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Employment Protection Legislation, Youth Unemployment and the Role of the Educational System

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Abstract

Research on the effect of employment protection legislation (EPL) on unemployment is extensive. However, results are ambiguous and were not able to show a clear pattern of how EPL is affecting labour market outcomes. Recent research has focussed on the effect of EPL on youth unemployment, linking higher protection to higher unemployment among young labour market entrants compared to their adult peers. Moreover, it is argued that EPL might not have a universal effect on youth unemployment but must be considered in an interplay of institutional factors, including vocational specificity. Based on these findings, this thesis provides a comprehensive assessment of the effects of EPL and vocational specificity on the labour market chances of young people compared to adults. As young people in particular often find their way into the labour market via temporary contracts, it is distinguished between EPL for regular and temporary contracts. A total of 28 OECD countries are examined from 1985 to 2013 using OECD data. In line with previous research, there appear to be no main effects of regular EPL or the vocational specificity on its own on the level of youth unemployment or the youth-to-adult unemployment ratio, but there is a positive effect of temporary EPL on the youth-to-adult ratio. This suggests that especially for young people deregulation of these contracts – contrary to the usual theoretical assumptions – can have a positive effect on their labour market situation.

Keywords: Labour market; EPL; unemployment; youth; education.

1. Introduction

Unemployment is a much-discussed issue in national governments and international organisations. Comparative Worldbank statistics show that most countries have seen an increase in youth unemployment in recent years and that youth unemployment is generally much higher than adult unemployment (Zimmermann et al., 2013) while there are clear differences in the unemployment rates of young people between 15 and 24 years across the OECD[1]. Especially labour market institutions and employment protection legislation are said to have a strong influence on unemployment. Employ-ment protection legislation (EPL hereafter) has very often been associated with high unemployment, but there is no consensus to confirm this link empirically and results seem to be inconclusive (Nickell and Layard, 1999). Nevertheless, EPL has not been lost sight of, but it is increasingly argued that strict EPL has a particularly negative impact on young people, as they are less likely to be hired, as employers have no references and information on their productivity and value to the company and thus fear high dismissal costs in the event of a poor fit (Esping-Andersen, 2000; Cahuc et al., 2004; Breen, 2005). Noelke (2015) and others show through the replication of prior research that strict EPL, however, is not to blame for high youth unemployment – at least not as the only factor. On the basis of these research results, the interconnectivity of different institutional factors becomes relevant and scholars argue that EPL does not have a clear effect on its own but depends on other contextual factors (Brzinsky-Fay, 2017). An obvious link here is the education system, which aims to prepare young people for the labour market and comes out strongly in past research as the institution that could make a difference. In addition to many factors such as investment in education, compulsory schooling or tracking, vocational specificity stands out as one crucial feature, since the link between schools and the labour market is most dominant. Signalling theory assumes that young people have a smoother school-to-work transition in countries with high vocational specificity and

[1] Blanchflower and Freeman (2000) provide a comprehensive review of cross-national differences and trends.

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a strong link between the education system and employers (O'higgins, 2001; Cahuc et al., 2013; Eichhorst et al., 2013). Here employers receive early signals about the productivity and capacity of potential workers so the fit to the company can be assessed better and more realistically. Since pupils in a vocational system are better prepared for the real problems and challenges faced in the labour market and get in touch with companies at an early stage, youth unemployment is expected to decrease (Quintini and Manfredi, 2009).

The most immediate departure points of this thesis are studies from Breen (2005) and Brzinsky-Fay (2017), which are the only ones working on the interlinkage of education and EPL. Breen assumes that strict EPL leads to high youth-to-adult unemployment, but that high vocational specificity can offset these negative consequences. Accordingly, the youth-to-adult unemployment rate should be highest for strict EPL and low educational signalling and lowest for weak EPL and high educational signalling - although Breen finds no existing countries combining the latter. Brzinsky-Fay suspects that EPL on its own has no effect on the youth-to-adult unemployment ratio and only becomes important in combination with other institutional factors. It is expected that strict EPL only has a negative effect on the youth labour market situation if vocational specificity is low. This thesis contributes to the literature and takes further the ideas of Breen and Brzinsky-Fay by improving on their work as not only EPL on regular contracts is examined but also the effect of EPL on temporary contracts. Moreover, due to new data availability, this thesis expands on both, but especially on Breen's study with regard to the time period investigated, covering a significantly longer period from 1985 - 2013.

