An evaluation of European Labour Market Reforms after the Great Recession

by

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Abstract

This paper provides an overview of the literature of European Labour Market Policies after the Great Recession. It discusses in detail the three main elements of the flexicurity model, which became popular during recent years: Employment Protection Legislation, Unemployment Insurance and Active Labour Market Policies. After the review I conduct an empirical analysis to detect which of the discussed policies proved to be successful in improving labour market outcomes. In the first part of my analysis I use panel regressions with fixed effects to see whether changes in the strictness of Employment Protection Legislation affected the share of permanent employment. I find that the legislation on temporary contracts had stronger effects than the legislation on regular contracts. In the second part of my analysis I examine the effect of labour market policies on employment rates. I find that Active Labour Market Policies play the most important role in this process, which is in line with the current policy discussions.

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1. Introduction

The Great Recession has posed significant challenges for developed and developing countries alike. With the huge and permanent drops in output and the rise of unemployment it became clear quite early that policymakers needed to reassess the functioning of the markets and respond to this situation with well-suited measures.

Among others, the labor market has been severely hit by the Recession. Even the unemployment rate of the advanced economies increased from 7% to 10% by 2010 [OECD, 2018] and in several countries it could not reach the before-crisis level to this very day, which implies that structural measures are needed to improve the situation. Furthermore, unemployment of such a long duration carries the risk of hysteresis, i.e. the increase of the natural rate of unemployment. This can happen due to loss of skills as well as loss of courage to find a new job after a prolonged period of unemployment [Blanchard-Jaumotte-Loungani, 2014].

In order to avoid such a phenomenon, policymakers rightly recognized that targeted measures were needed for those groups that tend to be the most segmented: the low-skilled, the young and the long-term unemployed. It is essential to target low-skilled workers because they are the first to be dismissed when a recession hits and their situation might not get better even with the start of recovery. Young people have little or no experience and their training bears costs, so they can also run into difficulties if they want to find a job during a recession. However, this period can have a significant impact on their future career path. Finally, the long-term unemployed need special attention since after a long period of unemployment they might lose important skills and the passage of time makes it harder to reintegrate them into work.

In order to reduce the divide between secure and insecure jobs and increase employment, many countries have taken significant steps to reform the system. In this study I focus on the reforms within the European Union, which all point to the direction of facilitating the so-called flexicurity, which means "balancing flexibility in the labor market with generous social protection" [Rinne-Zimmermann, 2012, pp. 17]. This term was first coined in the 1990s and soon became an important concept in policy debates. As Wilthagen-Tros mentions:

"This twofold expectation has been clearly documented in the EU policy discourse since 1993, starting with the 1993 White Paper, Growth, Competitiveness and Employment and formulated explicitly in the 1997 Green Paper, Partnership for a New Organisation of Work, which states that 'the key issue for employees, management, the social partners and policy makers alike is to strike the right balance between flexibility and security'."

Over the years the aim of achieving flexicurity has involved various measures that differed from member state to member state, but we can identify three main elements: the deregulation and re-regulation of Employment Protection Legislation, redefinition of the coverage and generosity of unemployment benefits, as well as advocating Active Labor Market Policies.

Some economies were hit by the crisis more than others and the outcome of the reforms varied, too. While Germany's case is said to be a miracle, many countries are still struggling. In this paper I describe some selected reforms of European countries in a structured way and evaluate the outcomes to see which measures proved to be the most successful. Furthermore, I conduct econometric analysis¹ to test whether certain European policy measures brought about significant improvement in outcomes related to employment.

The main question of my paper is which type of the recent European labour market reforms proved to be the most successful in improving labour market outcomes. Therefore I conduct econometric analysis with fixed effects, discussing two separate problems related to the topic. During the first one I examine the effect of changes in the strictness of Employment

¹ The analyzed countries are the following: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom

Protection Legislation on the share of permanent employment. I find that changes in the legislation on temporary contracts had a stronger effect on the share of permanent employment than changes in the legislation on regular contracts. During the second one I aim to detect which of the three main pillars of the flexicurity model is the most effective in increasing employment. I find that Active Labour Market Policies play the most important role in this process, which is in line with current policy discussions.

The main contribution of this paper is that it provides a general overview about all the pillars of the flexicurity model and conducts a comparative empirical analysis among European countries, which is not very common in the literature of the flexicurity concept.

The paper is structured as follows. The next section outlines some basic facts and trends about the labor markets of European countries. Then section three discusses the first main element of the flexicurity model: the Employment Protection Legislation. Section four goes on with conducting an empirical analysis on the role of the strictness of Employment Protection Legislation in affecting the share of permanent employment. Sections five and six elaborate on the other two main pillars of the flexicurity model (Unemployment Insurance and Active Labour Market Policies) and describe how particular countries implemented such measures. Section seven conducts an empirical analysis on the effectiveness of labour market policies in affecting employment rates. Finally, section eight concludes with a broad evaluation of the reforms.

2. Trends in European Labor Markets after the Great Recession

2.1. Changes in Unemployment

The Great Recession caused a sharp decline in economic figures in many countries. The effects of the Recession could be felt almost instantaneously: GDP and employment rates both decreased significantly within a year after the crisis broke out. As can be seen in Figure 1, even the more developed countries had been severely shocked.

Somewhat different is the case of Germany: while its GDP decreased more than most other European countries', the crisis had only a mild effect on its labor market. This outstanding performance is said to be a miracle, but in fact it is the consequence of a series of reforms that started before the crisis broke out. After the reunification of Germany, the new state struggled with one of the highest unemployment rates in Europe and over more than a decade it could not improve much; that is why the country was even called "the sick man of Europe" ["The sick man of the euro", 1999]. This stimulated various measures (known as the Hartz reforms) from 2003, among which incentivizing short-time work and the use of working time accounts contributed the most, so that the German economy had different tools at the start of the Recession than other countries and could avoid the significant increase of its unemployment rate [Jacobi-Kluve, 2006].

Table 1 shows that in many countries the young suffered the greatest losses in terms of unemployment. Between 2007 and 2012 most European countries witnessed a doubling of the unemployment rate among workers aged 15-24. In a couple of countries it exceeded 30% in 2012, with the extremes being Greece and Spain (55.3% and 52.86%, respectively). This data justifies our former expectations that targeted measures are needed to lower unemployment among young people.





