EPL along 18 basic items (Appendix 2). The regulations concerning temporary and permanent workers differ regarding the fact that the OECD focused on the

protection of the permanent workers, while it focused on the ease of using temporary workers. This should be kept in mind while interpreting the results from the analysis.

By using the EPL indexes in the empirical analysis, it is important to be aware of the limitations of the indicators. First of all, it is difficult to take all potentially important aspects of employment protection into account in the EPL indicator. Examples are the trial or probationary periods. In addition, EPL may be subject to court interpretations and this may constitute a source of variation in EPL strictness both across countries and over time (OECD, 2004).

By looking at Table 1, it turns out that the overall strictness of employment protection varies widely between the different European countries in the period between 2006 and 2013. France and Luxembourg have the highest overall strictness of employment protection while Finland and Iceland have the lowest overall strictness. In addition, protection on permanent workers and regulation concerning temporary workers also tends to vary widely between the different European countries in the period between 2006 until 2013. It turns out that the employment protection on permanent contracts remains stable or became less strict in every country in 2013 in comparison with 2008. In addition, regarding the regulations concerning temporary jobs, it became more difficult to use temporary contracts or the ease of using temporary contracts remains constant in 2013 compared to 2008 for most of the countries.

Correlations

The goal of this paper is to investigate the effect of EPL on the conversion rates from temporary to permanent contracts. Simple correlations between the conversion rates and the different EPL indicators may already give a prediction of the relation between the two variables. The results are shown in Table 2. There is a significant negative relationship found between protection on permanent contracts and the conversion rates. Higher protection on permanent contracts tends to decrease the conversion rates from temporary to permanent jobs for the general model as well as for the model for men and women. When incorporating the specific requirements with respect to collective dismissals into the permanent protection indicator, the relationship remains significant and negative. Furthermore, there is found a negative significant correlation between regulation on temporary contracts and the conversion rates from temporary to permanent contracts.

Table 2: Correlation coefficients between conversion rates and different EPL indexes

	General	*Men*	*Women*
Permanent protection	-0.344***	-0.313***	-0.358***
Permanent protection incl. (collective) dismissal	-0.355***	-0.315***	-0.367***
Temporary regulation	-0.410 ***	-0.393***	-0.406***

Note: *** $p<0.01$, **$p< 0.05$, *$p<0.1$

Controls

Not considering the institutional and policy environment in which EPL operates, may bias the estimated relationship between EPL and the conversion rates from temporary to permanent jobs (OECD, 2004). Labour market outcomes are quite strongly influenced by labour market conditions and the presence of other institutions (Boeri & Oers, 2013). Therefore, it is important to include control variables into the equation when estimating the relationship. Control variables taken up in the model are: ALMPs, unemployment benefits, GDP growth rate, trade union density and the tax wedge.

Bassanini and Gernero (2013) already mentioned that a key problem in cross- country analysis of the impact of regulations is that it is difficult to control for an exhaustive list of confounding factors. Although, many useful controls are already added to the equation it might be useful to add country dummies to the equation to control for unobserved heterogeneity like cultural factors. A more detailed description of the estimation procedure including a discussion about the country dummies will be provided in the methodology section.

3.3 Methodology

The macroeconometric analysis that follows aims to estimate the effect of changes in EPL on the conversion rates from temporary to permanent jobs. The specification of the model is based on the gross worker flow specification of Bassanini and Gernero (2013). In this analysis the linear specification of the conversion rates is written as follows:

$$TR_{c(t-1 \sim t)} = \gamma EPL_{Pct-1} + \tau EPL_{Tct-1} + X_{ct-1}'\beta + \eta_c + \eta_t + \varepsilon_{ct} \qquad [1]$$

Were TR stands for the overall conversion rate from temporary to permanent contracts in country *c* between years *t-1* and *t*. EPL is an indicator capturing employment protection regulations. In this equation there is made a distinction between EPL$_P$ which stands for employment protection for permanent jobs and EPL$_T$ which stands for regulation on temporary jobs. X is a vector of control, macro background characteristics are taken into account, including other institutions and the state of the economy. ε_{ct} stands for the error term and η_c and η_t stand respectively for the country fixed effect and time effects.