The main expectation is in line with both that youth labour market situations can only be understood in an complex interplay of institutions: Regarding the main effects of EPL, I expect that regular EPL will have no main influence on its own (Noelke, 2015), but that strict regulations on temporary contracts will have a positive effect on young people, as employers will not be able to take uncontrolled advantage of these insecure working conditions to get cheaper and less protected workers. It is expected that the best labour market setting for young people in terms of unemployment reduction is one that combines low regulations on regular contracts with strict regulations on temporary contracts. In addition, the labour market situation of young people in countries with high vocational specificity, which creates a direct link between school and the labour market, is strengthened. Generally, an interaction of the individual factors is always assumed, so that neither EPL regular nor vocational specificity alone are expected to have a significant influence. Although the focus of this work is on the level of youth unemployment, adult unemployment is also included in the analysis using the youth-to-adult unemployment ratio as the second dependent variable to examine the different effects of EPL and vocational specificity on these two groups. Especially with regard to the distinction between regular and temporary contracts, it seems promising to include the ratio to capture different effects on adults versus youth, since permanent contracts are still the status quo for adults, while temporary contracts are increasingly becoming the norm for young people. Furthermore, the ratio can be used to proxy the overall state of the labour market. New results could be used to better understand the interplay between the regulation of regular and temporary EPL and vocational specificity with regard to future policy decisions in the field of labour market regulation or the design of education systems to reduce unemployment. Methodically, different OLS regressions are calculated with country-clustered robust standard errors in order to extract the main effects of both types of EPL and vocational specificity on youth unemployment and the youth-to-adult unemployment ratio as well as possible interactions between these key explanatory variables. Data for the two dependent variables as well as indicators for strictness of employment protection and secondary education vocational enrolment as a proxy for educational signalling are taken from different OECD databases.

In the following a literature review and the theoretical framework with hypotheses are given in part two. Part three covers the analytical strategy and contains information on the comparative research design, variables and their operationalisations and the statistical methodology. In part four, the descriptive results are reported first, followed by the results of the regression analyses and the robustness checks. Finally, a critical evaluation of this thesis with its limitations follows in the conclusion and an outlook on future research opportunities is provided.

2. Literature Review and Theoretical Framework

2.1. Employment Protection Legislation and Youth Unemployment

While many things can play a role in the institutional framework when it comes to explanations of unemployment, such as minimum wages, education and training or active labour market policies (Salvador and Leiner-Killinger, 2008), employment protection in particular is often associated with unemployment and job insecurity among workers – especially young labour market entrants (Jimeno and Rodriguez-Palenzuela, 2002; Esping-Andersen, 2000; Organisation for Economic Cooperation and Development, 2004; Breen, 2005). Employment protection legislation includes all the provisions on job security, e.g. severance pay or notice, which restrict employers' abilities to dismiss workers. The main function is to stabilise workers and their employment relationships and secure their jobs (Organisation for Economic Cooperation and Development, 2004). High EPLs thus generate costs for employers if they dismiss workers with permanent contracts (for an overview, see Esping-Andersen, 2000; Organisation for Economic Cooperation and Development, 2013; Gebel and Giesecke, 2011), so that fewer employment changes take place (Bukodi and Robert, 2007; DiPrete, 2002).

Even though EPL has often been associated with unemployment (Blanchard and Wolfers, 2000; Botero et al., 2004;

Di Tella and MacCulloch, 2005; Feldmann, 2009; Fialová and Schneider, 2009; Nickell, 1997), past research has not yet been able to find a common consensus regarding the impact of strict EPL on the aggregated unemployment rate (Nickell and Layard, 1999). Some studies find no influence at all or even a positive influence of EPL on the employment rate (Allard and Lindert, 2006; Amable et al., 2007; Belot and van Ours, 2004; Cazes and Nesporova, 2007; Griffith et al., 2007; Rovelli and Bruno, 2008). Some other studies were able to show a strong effect of strict EPL on turnover but could not find any effect on aggregated unemployment or unemployment rates (Kugler and Pica, 2008; Marinescu, 2009). A potential reason why past research might not have been able to find clear results is that there seem to be two mechanisms of EPL that work in opposite directions and thus possibly balance each other out (Bentolila and Bertola, 1990).

On the one hand, there is a negative effect of strict EPL for all those who want to (re-)enter the labour market. Employers will be less likely to hire new employees under strong regulations as they fear high dismissal costs if the employee does not prove to be a good fit. They will have to take into account future dismissal costs when hiring new staff, so that the benefits of hiring new staff are reduced and recruitment rates therefore decrease (Blossfeld et al., 2008). It is assumed that strict EPL restricts market flexibility and that employers do not hire new employees even in good economic times. On the other hand, however, strict EPL also has a positive effect for all those insiders who are already employed. With strict EPL redundancies are made costly with an aim to reduce the turnover, stabilise new employment relationships and protect workers from quick dismissals.