Source: Bentolila-Dolado-Jimeno (2012)

Country	15-24		Tot	al	55-64	
Country	2007	2012	2007	2012	2007	2012
Czech Republic	10.74	19.51	5.37	7.04	4.63	5.83
France	18.83	23.65	7.69	9.47	4.38	6.20
Germany	11.68	8.02	8.75	5.46	10.33	5.85
Greece	22.69	55.30	8.53	24.69	3.36	13.46
Hungary	18.02	28.21	7.45	11.07	4.39	8.41
Iceland	7.19	13.57	2.32	6.15	0.89	4.29
Ireland	10.27	32.99	4.86	15.28	2.28	10.12
Italy	20.36	35.32	6.16	10.81	2.41	5.26
Netherlands	7.03	9.48	3.62	5.28	4.04	4.72
Portugal	16.73	37.91	8.46	16.33	6.51	12.72
Slovak Republic	20.11	34.03	11.04	13.99	8.12	11.21
Slovenia	10.10	20.58	4.95	8.99	3.27	6.16
Spain	18.09	52.86	8.28	24.93	5.97	18.02
Sweden	19.18	23.66	6.23	8.13	3.95	5.18
United Kingdom	14.24	21.21	5.32	8.10	3.28	4.94

Table 1 - Unemployment rates by ages in selected countries (%)

Source: OECD data, own construction

2.2. Micro and Macro Flexibility Concept

In order to overcome the dire effects of the crisis and get back on the track of growth, countries had to become flexible both from a micro and a macro perspective. They aimed at responding to the shock by reducing unemployment rates to a low level and keep it at that level with little fluctuation (macro flexibility) and facilitate the efficient reallocation of workers to sustain growth (micro flexibility) [Blanchard-Jaumotte-Loungani, 2014].

Both micro and macro flexibility requires a complex set of measures. As Blanchard-Jaumotte-Loungani [2014] describes, macro flexibility can be influenced among others by the minimum wage, the tax wedge and collective bargaining. The lifting of the minimum wage affects the extensive margin: it gives better incentives for (usually low-skilled) people to work. It can have a counter-effect though: increasing wages mean increasing costs for employers and this might lead to dismissals (in this case again, low-skilled people are the most likely to be affected). In practice, only little effects on employment could be shown [Betcherman, 2012; Brown-Gilroy-Kohen, 1982; Burkhauser-Couch-Wittenburg, 2000; Metcalf, 2007]. Blanchard et al. [2014] instead advise a combination of the minimum wage and negative income tax, since better redistribution can be achieved with this combination [Blanchard-Jaumotte-Loungani, 2014]. Wages can be set and thus similar effects can be achieved by collective bargaining. These however – as Blanchard-Jaumotte-Loungani [2014] points out - do not consider regional disparities; therefore, in order to achieve better adjustment to certain shocks, a more decentralized bargaining scheme would be beneficial.

Incentives to work or hire can be similarly given by altering the tax wedge. In general we can say that the higher the tax wedge, the higher costs employers have to face, thus the more likely that unemployment will increase. As Figure 2 shows however, governments do not make big reductions in the tax wedge to achieve low unemployment; we can find countries that even today struggle with high unemployment rates (e.g. Italy at 11.7%) and have quite high average tax wedge (Italy at 47.77%). This can be explained by budget constraints: lowering the tax wedge would mean revenue loss for the government and would contribute to the general government deficit.



Figure 2 - Average tax wedge in European countries in 2016 (%, single person, 0 children)

Source: OECD data, own construction

Micro flexibility is essential for increasing productivity: there is a need for the constant reallocation of resources so that high-productivity firms can enter the market and low-productivity firms exit it. In order to achieve this, governments need to introduce measures that strengthen competition in the market and encourage the mobility of workers. As Blanchard-Jaumotte-Loungani [2014] describes, these can be influenced among others by the removal of entry barriers, the definition of a proper bankruptcy framework and the protection of workers instead of protecting jobs. Such protection can be facilitated by three categories of measures that have been already mentioned: Employment Protection Legislation, unemployment benefits and Active Labor Market Policies. After an overview of shifting towards atypical employment in the next subsection, the following sections will elaborate on the effects of various types of these measures.

2.3. Atypical Employment

Since the crisis started, the significance of atypical forms of employment has increased notably (atypical referring to every form of employment that does not conform with the standard full-time, open-ended employment, such as temporary work or part-time work). Some of these forms proved crucial in handling the situation as with the fall of demand lots of jobs could not be kept in their typical form. These alternative forms provided a solution to the problem as more jobs could be saved. Although from the workers' perspective these could not be compared to the situation before the crisis, since for many of them changing to atypical work have been a compulsory choice; these helped smoothing the effects of the Recession.

The best example is Germany, where short-time work became incredibly popular after the crisis broke out. In this way, instead of dismissing a huge number of workers, many of them were offered to keep their job but work reduced hours. That is the reason why we can see almost no effect of the crisis on employment: workers have stayed in their jobs but their jobs were transformed [Burda-Hunt, 2011]. Figure 3 shows how this tool has been used in past German recessions. It can be seen clearly that the Great Recession caused the steepest decline in the number of hours worked in the past few decades. This tool has been calculated to have saved 400,000 jobs [Rinne-Zimmermann, 2012]. Short-time work in Germany was complemented with the concept of working time accounts. This meant that an employee working less hours than his contractual obligation could still receive a full salary and make up for the loss of work later. This tool has also proved very important in smoothing employment levels and adjusting working hours to the business cycle. In Germany, about one third of companies used working time accounts and it has been calculated to have saved 320,000 jobs [Rinne-Zimmermann, 2012].

Figure 3 - Changes in hours per worker in past German recessions



Source: Burda-Hunt (2011)

Due to the crisis many secure jobs could not be kept in their original form, so the less secure temporary work started to increase. As Eichhorst-Marx-Wehner [2017] describes, this form of work is beneficial if the jobs can be transformed later into more secure, permanent ones. Otherwise they can have severe consequences both in terms of macroeconomic efficiency and regarding the well-being of the workers. If temporary work tends to replace a huge amount of permanent jobs, it can be regarded as a sign of failure to create employment. Moreover, the temporary feature implies that employers' long-term investment in their employees is discouraged, which creates an obstacle to productivity growth. In addition, having an insecure job can have a negative effect on the employee's health and mental state as well as family formation [Eichhorst-Marx-Wehner, 2017].