To estimate the links between EPL and the conversion rates from temporary to permanent jobs, several techniques can be used. The model will be estimated using ordinary least squares and fixed effects. An advantage of the OLS model is that this model would fully account for cross- country variations, however a simple OLS model will not take the country- specific constant terms into account (OECD, 2004). A country- specific constant term in this model is for example culture. Culture might influence the conversion rates and also the policies made by the government. That is why it might be useful to take this country- specific constant term into account in the equation. However, Heckman and Pagès (2000) argue that fixed- effects estimates are likely to be imprecise because they only use the

time- series variation within countries. This means that FE estimates leaves unused the information on cross- country variation in EPL strictness (OECD, 2004). In addition, taking into account the country-specific constant term may also lead to a reduction in the precision of the regressions. Adding 19 country dummies to a small dataset uses up valuable degrees of freedom. This reduces the precision of the estimates due to an increase in the variance of the estimated coefficient and a decrease in the absolute magnitude of the t- scores (Studenmund, 2011). Due to these reasons the model will initially be estimated without adding county dummies. Furthermore, not all observations have the same weight in the models. The weight of the observation is based on the share of temporary employment from the total employment rate in a particular country. The higher the product of these rates, the higher the weight attached to the corresponding observations. This will make the outcomes more veracious.

Another important decision to make in this analysis, is whether to cluster the standard errors at a country level. This can be very important as failure to do so can lead to massively underestimated standard- errors and consequent over- rejection using standard hypothesis tests (Camaron et al., 2012). However with a small number of clusters the cure can be worse than the disease of autocorrelation and heteroskedasticity (Nichols & Schaffer, 2007; Kézdi, 2004; Angrist & Pischke, 2008). The panel- data set of this research contains 20 clusters. Because it is unclear whether one should cluster the standard errors, the model will be estimated while clustering the standard errors at a country level, but also without clustering the standard errors.

After the models including the summary EPL indicators are estimated, I will use the disaggregated EPL indexes to estimate the effect of the specific regulations on the conversion rates from temporary to permanent jobs. First of all, the regulations for individual dismissals with permanent contracts will be disentangled from the additional provision applying to collective dismissals. Next, the effect of regulations for individuals dismissals regarding permanent contracts will be further decomposed. After the decomposition of the regulations for permanent contracts, the regulations for temporary contracts will be decomposed. A special focus will lie on the regulations concerning the fixed term contracts. Because of multicollinearity, the variables maximum duration and the maximum number of fixed- term contracts are merged into one variable.

In addition, the models will be estimated for the general conversion rates as well as for the specific conversion rates among men and women. Estimating the models separately for men and for women may be useful considering that EPL may affect employment opportunities for women in another way than employment opportunities for men (OECD, 2004). Furthermore, the model will be estimated for the conversion rates from temporary jobs to unemployment.

4. Results

4.1 Main findings

The analysis will start by estimating the impact of the various EPL indexes on the conversion rate from temporary to permanent contracts for the general conversion rates. In Table 3 the estimated coefficients are provided considering different specifications of the standard model [1], that is: i) OLS with normal standard errors; ii) FE with normal standard errors); iii) OLS with clustered standard errors; iiii) FE with clustered standard errors. Furthermore, Table 3 shows next to the base model with summary indexes, the models in which the fixed- term contract and protection on permanent worker regulations are disentangled. The results for the base model including the coefficients of the control variables are presented in Appendix 1.

Although not significant for every specification, the base model shows a negative relationship between the regulation of temporary contracts and the conversion rate from temporary to permanent contracts. The model in which the permanent worker regulations are disentangled also show this negative relationship. This result indicates that increasing the stringency of the regulations concerning the use of temporary contracts leads to a reduction in the conversion rates. This is in line with the mechanisms mentioned by the OECD (2014) and Becker (1962). Concerning the protection on permanent workers, the specifications including the country dummies show a significant negative effect with respect to the conversion rates from temporary to permanent contracts. This result is found in the base model as well as in the model in which the fixed- term contract regulations are disentangled. This outcome indicates that increasing the protection on permanent workers tends to reduce the conversion rates from temporary to permanent contracts. This result is consistent with both Hypothesis 1 and the theoretical predications by Cahuc- Postel Vinay (2002).