Studies show that both mechanisms are happening simultaneously as strict EPL reduces hiring and limits employee turnover on one hand but also prolongs existing employment relationships by reducing firing rates (Organisation for Economic Cooperation and Development, 1999, 2004; Kugler and Pica, 2008; Marinescu, 2009). Thus, a general theoretical and empirical relationship between EPL and aggregated unemployment could not be found (Nickell and Layard, 1999; Baccaro and Rei, 2007; Kahn, 2012), as it is a possible interpretation that the opposing effects of EPL outlined above have an equal impact on the aggregated unemployment rate (Noelke, 2015). As both mechanisms may balance each other out, it is the next step to look at different groups and not just at the aggregated unemployment rate to find out if the mechanisms might work differently for different groups. The decisive factor that emerged in the literature is the comparison between young people and adults. Strict EPL is cited in many studies as the main cause of integration problems of young people into the labour market and resulting youth unemployment (Esping-Andersen, 2000; Cahuc et al., 2004; Organisation for Economic Cooperation and Development, 2006; Breen, 2005; Boeri and van Ours, 2008).

While the protection argument for labour market insiders applies to both groups, the negative effect of decreased hiring rates might be particularly relevant for young people, so that they are more affected by these negative consequences than adults. In their school-to-work transition young people try to find their first job and take the first step into the labour market. However, if employers have high dismissal costs, they are more inhibited to hire new employees, which has a particularly negative impact on young people who always start as labour market outsiders when leaving education. Looking at the situation of young people, it can be seen that a reduction in job offers through strict EPL makes job search more difficult as the school-to-work transition is prolonged until the first employment is entered (Wolbers, 2007) and job opportunities for young unemployed people are generally worse in countries with strict EPL (Russell and O'Connell, 2001). Therefore, lower hiring rates might be more consequential for young people in their school-to-work transition than negative effects of higher dismissal rates for labour market insiders when there is less regulation. Based on this assumed relationship, there was consensus in international organisations (Organisation for Economic Cooperation and Development, 2004, 2006; European Commission, 2006, 2011; World Bank, 2007) and across disciplines that strict EPL increases youth unemployment in absolute terms and in relation to adults in OECD countries (Addison and Teixeira, 2003; Autor et al., 2006; Bertola et al., 2007; Blau and Kahn, 1999; Boeri and van Ours, 2008; Botero et al., 2004; Esping-Andersen, 2000; Kahn, 2012).

Although a large number of authors support the positive correlation between strict EPL and high youth unemployment, doubts are increasingly emerging that question the proposed link. Scholars from various disciplines and international organisations are increasingly critical of the assumption that EPL is a key driver of high youth unemployment. Noelke (2015) shows in his literature review and the replication of prior research in a comprehensive sample of Western European countries that a number of studies linking EPL with high youth unemployment are statistically not robust. He shows that the prevailing consensus that strict EPL is to blame for high youth unemployment in the OECD is not backed up with comprehensive evidence and agrees with previous findings that could also find no consistent effects (Dieckhoff and Steiber, 2012; Kahn, 2010; Organisation for Economic Cooperation and Development, 1999). Brzinsky-Fay (2017) shows with QCA that the claim that high employment protection legislation itself leads to high youth unemployment must be refuted (Brzinsky-Fay, 2017), as must Gebel and Giesecke (2016), who argue that more stringent employment protection legislation for regular contracts increases youth job insecurities, but does not lead to an increase in youth unemployment (Gebel and Giesecke, 2016) leading to the following first hypothesis:

> H1: EPL on regular contracts has no significant impact on the level of youth unem-ployment and the youth-to-adult unemployment ratio

While focussing on young people and their employability in the context of EPL, the different forms of EPL - regulations on regular and on temporary contracts - must also be considered more closely, as this distinction has been overlooked in

many studies so far (Gebel and Giesecke, 2016; see Dieckhoff and Steiber, 2012 for an exception). A moderately low correlation with 0.31 in an analysis of Gebel and Giesecke (2016) however, shows that both indices measure different features of EPL and that therefore a distinction should definitely be made. Permanent or regular contracts have no end of employment while temporary contracts have a predetermined date of expiration (Gebel and Giesecke, 2011; Organisation for Economic Cooperation and Development, 2004). For employers to not simply replace permanent contracts with temporary contracts, the use of temporary contracts has traditionally been very restricted with limits on the cumulative duration of these contracts or the number of temporary contracts that can be concluded in succession (Noelke, 2015). Generally, an employment with a temporary contract is more insecure and riskier because the end of an employment relationship is already foreseeable, and one has to take care of a new job during employment to not slip into unemployment after the end of a temporary employment.