As temporary work affects mostly new entrants to the labor market, in order to avoid segmentation of the young population, special measures are needed to enhance transformation of temporary contracts into permanent ones. Figure 4 depicts the share of employed in temporary employment among workers aged 15-24 in selected countries. In many we can see a pattern of increasing share of temporary employment, reaching especially high levels in Spain and Portugal.



Figure 4 - Share of employed in temporary employment (%, ages 15-24)

Source: OECD data, own construction

With the rise of temporary employment, the divide between workers with a secure and an insecure job widens, which requires treatment by special measures that will be described in the following sections.

3. Recent Experiences with Employment Protection Legislation

Segmentation in the labor market is a crucial issue in many economies. There is a divide between insiders (those workers who have stable jobs with permanent contracts) and outsiders (these are the unemployed and workers with a flexible contract who are also in a fragile situation because they are much easier to dismiss when a recession hits). The problem arises when employees with flexible contracts (e.g. temporary workers) cannot transfer their contracts into permanent ones. Thus, this insecure layer of the labor market is trapped; as their mobility into stable jobs is hindered, they cannot increase their productivity.

During the past several years, the insider-outsider divide has become the most severe in Spain. The share of employees with permanent contracts decreased in several European countries over the 2000s but among all of them Spain had by far the lowest shares of permanent employment. As Figure 5 describes, outsiders formed a vast part of the labor force even in the 1980s, and although steps have been taken to reduce this share, they still form a very significant proportion of the active population.





Source: Bentolila-Dolado-Jimeno (2012)

In order to achieve productivity growth, policymakers need to affect both sides of what at first sight seems to be a trade-off but of which both sides contribute to the increase in productivity: mobility and stability. They need to remove or at least weaken mobility barriers between temporary and permanent contracts and at the same time strengthen the protection of employees; that is the basis of the flexicurity model [Blanchard-Jaumotte-Loungani, 2014].

The Employer Protection Legislation has been very stringent in several countries including among others Spain [Bentolila-Dolado-Jimeno, 2012], Portugal and Greece [Theodoropoulou, 2015], Estonia [Brixiova-Egert, 2012] and Germany [Rinne-Zimmermann, 2012]. The protection is aimed at reducing layoffs and thus decreasing the incidence of unemployment. But as Blanchard-Jaumotte-Loungani [2014] points out, at the same time it decreases the ability of firms to adjust employment to business cycles, decreases their willingness to hire, which in the downturn leads to longer duration of unemployment, especially strongly affecting those with low or uncertain productivity (the low-skilled and the young).

That is the reason why former reforms moved towards duality: while dismissal remained costly in case of permanent contracts, there was much lighter protection on temporary ones. This however had adverse effects: it discouraged firms from investing in temporary workers. This not only hindered the increase in productivity but also made the situation of temporary workers much more fragile [Blanchard-Jaumotte-Loungani, 2014].

In order to improve the situation, the IMF advised several countries to reduce the duality by deregulating permanent contracts and reregulating temporary ones [Blanchard-Jaumotte-Loungani, 2014]. To make the conditions of temporary and permanent contracts more equal, severance payments have been reduced in among others Spain, Portugal, Slovenia [Eichhorst-Marx-Wehner, 2017] and Estonia [Brixiova-Egert, 2012]. Making layoffs cheaper caused great tension in Italy; the reforms of the so-called Jobs Act in 2011 have been widely debated

among the public [Fana-Guarascio-Cirillo, 2015] since many of them regarded downsizing the protection of workers during a recession unwise. In Austria an interesting model emerged: severance payments were replaced with capitalization funds for dismissals, the so-called Mitarbeitervorsorgekassen. Employers contribute an agreed (smaller) amount to this fund on a monthly basis and upon dismissal employees can withdraw the money or carry it over to their next workplace and use the money as pension savings [Eichhorst-Marx-Wehner, 2017].

Another step to make layoffs easier and enhance mobility was to reduce length of notice and extend the causes for fair dismissal. As Theodoropoulou [2015] describes, in Greece even the terms of dismissal across blue- and white-collar jobs have been harmonized. These reforms were not easy to push through, though. Similar to Italy's case, political debates detained reforms from implementation; in Portugal some initiatives to lax the conditions of dismissal were even ruled unconstitutional [Theodoropoulou, 2015].

There is no question that the situation of employees in insecure jobs cannot be improved by prohibiting temporary contracts. These jobs are important since they form an entry point to the labor market for many young and low-skilled workers. Rather, the transition from temporary to permanent contract jobs needs to be enhanced.

As Figure 6 shows, there is quite a large variation between countries in terms of transition to permanent contracts. Although various measures have been taken, not many of them have been able to intensify this transition after the Recession. Some of them maximized the duration of a sequence of temporary contracts for a specific job to avoid the possibility of employers exploiting workers by offering them temporary contracts continuously (in Spain [Bentolila-Dolado-Jimeno, 2012] or Slovenia and the Netherlands [Eichhorst-Marx-Wehner, 2017]). As Fana-Guarascio-Cirillo notes, in 2011 the Italian Jobs Act maximized the amount of compensation one can get via vouchers for accessory jobs (mini-jobs). With this step the

Italian government wanted to avoid employers using vouchers for dependent jobs since this scheme does not involve any social security rights and thus makes the situation of workers really fragile.



Figure 6 - Year-to-year transition from temporary to permanent contracts

Source: Eichhorst-Marx-Wehner (2017)

Another measure to facilitate transition was to reduce the social security contributions of employers if they transformed temporary contracts into permanent ones. This kind of monetary incentives were used among others by Spain [Bentolila-Dolado-Jimeno, 2012], Italy [Fana-Guarascio-Cirillo, 2015] France, Slovenia and the Netherlands [Eichhorst-Marx-Wehner, 2017]. Usually these schemes allowed rebates only for a limited period after the contract was made and thus there is a possibility that after expiry, employers decide to fire workers.

Based on the existing literature, the effects of the introduced Employment Protection Legislation reforms do not seem to be large. So far, the duality could be reduced only marginally and although permanent contracts increased somewhat due to contract transformation, many of these are rather part-time jobs. Moreover, many of these measures proved to be ineffective in creating jobs. It seems that these are not the most important but still essential measures in reforming labor markets. In the next section I conduct an empirical analysis among European countries to see whether a statistically significant effect can be detected between the changes in Employment Protection Legislation and the share of employees with permanent contracts.