In addition, the models in which the fixed- term contract regulations are disentangled do not provide many significant results. With respect to regulations concerning temporary work agency employment, it turns out that in one specification an increase in the stringency of regulations tend to reduce the conversion rates. In addition, one specification shows a negative significant relationship between the maximum number and cumulated duration of fixed- term contracts and the conversion rates from temporary to permanent contracts. Because of possible multicollinearity, the variables maximum duration and maximum number of fixed- term contracts were merged in the model. However, it is useful to mention that when these variables are added to the model separately, both variables are negatively related to the conversion rate from temporary to permanent contracts. Furthermore, the model in which the regulations concerning the protection on permanent workers are disentangled, shows a significant negative relationship between the procedural inconvenience and the conversion rates for two specifications without country dummies.

Regarding the different estimated specifications it turns out that the OLS specifications predict a significant relationship with respect to temporary regulations, whereas the FE specifications predict a

significant relationship with respect to permanent protection. Furthermore, it turns out that the specifications with the clustered standard errors provide less significant results compared to the specifications with the normal standard errors. Which specification is preferred is debatable. It is likely that the clustered standard errors over- reject the standard hypothesis, which makes the specification with normal standard errors preferable. In addition, for all FE specifications the country dummies are jointly significant. This may indicate that the FE model is preferred over the OLS specifications. However, as argued in the methodology section adding 19 country dummies might reduce the precision of the estimates. This makes it difficult to choose a preferred specification.

Table 3: Effect EPL on the general conversion rates temporary to permanent contracts

		i) OLS	ii) FE
Base model **(N= 126)**	EPL_P	-0.744 (2.287) [3.091]	-14.31 (7.343)* [5.822]**
	EPL_T	-3.143 (1.002)*** [2.017]	-2.133 (4.339) [5.501]
	R- squared	0.475	0.781
Disentangled fixed- term **(N= 125)**	EPL_P	-1.371 (2.631) [4.387]	-14.49 (8.288)* [7.206]*
	Number of valid cases FT	0.889 (0.961) [1.630]	2.727 (6.020) [6.031]
	Maximum duration and number FT	-3.410 (1.820)* [2.743]	-1.989 (1.836) [2.257]
	Temporary work agency	-2.687 (1.129)** [2.232]	-0.551 (3.275) [3.846]
	R- squared	0.531	0.781
Disentangled permanent **(N= 125)**	Procedural inconvenience	-3.097 [1.420]** (1.646)*	1.051 [2.062] (1.501)
	Notice and severance pay	-0.270 (1.023) [1.416]	0.388 (1.609) [1.258]
	Difficulty of dismissal	1.621 (0.998) [1.884]	1.559 (1.194) [1.282]
	EPL_T	-4.528 (1.072)*** [1.782]**	-2.716 (4.842) [7.082]
	R- squared	0.531	0.781

Note:- All estimations include control variables. Coefficients of control variables for base model are presented in Appendix 1.
- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
- *** p<0.01, **p< 0.05, *p<0.1

4.2 Gender specification

In the following models, we will look at the relation between EPL and the conversion rates from temporary to permanent contracts estimated separately for men and for women. The model estimated for men (Table 4) shows almost similar results compared to the general model. Similar to the general model, the relationship between the regulation of temporary contracts and the conversion from temporary to permanent contracts is negative. In addition, Table 4 shows a negative relationship between protection on permanent workers and the conversion rates from temporary to permanent contracts. However, the model for men shows less significant results compared to the general model.