4. Empirical Investigation of the Factors Affecting the Share of Permanent Employment

4.1. Determinants of Share of Permanent Employment

In the previous section I outlined manifold ways in which European countries attempted to increase the share of permanent employment within the country. In this section my aim is to get a more general picture of particular measures affecting permanent employment by conducting an empirical analysis among European countries on a macro level.

The factor that seems to be the most important - based on recent policies and discussions is a measure of *Employment Protection Legislation* that comprises, among others, the definition of causes for fair dismissal, severance payments and the procedures for hiring workers on temporary or permanent contracts. During the last couple of years there has been special focus on introducing different legislation for temporary and permanent contracts; therefore the effects of these should be analyzed separately.

I expect that both legislation on employees with temporary and permanent contracts affect the hiring decisions of employers, and they have opposite effect on the share of permanent employment. Making the legislation on permanent contracts more lenient means less burden for employers and thus shifts their decisions towards employing more workers with permanent contracts. With lenient enough legislation on temporary contracts, it is likely to work in the other direction as well: making legislation on permanent contracts stricter will lead to the decrease in share of permanent employment.

In a similar way, easing legislation on temporary contracts makes it more attractive for employers to hire more employees with temporary contracts. Also, in case the existing conditions for workers with permanent contracts are relatively favorable, making legislation on temporary contracts stricter is likely to lead to the desired outcome: an increase in the share of permanent employment. So the effect of these two measures may depend significantly on each other, although they work through different channels.

Another factor that can affect the share of permanent employment notably is *government employment*. In the public sector permanent contracts are made and these form a significant fraction of all employment with permanent contracts. Therefore an increase in government employment contributes to a potential increase in the share of permanent employment.

Furthermore, *coverage of trade unions* within the country might be important as well. In countries where trade unions are strong, they are able to influence the hiring and firing decisions of employers; possibly, towards employing more people with permanent contracts. So higher trade union density might lead to a higher share of workers employed with permanent contracts.

Besides these governmental and public factors, the individual characteristics of employees obviously are decisive factors in the choice of employing them with temporary or permanent contracts. Among these individual characteristics probably the most important ones are related to the employee's knowledge and skills, which on a macro level can be measured by the *educational attainment* of the population. More educated people are more likely to find a job with a permanent contract more easily, while less educated people might have to settle for employment with temporary contracts. Therefore, we can expect that an increase in the share of population with tertiary education contributes to higher share of permanent employment.

There might be other factors that hinder or enable employers to hire more people with permanent contracts. *Economic conditions* influence the possibilities of business leaders, so for instance higher GDP per capita allows for higher share of permanent employment.

There are further factors that should be taken into account but are not relevant when conducting an analysis on a macro level. These are further individual characteristics of the employees and of the firms or certain measures determined by national governments. Among these probably the most essential one is the social security contribution an employer has to pay after the employee. Higher social security contributions mean higher burden for employers and make hiring less attractive. As it has been outlined in the previous section, in several countries these contributions have been formed in a way that it promotes the hiring of workers with permanent contracts.

In the next section I go on with describing how the above factors fit in my analysis, how I am using them to detect potential effects on the share of permanent employment.

4.2. Data Description and Empirical Strategy

Since the aim of my paper is to draw general conclusions about recent European labour market policies, I collected data on a macro level from OECD and Eurostat databases and arranged them in a panel dataset. The dataset contains information about 20 countries² over 14 years (2000-2013).

The main outcome variable of my analysis is the share of people employed with permanent contracts among all employed. As Figure 7 shows, the share of permanent

² The analyzed countries are the following: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

employment decreased in several countries about the time the crisis broke out, but in most cases it changed only a few percentage points (with a few exceptions, e.g. Poland). The situation of people aged 15-24 have been worse even before the crisis (the share of permanent employment for this age group was much lower in each of the analyzed countries than for the whole population) and it deteriorated even more, with much larger drops in share of permanent employment than regarding the whole population, so it is no wonder policymakers paid special attention to this age group when designing labour market policies.

The main factors I use as explanatory variables are indices of strictness of Employment Protection Legislation (EPL) for temporary and for permanent contracts. These indices are represented on a scale of 0-6, where higher values correspond for stricter legislation. The indices incorporate the procedures and costs involved in dismissing and hiring workers, regarding statutory laws, collective bargaining agreements and case law [OECD, 2018]. These are compiled by the experts of OECD.

Looking at Figure 8 we can see no obvious pattern in changes of Employment Protection Legislation; it varies from country to country. Table 2 shows us however, that on average EPL on regular contracts is stricter than on temporary ones but there has been more variation in EPL on temporary contracts. This reflects the previously described measures, which focused mainly on reregulating temporary contracts.

Besides the indices of EPL, I am using four other factors as explanatory variables: government employment (the percentage of people employed by the public relative to all employees), trade union density (the ratio of employees who are members of a trade union relative to all employees), educational attainment (the fraction of population with tertiary education) and GDP per capita.



Figure 7 - Changes in share of permanent employment in selected European countries

Source: own construction, based on OECD data



Source: own construction, based on OECD data



Figure 8 - Changes in Employment Protection Legislation in selected European countries

Source: own construction, based on OECD data



Source: own construction, based on OECD data

Variable	Mean	St. dev.	Source
Share of permanent employment (%, ages 15-64)	87.07	6.30	OECD
Share of permanent employment (%, ages 15-24)	62.83	16.13	OECD
Share of permanent employment (%, ages 55-64)	93.07	3.95	OECD
Strictness of EPL on regular contracts	2.37	0.66	OECD
Strictness of EPL on temporary contracts	1.71	0.97	OECD
Government employment (%)	18.81	6.28	OECD
Trade union density (%)	32.34	20.10	OECD
Educational attainment (%, ages 15-64)	83.59	3.82	Eurostat
Educational attainment (%, ages 15-24)	62.77	15.23	Eurostat
Educational attainment (%, ages 55-64)	65.28	9.89	Eurostat
GDP per capita (USD, PPP)	32829.24	10493.71	OECD

Table 2 - Descriptive statistics of factors determining share of permanent employment

Source: own construction

I use the above mentioned variables in a panel regression model. It is plausible though that there are certain country- and time-specific trends, which can explain changes in the outcome variable. To control for these, I added fixed effects to my model, so my model can be written in the following form:

$$\widetilde{y_{it}} = \widetilde{x_{it}}\beta + \widetilde{e_{it}}$$
, where $\widetilde{y_{it}} = y_{it} - \overline{y_t}$, $\widetilde{x_{it}} = x_{it} - \overline{x_t}$ and $\widetilde{e_{it}} = e_{it} - \overline{e_t}$ and $\overline{y_t} = \frac{1}{T}\sum_{i=1}^T y_{it}$, $\overline{x_t} = \frac{1}{T}\sum_{i=1}^T x_{it}$ and $\overline{e_t} = \frac{1}{T}\sum_{i=1}^T e_{it}$,

where y_{it} represents the share of permanent employment for the analyzed countries and time periods and x_{it} represents the above described explanatory variables.

In the next subsection I present and discuss my results regarding the factors determining the share of permanent employment.

4.3. Results and Discussion

The results of the regressions are shown in Table 3. Among the two main variables, strictness of EPL on regular contracts is in a negative relationship with the outcome variable, which is in line with the expectations. It also corresponds to the findings of former studies, which showed that strict Employment Protection Legislation on regular contracts leads to the relative rise of temporary employment (Chung[2005], Nunziata-Staffolani[2005], Booth et al. [2002]). Interestingly, this effect is significant only in specifications without fixed effects, which might be explained by the relatively little variation in this variable.

Dependent variable: share of peri	Dependent variable: share of permanent employment								
	(1)	(2)	(3)	(4)					
Strictness of EPL on regular	-2.73	-0.37	-0.31	-					
contracts	(***)								
Strictness of EPL on temporary	-1.74	-1.3	-1.2	-1.1					
contracts	(***)	(***)	(***)	(***)					
Government employment	-	-	0.15	0.09					
			(***)	(***)					
Trade union density	-	-	0.04	-					
Educational attainment	-	-	-0.08	-					
GDP per capita	-	-	0.00	-					
			(***)						
Fixed effects	no	yes	yes	yes					
\mathbf{R}^2	0.20	0.94	0.94	0.94					
Observations	278	278	278	278					

Table 3 - Regressions with fixed effects on the share of permanent employment

Source: own construction

The other main variable, the strictness of EPL on temporary contracts is significant either with or without fixed effects. However, it seems to be at odds with previous interpretations (e.g. Kahn[2010]): it shows that stricter EPL on temporary contracts decreases the share of permanent employment. We might explain this result by reverse causality: it is plausible that EPL on temporary contracts is made stricter in case of low

share of observed permanent employment. It is also worth noting that the effect of change in EPL on temporary contracts depends on the level of EPL on regular contracts as well, so it might not be possible to adequately identify their effect separately.

The only other variable that has a significant effect on the share of permanent employment in the baseline regressions is government employment. It is positively correlated with the outcome variable, which reasonably tells us that higher labor demand from the government's side leads to higher share of people employed with permanent contracts.

Dependent variable: share of permanent employment								
Age	Total	Total	15-24	55-64				
Gender	Male	Female	Total	Total				
	(1)	(2)	(3)	(4)				
Strictness of EPL on regular contracts	0.07	-0.85	0.17	-1.10				
Strictness of EPL on temporary contracts	-1.08 (***)	-1.37 (***)	-0.81	-0.40				
Government employment	0.14 (***)	0.16 (**)	0.46 (***)	0.05				
Trade union density	-0.05	0.16 (**)	-0.27 (**)	-0.21 (***)				
Educational attainment	-0.10	-0.06	0.10 (**)	0.01				
GDP per capita	0.00	0.00	0.00	0.00				
	(***)	(***)	(***)					
\mathbf{R}^2	0.94	0.94	0.95	0.87				
Observations	278	278	278	278				
	n							

Table 4 - Robustness checks

Source: own construction

Table 4 contains the results of robustness checks across age and gender. The coefficients of strictness of EPL on temporary contracts as well as of government employment are robust when controlling for gender. However, the measure of strictness of EPL on temporary contracts turns insignificant when focusing on specific age groups. This is surprising, since I expected that it would have a similar or perhaps even stronger effect on the share of permanent employment among young people. This result might indicate that

the legislation failed to incorporate incentives for hiring people with permanent contracts from that age group.

Interestingly, educational attainment is only significant for the 15-24 age group, which indicates that education is a very important factor for employers to decide whether they want to employ young people with permanent or temporary contracts (probably, later on former work experiences take the role of this factor).

Trade union density becomes significant for female employees and in the case of focusing on the young and the old employees but it has different signs in different specifications, which is hard to interpret. Probably, it is rather due to the noise in the data and does not represent real relationships.

It is worth noting that seemingly bad results might be attributed to endogeneity problems. This problem could be solved by a difference-in-differences approach but unfortunately, since the date of introduction and the magnitude of changes in Employment Protection Legislation have been very diverse across countries, such an approach would be very hard to implement in a macro level panel setting.

The next two sections introduce main concepts and recent experiences relating to the other two pillars of the flexicurity model: unemployment insurance and Active Labour Market Policies.

5. Unemployment Insurance

Unemployment induces huge welfare costs; these costs can be reduced by providing unemployment insurance to dismissed people. The insurance is paid to those registering as unemployed in case they fulfil certain criteria. The payments usually aim to cover basic needs of the unemployed and compensate for the loss of wages. After the start of the crisis unemployment surged, so it became essential to cover a high share of unemployed by providing unemployment benefits. Figure 9 shows that the coverage varies across countries and only a few of them extended coverage significantly.

The divide between insiders and outsiders can be aggravated by a badly designed unemployment benefit scheme. As benefits are usually tied to former wages, it could mean a penalty for those having worked in an atypical form before and contribute to segmentation.



Figure 9 - Share of short-term unemployed receiving benefits (%)

Source: Eichhorst-Marx-Wehner (2017)

Also, the benefits might prove to be exceedingly generous and fail to create incentives for the unemployed to go back to work. This can be measured by the net replacement rate: it measures the net benefits one gets as unemployed relative to her previous net income. A high value of net replacement rate indicates an unemployment trap, which means that opportunity costs of work are too high.