Table 4: Effect EPL on conversion rates temporary to permanent contracts for men

		i) OLS	ii) FE
Base model	EPL_P	0.151	-13.41
(N= 126)		(2.346)	(7.912)*
		[2.703]	[6.347]
	EPL_T	-3.175	-2.864
		(1.028)***	(4.732)
		[1.999]	[4.545]
	R- squared	0.500	0.763
Disentangled fixed- term	EPL_P	-1.008	-12.66
(N= 124)		(2.709)	(8.939)
		[4.115]	[7.872]
	Number of valid cases FT	0.737	2.664
		(0.978)	(6.744)
		[1.475]	[6.493]
	Maximum duration and number FT	-3.658	-1.380
		(1.857)*	(2.012)
		[3.075]	[3.464]
	Temporary work agency	-2.368	-1.563
		(1.158)**	(3.529)
		[2.047]	[3.593]
	R- squared	0.516	0.764
Disentangled permanent	Procedural inconvenience	-2.426	1.305
(N= 124)		(1.420)*	(2.182)
		[1.625]	[1.921]
	Notice and severance pay	0.0364	-0.107
		(1.060)	(1.745)
		[1.465]	[2.114]
	Difficulty of dismissal	1.697	1.633
		(1.018)*	(1.284)
		[1.884]	[1.423]
	EPL_T	-4.413	-3.402
		(1.103)***	(5.264)
		[1.781]	[5.943]
	R- squared	0.545	0.764

Note:- All estimations include control variables. Coefficients of control variables for base model are presented in Appendix 1.
- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
- *** p<0.01, **p< 0.05, *p<0.1

Although overall the model for women shows similar results compared to the model for men and the general model, some small differences between the models are found (Table 5). The relationship between the regulations on permanent and temporary workers on the conversion rates is similar. However, by disentangling the fixed- term contract regulations, it turns out that in one specification for women, a decrease in the number of valid cases for the use of fixed- term contracts tends to increase the conversion rates, whereas this effect is insignificant for the general model and the model for men. Regarding this finding, one could argue that making the possibility to work under a temporary contract more difficult might lead to the decision among some groups of women to become inactive. This is because women tend to react strongly on labour market policies compared to men (Hakim, 1995). Women are seeking to balance the competing demands of work and care and tend to move between employment and inactivity (OECD, 2004). Only really motivated women are applying for these temporary contracts, which might lead to an increase of conversion rates from temporary to permanent contracts. Furthermore, compared to the model for men, the model for women provides more significant results.

4.3 Conversion from temporary contracts to unemployment

Although the main purpose of this paper is to investigate the effect of EPL on the conversion rates from temporary to permanent jobs, it might be interesting to also estimate the relationship between EPL and the conversion rates from temporary jobs to unemployment (Table 6). In two specifications, the relationship between the regulation of temporary contracts and the conversion from temporary jobs to unemployment is positive and significant. This indicates that an increase in the stringency concerning the use of temporary contracts tends to increase the conversion rate from temporary employment to unemployment. This finding is consistent with the negative significant relationship between the regulation on temporary contracts and the conversion rates from temporary to permanent. Regarding protection on permanent workers, no robust significant effect is found. Because of the small difference in findings found for women compared to the model for men, it is interesting to investigate the relationship between EPL and the conversion from temporary jobs to unemployment separately for men and for women. However, when this relationship is estimated, neither the model for men nor the model for women provides significant results.

Table 5: Effect EPL on conversion rates temporary to permanent contracts for women

		i) OLS	ii) FE
Base model	EPL_P	-3.618	-17.10
(N= 125)		(2.854)	(8.805)*
		[4.473]	[12.27]
	EPL_T	-3.281	-7.108
		(1.108)***	(4.653)
		[2.083]	[5.755]
	R- squared	0.441	0.755
Disentangled fixed- term	EPL_P	-2.192	-17.21
(N= 124)		(3.302)	(9.478)*
		[5.964]	[13.61]
	Number of valid cases FT	1.762	2.352
		(0.970)*	(7.551)
		[1.585]	[7.151]
	Maximum duration and number FT	-3.799	-2.708
		(2.090)*	(2.294)
		[2.728]	[1.662]
	Temporary work agency	-4.008	-2.921
		(1.217)***	(3.669)
		[2.418]	[4.398]
	R- squared	0.483	0.760
Disentangled permanent	Procedural inconvenience	-4.163	-0.406
(N= 124)		(1.532)***	(2.751)
		[1.503]**	[2.749]
	Notice and severance pay	-1.321	-0.362
		(1.194)	(2.032)
		[1.471]	[1.905]
	Difficulty of dismissal	0.844	0.670
		(1.141)	(1.467)
		[1.922]	[1.586]
	EPL_T	-4.463	-11.55
		(1.141)***	(4.972)**
		[1.601]**	[7.596]
	R- squared	0.500	0.750

Note:- All estimations include control variables. Coefficients of control variables for base model are presented in Appendix 1.

- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]

- *** p<0.01, **p< 0.05, *p<0.1

Table 6: Effect EPL on conversion rates temporary employment to unemployment

		i) OLS	ii) FE
Base model	EPL$_P$	0.178	-2.004
(N= 126)		(1.083)	(2.744)
		[1.577]	[1.709]
	EPL$_T$	2.276	-1.962
		(0.474)***	(1.622)
		[1.442]	[1.489]
	R- squared	0.452	0.858
Disentangled fixed- term	EPL$_P$	-0.921	-2.136
(N= 125)		(1.251)	(3.067)
		[1.550]	[2.083]
	Number of valid cases FT	0.746	-1.879
		(0.457)	(2.228)
		[0.756]	[1.447]
	Maximum duration and number FT	-0.725	0.113
		(0.865)	(0.680)
		[1.053]	[0.580]
	Temporary work agency	1.549	-1.185
		(0.537)***	(1.212)
		[1.110]	[0.905]
	R- squared	0.464	0.861
Disentangled permanent	Procedural inconvenience	-2.821	-0.624
(N= 125)		(0.628)***	(0.754)
		[0.813]***	[0.432]
	Notice and severance pay	0.769	-0.418
		(0.452)*	(0.589)
		[0.618]	[0.368]
	Difficulty of dismissal	0.369	0.362
		(0.441)	(0.437)
		[0.474]	[0.177]*
	EPL$_T$	1.396	-1.693
		(0.474)***	(1.771)
		[1.151]	[2.002]
	R- squared	0.570	0.862

Note:- All estimations include control variables. Coefficients of control variables for base model are presented
   in Appendix 1.
   - Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
   - *** p<0.01, **p< 0.05, *p<0.1

4.4 Robustness checks

In order to check the robustness of the models estimated following the original estimation procedure, the models will be estimated following another estimation procedure. Heyma and Werff (2013) argue that economic conditions will influence the conversion from temporary contracts to permanent contracts or to unemployment. The inclusion of interaction terms between EPL and the GDP growth rate might be useful. This because of the idea that the interaction between EPL and the conversion rates might differ in a period of economic boom compared to a recession. However, the period under study in this paper falls almost entirely within the period of the Great Recession. Making a division between economic booms and recessions may therefore become difficult. That is the reason why the model will initially be estimated without the inclusion of these interaction terms. However, it might be useful to estimate the models including the interaction terms as a robustness check.

Overall, this robustness check model (Table 11, Appendix 1) confirms the main model, considering the negative relationship between the regulations concerning temporary contracts and protection on permanent contracts on the conversion rates from temporary to permanent contracts. Few results regarding the interaction terms are significant. However, this model suggest that when the economy improves, the negative effect of an increase in protection on permanent workers on the conversion rates from temporary to permanent contracts becomes less severe.

5. Discussion and conclusion

Many European labour markets are dual labour markets considering the large differences in regulations across different types of contracts. To reduce the negative effects of the emerging dual labour market, several countries have launched labour market reforms. In this study I examined the effect of EPL on the conversion rates from temporary to permanent contracts. I estimated the relationship using a panel data set including data from 20 European countries. Although not significant in every specification, a negative relationship between the regulations concerning the use of temporary contracts and the conversion rates from temporary to permanent contracts is found. This is in line with the mechanisms mentioned by the OECD (2014) and Becker (1962). Furthermore, the empirical analysis shows a negative relationship between protection of permanent workers and the conversion rates from temporary to permanent contracts. This result is in line with the theoretical predictions by Cahuc- Postel Vinay (2002) and the empirical findings of Bassanini and Gernero (2013).