Figure 10 - Net replacement rates in European countries (%, singles, 0 children)

In terms of unemployment benefits, the Portuguese system was more likely to create inactivity traps than other countries: it provided generous unemployment assistance benefits even for those not qualifying for unemployment insurance [Theodoropoulou, 2015]. Therefore, while for many countries (among others for Greece, Spain, Estonia and Italy) the IMF advised countries to extend coverage and benefits, in the case of Portugal it was just the opposite: reduce long-term unemployment by lowering eligibility criteria for unemployment insurance and decrease benefits [Blanchard-Jaumotte-Loungani, 2014].

The general conclusion about this type of measure is that it is an important tool and its extension is encouraged more than of Employment Protection Legislation. Though it is essential that generous benefits should only be provided conditionally and that the benefits should decrease with the duration of unemployment so that it does not reduce incentives to search for jobs. It can also stimulate job search if the benefits are conditional on participation in Active Labour Market Policy Programs that will be outlined in the next section.

6. Active Labour Market Policies

As Unemployment and its duration surges, it becomes incredibly important to help the activation of workers on a personal level. That's what Active Labour Market Policies (ALMP) are for: they help the unemployed to return to the labour market mainly via job search assistance programs and training schemes.

Its importance was recognized even before the Great Recession: a significant part of the German Hartz reforms consisted of Active Labor Market Policy measures. To be effective, after the start of the reforms job-seekers have been assigned to one of four groups based on chances of employment and particular groups received targeted treatment afterwards. In fact, only two groups out of the four received real support. The other two groups were made up of people for whom it was not worth being involved in the programs: either because they did not require any help during the course of job search or because they were considered helpless [Jacobi-Kluve, 2006].

One area which the Hartz reforms targeted was improving placement services. Every jobseeker was assigned to a fixed case-worker and received an extended range of counselling. Local employment agencies were reorganized and temporary job agencies were formed to help activation even in an atypical working form. After the crisis hit, a couple of other countries (among them Spain, France [Eichhorst-Marx-Wehner, 2017], or the United Kingdom and Estonia [Brixiova-Egert, 2012]) worked on making this system more effective. Usually these policies included an improvement in a mix of job search programs and training schemes so as to provide job-seekers short-term solutions and longer-term career prospects as well.

With the surge of unemployment, it became crucial to focus on the short-term activation of the unemployed. Program durations were reduced and job search assistance programs were preferred to trainings so as not to keep people out of the labour market for long. In addition, countries tended to tie benefits to participation in job search assistance programs to potentially reduce the duration of unemployment. As Jacobi-Kluve [2006] notes, in Germany, registered jobseekers were even obliged to accept any work that seemed suitable, including such possibilities that required moving to another city. Monitoring of participants was also intensified in the form of frequent personal visits among others in the Czech Republic or in the United Kingdom [Brixiova-Egert, 2012].



Figure 11 - Expenditure on Active Labour Market Policies per person looking for work (PPS)

Source: Eichhorst-Marx-Wehner (2017)

In the case of Active Labour Market Policies again, the scope of reforms has been limited by budget constraints. Figure 11 shows the spending of European countries on such policies. In spite of claiming it to be an essential part of labour market reforms, in Figure 11 we do not see a significant increase in expenditure after the crisis in most of the countries, which in some cases can indicate that measures have been made more cost-effective but in general, probably it only indicates lack of political will.

Active Labor Market Policies constitute an essential part of labour market reforms. Improving long-term future prospects of workers by training schemes have been claimed one of the top priorities; as Blanchard-Jaumotte-Loungani [2014] points out, the IMF recommended extending and improving targeted training schemes for many countries (among others for Greece, Portugal, Iceland and Ireland). However, it has to be taken into account that these policies do not benefit all participants to the same extent: it can be extremely beneficial for the low-skilled but probably less for the young who just completed education. Moreover, such programs can be very expensive.

7. Empirical Investigation of the effect of Labour Market Policies on Employment

7.1. Factors Affecting Employment Rates

In the previous two sections I described recent trends of using unemployment insurance and Active Labour Market Policies with the aim of boosting employment. In this section - similarly to the former one related to the share of permanent employment – I am doing an analysis on a macro level to detect statistically significant effects of labour market policies on employment.

Based on recent policies, two factors seem to be of key importance: the net replacement rate and the public expenditure on Active Labour Market Policies (ALMP). The *net replacement rate* shows us a picture about the financial situation of unemployed people. It compares the net benefits an unemployed person receives with the net income received in her previous job. The higher this measure, the better the situation of the unemployed person is and thus the less incentives she has to find a new job. Therefore, a reverse effect can be expected between this measure and employment.

Active Labour Market Policies aim at making people more willing to work and find a new job more easily. If the details of these programmes are designed cleverly and the money is spent adequately, then increased spending on these should make it easier for more people to find a suitable job and thus boost employment. However, it is also worth noting that these programmes include among others trainings, which probably only have an effect on employment in the long run.

Similarly to the previous analysis, legislation on employment can have a significant effect on the hiring decisions of employers. Since in this case I do not examine separately the effects on temporary and permanent employment, it is reasonable to use only the measure of *Employment Protection Legislation* on regular contracts. As already described earlier, we can expect a reverse effect between the Strictness of Employment Protection Legislation measure and employment. Stricter legislation shifts employers' decisions towards employing less people with permanent contracts.

Another important measure set by governments, which determines the hiring decisions of employers, is the amount of the *employer social security contribution*. Employment decisions partially depend on the costs of hiring a new employee, which includes social security contributions as well. In case an employer has to face lower costs, he might be induced to hire more employees, which has a positive effect on employment, so we can expect reverse effects in case of this factor, too.

Trade unions can also play an important role in the employment decisions. In countries, where they are strong, they are likely to make an impact on the hiring and firing decisions of employers. Therefore, *trade union density* might be an important factor, too: high coverage of trade unions might indicate their strength and thus an ability to shift employers' decisions towards employing more people.

In addition to the above mentioned publicly set conditions, the employers' decisions are highly influenced by the individual characteristics of the candidates as well. These include mostly the expertise and skills of the employees, which on a macro level can be measured by the educational attainment of the population. More educated people usually find suitable jobs more easily, so a higher *fraction of population with tertiary education* is likely to generate higher employment.