Based on these results one could predict the effect of the new EPL imposed by several European countries to reduce the labour market divide. The Dutch government implemented the Work and Security Act which is become effective in 2015. One of the central aims of the reform is to limit the gap in regulations between temporary and permanent employment, thereby encouraging faster conversion from temporary to permanent contracts (Akgündüz and van Huizen, 2015). Important changes are with respect to the successive contract rules. Successive employment contracts may not be separated by more than six months under the new act, which was currently three months. Furthermore, the maximum collative duration of fixed- term contracts will be shortened from three to two years. With the introduction of this new Act also the rules for terminating employment like the rules for the severance pay for the two dismissal routes is revised (Bos et al., 2014). According to the results provided in this study, on the one hand the conversion rates from temporary to permanent contracts might increase due to less strict protection on permanent workers. However, on the other hand, stricter regulation concerning the use of temporary contracts, like the shorter maximum duration of temporary contracts tends to reduce the conversion rates. The OECD (2013) argue that overall, it is unclear whether the Dutch Work and Security Act would effectively reduce dismissal costs for permanent contracts. The implementation of the transition allowance may for example prevent a reduction of dismissal costs. Therefore, I expect that the implementation of the Dutch Work and Security Act would lead to lower conversion rates from temporary to permanent contracts in the Netherlands. According to this finding the desired effect of the reform will not be reached. This statement is confirmed by a research of Verbiest et al. (2014) in the Netherlands.

The same line of reasoning is applicable to the '2012 reform' in Spain. As a reaction to the labour market outcomes during the economic crisis, the Spanish government has launched 'the 2012 reform'. Generally, firing costs under a new permanent contract became lower, while the firing costs under temporary contracts increased under this new reform (Jimeno, 2012). Again, the overall effect on the conversion rates from temporary to permanent contracts is unclear. However, in contradiction with

the Dutch case, the Spanish government reduced the severance payment significantly, without implementing a regulation which makes the dismissal of permanent workers more difficult. Furthermore, next to making the regulations concerning the use of temporary contracts more strict, the conversion from temporary to permanent contracts is subsidized in some sectors. Based on these facts, it remains unclear how the conversion rates will develop in Spain.

The Italian case differs from the Dutch and the Spanish case due to the introduction of a single contract for new workers. Under the single contract principle, temporary contracts will disappear and there will be introduced a new open- ended regular contract with no ex ante limit, with an overall level of job protection to be chosen according to political preference but progressively increasingly with tenure (OECD, 2014; Forte & Jones, 2015). This refers to protection on temporary contracts, while the results provided in this paper are based on the ease of using temporary contracts. Therefore, one could not make a robust statement with respect to the effect of protection on temporary contracts and the conversion rates. However, under the introduction of a single contract, the relevant question becomes what happens with the overall employment rate in the country. The phenomenon conversion from temporary to permanent contracts becomes of no importance in the case the whole old system is replaced by the single contract system.

For future research it might be very interesting to follow and investigate the specific case of Italy as the introduction of a single contract might be a new solution to reduce the negative consequences of a dual labour market. Another point for future research might be the mobilization of a larger longitudinal dataset to explore more directly the effect of the reforms implemented by several countries to reduce the labour market divide. Furthermore, a difficulty in this paper is the distinction between protection on permanent workers and the regulations concerning the use of temporary contracts. This makes the interpretation of the results complicated. For future research it is advisable to develop EPL indexes that are more easily comparable with each other. Another difficulty of this paper is the period of study that falls almost entirely under the period of the Great Recession. One should be aware of the possibility that the outcomes could be different in a period of an economic boom.

To conclude, the general implication of this paper is that making regulations concerning the use of temporary contracts stricter, which is implemented in several European countries, will not lead to a reduction of the labour market divide. Relaxing the employment protection on the permanent workers might increase the conversion rates from temporary to permanent contracts. However, as long as different protection provisions concerning the different types of contracts exists, employers will have a strong incentive to employ those under favourable regimes. As a consequence, the dual labour market remains to exist (OECD, 2014). When countries want to reduce the negative effects of a dual labour market, they have to consider reforming the dual system and introduce a single employment contract with increasing severance payment with job tenure (Andrés et al., 2009; Aoyagi & Ganelli, 2013; García- Pérez & Osuna, 2012; OECD, 2014; The World Bank, 2014). However, by introducing a single employment contract, countries should be aware of the truly temporary activities. They might consider

maintaining some forms of temporary contracts to provide firms with the necessary flexibility (OECD, 2014). With respect to making exemptions of implementing a single contract for truly temporary activities, it is of particular importance to have a clear definition of truly temporary activities. This is necessary to avoid the problem that firms are searching for ways to avoid the new rules concerning the new introduced type of contract. With respect to this statement it is important to consider the self-employed. Generally, the self- employed are not covered by the laws for temporary and permanent workers. However, it is advisable to find a way to apply the new rule of increasing severance payment with job tenure, also for the self- employed in the case the activity could also be done by a permanent worker. When all the actors of the labour market are involved in the new EPL, this might lead to an effective reduction of the labour market divide.