Besides the factors affecting the decisions of employers, we should consider the employees' side as well. One of the main conditions an employee considers before making a contract with a firm is the compensation she gets for her work. This works through a similar channel than in

the case of net replacement rates, but in an opposite direction. Higher wages constitute positive incentives to work since they contribute to a better financial position and thus boost employment. Since I conduct my analysis on a macro level, instead of the wages of individual employees, I represent this factor by the *average wage*. However, it should be taken into consideration as well that high wages might indicate labor shortage on the market and it might not be possible to increase employment significantly.

Employment decisions might be influenced by *economic conditions* as well. In case of an economic boom, more people can find a job than during a recession. This might be represented by GDP per capita; over the course of business cycles GDP and employment move in the same direction.

In the next subsection I define how I build these factors into my model to detect which of them have a significant effect on employment rates.

7.2. Data description and Empirical Strategy

Similarly to the analysis in Section 4, in this section, too, I use a panel dataset collected from OECD and Eurostat databases to deduct some general conclusions about the effect of recent labour market policies. The dataset contains macro level data about the same 20 countries over the same time period as in the previous analysis.

My main outcome variable in this case is the employment rate. As the crisis hit, almost all European countries experienced large drops in their employment rate. Countries, which were especially severely hit by the crisis included Greece, Ireland, Italy, Spain and Portugal (the so-called PIIGS countries). As Table 5 shows, the situation of people of specific age groups (namely, people aged between 15-24 and 55-64) has been particularly difficult, since the

employment rate of these people is significantly lower than of the whole population, and they experienced larger variations (usually, larger drops) in the employment rate. Therefore it is quite reasonable that policymakers addressed the young as a specifically targeted group when designing policies.

Variable	Mean	Std. dev.	Source
Employment rate (%, ages 15-64)	66.33	7.36	OECD
Employment rate (%, ages 15-24)	38.87	15.12	OECD
Employment rate (%, ages 55-64)	47.06	14.41	OECD
Net replacement rate (at 67% of the average wage, Singles, 0 children)	31.73	10.75	OECD
Average wage (USD, PPP)	37520.82	11234.79	OECD
Public expenditure on Active Labour Market Policies (%)	0.24	0.16	OECD
Strictness of Employment Protection Legislation	2.37	0.66	OECD
Trade Union Density (%)	32.34	20.10	OECD
Employer Social Security Contribution (at 67% of the average wage)	22.51	10.75	OECD
Educational attainment (ages 15-64)	83.59	3.82	Eurostat
Educational attainment (ages 15-24)	62.77	15.23	Eurostat
Educational attainment (ages 55-64)	65.28	9.89	Eurostat
GDP per capita (USD, PPP)	32829.24	10493.71	OECD

Table 5 - Descriptive statistics of factors determining employment

Source: own construction

One of the main explanatory variables is the public expenditure on Active Labour Market Policies. This variable is measured as a percentage of GDP, and normalized by the unemployment rate of those who have been unemployed for at least six months. This is necessary since I want to identify how effective Active Labour Market Policies have been regarding tackling the problem of unemployment. Although after the crisis most of the countries responded to the drop in employment rates by increasing public expenditure on ALMP in absolute terms, we can see in Table 6 that the normalized values increased at most slightly. It might be surprising regarding that in policy discussions expenditure on ALMP has been picked to be one of the most important tools to handle problems in the labour market. Probably, it indicates that although its importance has been recognized, the government budget did not allow large increases in expenditure.

Another important factor that I use as explanatory variable is the net replacement rate. It measures the amount of benefits one gets when unemployed compared to her previous earnings. Since on a macro level I cannot use each individual's net replacement rates separately, instead, I use one that is representative of the population of the country. It is calculated at 67% of the average wage for singles with no children. In Table 6 we cannot discover any uniform pattern but we can see that in those countries where net replacement rates were high before the crisis, these rates usually decreased in the following few years. This is in line with the policy of incentivizing the unemployed to search for a new job.

Another important measure is the Employer Social Security Contribution, which is measured in percentages, at 67% of the average job. In this measure, too, we see a slight decrease in several countries, which is aimed at decreasing the burden of employers and incentivizing them to employ more people.

Besides the above mentioned variables, I use the average wage, the strictness of Employment Protection Legislation, trade union density (the ratio of employees who are members of a trade union relative to all employees), educational attainment (the fraction of population with tertiary education) and GDP per capita as explanatory variables.

Similarly to Section 4, I use a panel regression model with fixed effects. In the next subsection I present and discuss the results of this analysis.

	Net replacement rate		AI	ALMP		Employer SSC	
Country	2006	2011	2006	2011	2006	2011	
Austria	51.3	51.3	0.33	0.36	21.63	29.13	
Belgium	66.5	71.0	0.29	0.35	28.38	28.43	
Czech Republic	4.8	4.6	0.05	0.06	35.00	34.00	
Denmark	68.2	33.2	0.73	0.40	0.88	1.21	
Finland	40.6	38.3	0.29	0.27	24.00	22.50	
France	48.3	47.4	0.28	0.27	38.25	39.52	
Germany	35.7	30.3	0.22	0.26	20.55	19.73	
Greece	6.8	10.2	N/A	N/A	28.06	28.56	
Hungary	8.9	9.0	0.07	0.08	35.26	28.50	
Ireland	46.3	50.8	0.27	0.20	10.75	10.75	
Italy	7.2	8.9	0.15	0.17	32.08	32.08	
Netherlands	29.0	26.6	0.54	0.42	9.05	9.54	
Norway	67.1	27.2	0.23	0.25	13.30	13.10	
Poland	9.9	8.5	0.07	0.06	16.78	14.78	
Portugal	39.8	45.3	0.18	0.12	23.75	23.75	
Slovakia	6.1	6.2	0.04	0.05	26.20	26.20	
Spain	27.6	28.5	0.23	0.14	30.60	29.90	
Sweden	38.2	37.1	N/A	0.21	32.28	31.42	
Switzerland	21.7	22.1	0.27	0.20	6.05	6.25	
United Kingdom	18.6	19.6	0.07	0.06	9.73	9.53	

 Table 6 - Changes in selected variables in the analyzed countries

Source: own construction

Collection	
l eTD	
CEU	

7.3. Results and Discussion

Table 7 and Table 8 show the results of the fixed effects regressions on employment rate and the corresponding robustness checks. Looking at the results it is quite clear that the expenditure on Active Labour Market Policies is a very important factor in determining employment rates. It is significant in all the specifications and it has the largest magnitude among the variables used. It shows that increased spending on ALMP increases employment rates, which corresponds to the findings of other studies (Gal-Theising [2015], Nickell-Nunziata-Ochel [2005], Martin-Grubb [2001], Calmfors-Forslund-Hemstrom [2002]).