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Appendix 1: Additional results

Table 7: Effect EPL on general conversion rates temporary to permanent contracts for base model

N= 126	i) OLS	ii) FE
EPL$_P$	-0.744	-14.31
	(2.287)	(7.343)*
	[3.091]	[5.822]**
EPL$_T$	-3.143	-2.133
	(1.002)***	(4.339)
	[2.017]	[5.501]
Unemployment benefits	-4.949	-9.413
	(2.185)**	(3.080)***
	[3.338]	[2.237]***
ALMP	-11.66	0.448
	(4.477)**	(7.519)
	[6.491]*	[7.598]
GDP	0.655	0.558
	(0.559)	(0.436)
	[0.452]	[0.448]
Trade union	0.224	0.0381
	(0.0659)***	(0.552)
	[0.120]*	[0.398]
Tax wedge	0.569	0.631
	(0.161)***	(0.762)
	[0.304]*	[0.646]
R- squared	0.475	0.781

Note:- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
- *** p<0.01, **p< 0.05, *p<0.1

Table 8:Effect EPL on conversion rates temporary to permanent contracts for base model for men

N= 126	i)OLS	ii)FE
EPL$_P$	0.151	-13.41
	(2.346)	(7.912)*
	[2.703]	[6.347]**
EPL$_T$	-3.175	-2.864
	(1.028)***	(4.732)
	[1.999]	[4.545]
Unemployment benefits	-3.691	-6.199
	(2.233)	(3.308)*
	[3.064]	[2.511]**
ALMP	-16.14	-1.583
	(4.597)***	(8.029)
	[6.515]**	[7.733]
GDP	1.161	0.914
	(0.603)*	(0.527)*
	[0.567]*	[0.570]
Trade union	0.262	-0.527
	(0.0694)***	(0.594)
	[0.119]**	[0.497]
Tax wedge	0.688	0.743
	(0.163)***	(0.801)
	[0.294]**	[0.632]
R- squared	0.500	0.763

Note:- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
- *** p<0.01, **p< 0.05, *p<0.1

Table 9: Effect EPL on conversion rates temporary to permanent contracts for base model for women

N= 125	i) OLS	ii) FE
EPL$_P$	-3.618	-17.10
	(2.854)	(8.805)*
	[4.473]	[12.27]
EPL$_T$	-3.281	-7.108
	(1.108)***	(4.653)
	[2.083]	[5.755]
Unemployment benefits	-9.434	-17.15
	(2.828)***	(4.303)***
	[5.107]*	[5.544]***
ALMP	-3.840	5.692
	(5.045)	(8.699)
	[8.893]	[9.512]
GDP	1.046	0.418
	(0.617)*	(0.525)
	[0.624]	[0.485]
Trade union	0.138*	0.878
	(0.0788)	(0.650)
	[0.154]	[0.558]
Tax wedge	0.407	0.531
	(0.190)**	(0.922)
	[0.346]	[0.750]
R- squared	0.441	0.755

Note:- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
   - *** p<0.01, **p< 0.05, *p<0.1

Table 10: Effect EPL on conversion rates temporary employment to unemployment for base model

N= 126	i) OLS	ii) FE
EPL$_P$	0.178	-2.004
	(1.083)	(2.744)
	[1.577]	[1.709]
EPL$_T$	2.276	-1.962
	(0.474)***	(1.622)
	[1.442]	[1.489]
Unemployment benefits	5.166	6.288
	(1.035)***	(1.151)***
	[2.123]**	[1.769]***
ALMP	-7.157	4.524
	(2.119)***	(2.810)
	[4.565]	[2.962]
GDP	0.191	0.0422
	(0.265)	(0.163)
	[0.300]	[0.193]
Trade union	0.0556	0.139
	(0.0312)*	(0.206)
	[0.0777]	[0.217]
Tax wedge	0.154	0.149
	(0.0764)**	(0.285)
	[0.182]	[0.350]
R- squared	0.452	0.858