Dependent variable: employment rate								
1	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Net replacement rate	0.17 (***)	0.01	-	-	-	-	-	-
ALMP	-	-	24.86 (***)	10.97 (***)	-	-	-	-
Employer SSC	-	-	-	-	-0.40 (***)	-0.07	-	-
Educational attainment	-	-	-	-	-	-	1.55 (***)	0.62 (***)
Fixed effects	no	yes	no	yes	no	yes	no	yes
\mathbf{R}^2	0.22	0.94	0.34	0.95	0.35	0.64	0.65	0.96
Observations	264	264	235	235	264	264	264	264

Table 7 - OLS regressions with one independent variable

Source: own construction

In contrast with my expectations, the net replacement rate proved not to be significant in most of the specifications. Its sign also contradicts previous findings (Salomäki-Munzi, 1999). This might be explained by reverse causality: when employment rates are high, there is no need for incentivizing more people to intensify job search, therefore it is needless to reduce net replacement rates. As for the other factors, average wage and the strictness of Employment Protection Legislation do not seem to play a crucial role in determining employment rates, either. Trade union density is significant in most specifications but its sign is negative, which is hard to interpret. However, there are two other variables that seem to be important in explaining employment rates: the employer social security contribution and the educational attainment. The results show that higher burden for employers detain them from hiring more employees and that education on a higher level contributes to employment, which is in line with what I expected. Their magnitude is however significantly smaller than of the expenditure on ALMP, which shows how powerful tools the Active Labour Market Policies are.

Dependent variable: en	Dependent variable: employment rate										
Age	Total	Total	Total	Total	15-24	55-64					
Gender	Total	Total	Male	Female	Total	Total					
	(1)	(2)	(3)	(4)	(5)	(6)					
Net replacement rate	-0.00	0.03	0.01	0.05	0.04	0.01					
		(*)		(***)							
Average wage	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00					
	(***)	(***)	(***)	(***)	(***)						
ALMP	10.80	7.07	7.05	5.92	8.00	5.30					
	(***)	(***)	(***)	(***)	(***)	(***)					
Strictness of EPL	0.98	0.94	0.74	-0.12	2.80	3.51					
	(***)				(*)	(***)					
Trade union density	-0.00	-0.34	-0.51	-0.09	-0.56	-0.27					
-		(***)	(***)	(**)	(***)	(***)					
Employer SSC	-0.06	-0.07	-0.15	0.00	0.17	-0.23					
	(**)	(*)	(***)		(**)	(***)					
Educational	0.98	0.57	0.73	0.56	0.22	0.57					
attainment	(***)	(***)	(***)	(***)	(***)	(***)					
GDP per capita	0.00	0.00	0.00	0.00	0.00	-0.00					
	(***)	(***)	(***)		(***)						
Fixed effects	no	yes	yes	yes	yes	yes					
R2	0.85	0.98	0.96	0.99	0.98	0.99					
Observations	235	235	235	235	235	235					

Table 8 - Fixed effects regressions on employment rate

Source: own construction

The results show that expenditure on Active Labour Market Policies is indeed a very important tool in increasing employment, so its use should be encouraged. Although its importance has been already recognized by policymakers, increases in expenditure on ALMP were not in line with the amount of unemployed, which indicates that budget constraints constitute a very important barrier to employment growth. In order to overcome this problem and use public funds efficiently, it would be also interesting to see, which specific types of ALMP (incentive reinforcement, occupation, employment assistance or human capital investment) prove to be the most effective and on what conditions. This however remains a question of further research.

8. Concluding Remarks

In this paper I described what kind of measures the European countries took to offset the negative effects of the Great Recession on labour markets. The crisis generated a huge rise in the unemployment levels and duration in almost all European countries. Due to this and the increasing share of population working in an atypical form, the segmentation between insiders and outsiders of the labour market widened. The countries intended to solve this problem by moving towards the Nordic "flexicurity" model that involves high employment protection, generous unemployment insurance and strong active labour market policies.

The reforms comprised several measures varying from country to country and the outcomes differed due to disparate country characteristics, but some general objectives can be deducted. The primary goal has been to reduce the divide between insiders and outsiders, especially in those countries where the gap is large (e.g. in Spain, Portugal or Italy). To achieve this, targeted measures were needed towards the most vulnerable layers of population: the young, the low-skilled and the long-term unemployed.

Generally, policy initiatives and recommendations from supranational organizations involved: limiting the role for employment protection; extending the coverage of unemployment insurance; and tying the benefits to participation in activation programs and promoting training schemes to enhance long-term career prospects of the unemployed. Usually, the outcome of the reforms has been positive but insufficient; several of the reforms provided good incentives but did not tackle structural problems, therefore further measures are required.

To get a general picture about the effects of labour market policies in Europe, I conducted panel regressions with fixed effects on a dataset of 20 European countries over 14 years. The first part of my analysis aimed at detecting whether Employment Protection Legislation contributes to the changes in the share of permanent employment significantly. I found that changes in the strictness of Employment Protection Legislation on temporary contracts had stronger effects on the share of permanent employment than changes in the strictness of Employment Protection Legislation on regular contracts. This can be attributable to the fact that during the past few years reregulation of temporary contracts were in the focus of policy design and policymakers paid more attention to that segment than to reforming employment with regular contracts. During the second part of my analysis I examined which of the three main types of the labour market reforms proved to be the most effective in increasing employment rates. I found that Active Labour Market Policies play the most important role in this process, so the use of these policies should be further encouraged by governments.

There are a couple of challenges ahead that policymakers need to consider. Attitude towards reforms both from politicians and the public might be an obstacle in implementation, the so-called reform fatigue and lack of political will can detain people from support. Furthermore, administrative capacities and budget constraints limit the scope of all intervention. There are also demographic processes that create a challenge for further policymaking: the ageing society is a problem in whole Europe, since it causes increasing shortages of (especially skilled) labour. Therefore it is essential that policymakers frequently reassess economic conditions and fine-tune the measures accordingly.

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