Note:- Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]
   - *** p<0.01, **p< 0.05, *p<0.1

Table 11: Robustness check model including interaction terms

		i) OLS	ii) FE
General model **N= 126**	EPL$_P$	-1.103 (2.320) [3.029]	-18.32 (7.562)** [7.116]**
	EPL$_T$	-3.034 (1.079)*** [2.125]	-1.671 (4.476) [5.407]
	Interaction EPL$_P$ GDP	0.886 (0.688) [0.768]	0.956 (0.536)* [0.584]
	Interaction EPL$_T$ GDP	-0.0804 (0.369) [0.461]	-0.243 (0.306) [0.321]
	R- Squared	0.483	0.790
Men **N= 126**	EPL$_P$	-0.126 (2.405) [2.657]	-16.79 (8.193)** [6.821]**
	EPL$_T$	-3.261 (1.111)*** [2.137]	-3.117 (4.930) [4.765]
	Interaction EPL$_P$ GDP	0.764 (0.728) [0.805]	0.929 (0.611) [0.600]
	Interaction EPL$_T$ GDP	0.0890 (0.374) [0.472]	-0.0852 (0.337) [0.356]
	R- Squared	0.505	0.769
Women **N= 125**	EPL$_P$	-4.247 (2.911) [4.344]	-21.67 (9.059)** [13.78]
	EPL$_T$	-2.797 (1.188)** [2.296]	-5.047 (4.749) [5.808]
	Interaction EPL$_P$ GDP	0.376 (0.811) [0.916]	0.916 (0.640) [0.422]**
	Interaction EPL$_T$ GDP	-0.444 (0.406) [0.436]	-0.539 (0.325) [0.379]
	R- Squared	0.449	0.768
Unemployment **N= 126**	EPL$_P$	0.294 (1.047) [1.626]	-0.322 (2.797) [1.916]
	EPL$_T$	2.550 (0.487)*** [1.520]	-1.398 (1.656) [1.442]
	Interaction EPL$_P$ GDP	-0.975 (0.310)*** [0.307]***	-0.467 (0.198)** [0.188]**
	Interaction EPL$_T$ GDP	-0.276 (0.166) [0.193]	-0.0797 (0.113) [0.161]
	R- Squared	0.509	0.866

Note:- All estimations include control variables.

   - Standard errors in parentheses: first normal (S.E.), second clustered [S.E.]

   - *** p<0.01, **p< 0.05, *p<0.1

Appendix 2: List of aggregated EPL index

Table 13: List of aggregated EPL index

Variable in analysis	*Code*	Name regulation
Procedural Inconvenience	*REG1*	Notification procedures
	REG2	Delay involved before notice can start
Notice and Severance pay	*REG3A*	Length of the notice period at 9 months tenure
	REG3B	Length of the notice period at 4 years tenure
	REG3C	Length of the notice period at 20 years tenure
	REG4A	Severance pay at 9 months tenure
	REG4B	Severance pay at 4 years tenure
	REG4C	Severance pay at 20 years tenure
Difficulty of Dismissal	*REG5*	Definition of justified or unfair dismissal
	REG6	Length of trial period
	REG7	Compensation following unfair dismissal
	REG8	Possibility of reinstatement following unfair dismissal
Number of valid cases FT	*FTC1*	Valid cases for use of fixed-term contracts
Maximum duration and number FT	*FTC2*	Maximum number of successive fixed-term contracts
	FTC3	Maximum cumulated duration of successive fixed-term contracts
Temporary work agency	*TWA1*	Types of work for which temporary work agency (TWA) employment is legal
	TWA2	Restrictions on the number of renewals of TWA assignments
	TWA3	Maximum cumulated duration of TWA assignments
Collective dismissal	*CD1*	Definition of collective dismissal
	CD2	Additional notification requirements in case of collective dismissals
	CD3	Additional delays involved in case of collective dismissals
	CD4	Other special costs to employers in case of collective dismissals