In theory, there are two mechanisms of temporary contracts (Giesecke and Groß, 2003): The 'integration view' emphasises the positive advantages of temporary contracts, as they can stimulate the flows on the labour market, increase the number of hires and provide a first step into the labour market. The 'segmentation view', however, stresses a higher risk of job loss due to shorter employment contracts. The criticism of deregulation of temporary contracts seems to predominate the literature, which convicts a deregulation of temporary contracts while maintaining the same strict EPL for regular contracts as a main reason for high youth unemployment (S. and Dolado, 1994; Blanchard and Landier, 2002; Cahuc and Postel-Vinay, 2002; European Commission, 2011). This already shows that the regulations of regular and temporary contracts should always be considered in combination. While job security provisions in form of EPL on regular contracts have remained relatively strict over the past decades, temporary contracts have been gradually deregulated in many OECD countries (Organisation for Economic Cooperation and Development, 2004; Gebel and Giesecke, 2011). Schönmann and Clauwaert (2012) show a trend during the recession that more and more countries have liberalised and deregulated their labour markets for temporary contracts and new forms of temporary contracts have been created that are often less protected and explicitly targeted at young people (Schönmann and Clauwaert, 2012). The 'partial deregulation' (Blanchard and Landier, 2002) leads to the fact that with high dismissal costs for permanent contracts but low regulations for temporary contracts, there are no longer any economic and monetary incentives to convert temporary contracts into permanent ones. Young people are thus in a 'trap' of frequently changing temporary jobs, which are usually paid less and only limited further training is possible (Quintini and Manfredi, 2009). It is therefore argued that social inequalities are increased by the spread of temporary contracts (Gash and McGinnity, 2007) without creating and improving new labour market opportunities for young people, resulting in individual career risks and impairing social mobility (Barbieri, 2009; Cazes and Tonin, 2010; DiPrete et al., 2006; Gebel, 2009; Giesecke and Groß, 2003; McGinnity et al., 2005). In addition, employers are given incentives to replace permanent contracts with temporary contracts if partial deregulation happens (Blanchard and Landier, 2002; Cahuc and Postel-Vinay, 2002; DiPrete et al., 2006; Kahn, 2010). Moreover, an increasing difference between dismissal costs from regular to temporary contracts leads to a higher flow of temporary jobs into unemployment (Blanchard and Landier, 2002, see Centeno and Novo, 2012 for evidence).

It should be pointed out that young people in particular are disproportionately affected by this type of contract and thus also by the consequences of constant deregulation. Therefore, it is interesting to not only look at youth unemployment but also at the youth-to-adult unemployment ratio, which provides insights into how far young people are more or differently affected by changes than adults. Although time-unlimited contracts are the status quo of employment relationships among adults in the labour market (Noelke, 2015), it turns out that the increasing number of temporary contracts for all entry levels jobs affects disproportionately young people, for whom this type of temporary contract has become the norm in some countries (Organisation for Economic Cooperation and Development, 2014). Young people in particular are thus automatically exposed to a higher risk of unemployment due to the nature of their employment contract, as the positive insider effect of strict regular EPL does not apply to them. Furthermore, the destabilising effect of temporary jobs for employment careers and the failure of deregulation to lead to job growth for young people is stressed (Barbieri, 2009; Giesecke and Groß, 2003; Polavieja, 2003; Scherer, 2005; Barbieri, 2009). Gebel and Giesecke (2016) show across countries and time that overall partial deregulation was not successful in reducing the risk of youth unemployment, but that instead the youth temporary employment risk was increased (Gebel and Giesecke, 2016).

> H2: Strict EPL on temporary contracts is decreasing the level of youth unemployment and the youth-to-adult unemployment ratio

It is expected that the effect of deregulation of temporary contracts depends on the level of regulation of regular contracts, so the link of both types of EPL is crucial. Noelke (2015) confirms this expectation and shows empirically that youth unemployment rates rise when a country combines high regulations for regular contracts with a deregulation of temporary contracts, which is consistent with theoretical macroeconomic models (Blanchard and Landier, 2002; Cahuc and Postel-Vinay, 2002). What counts with regard to general unemployment but especially youth unemployment is therefore the link between regulations of regular and temporary contracts. Thus, both types of EPL will be examined in this thesis. The assumed best-case scenario for young people is having low regulations on regular contracts, as employers do not have to fear high dismissal costs if they want to employ labour market entrants on a secure regular contract and simultaneously high regulations on temporary contracts, as

a protection against being employed on insecure short-term contracts over and over again without planning certainty and with lower salaries. For adults, high regulations for temporary contracts are also important for this reason. For them, however, strict EPLs on regular contracts are better, as they are mostly labour market insiders and thus protected from dismissal by many rules and high dismissal costs.

> H3: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL regular and high EPL temporary

2.2. Linking Employment Protection Legislation and Education

The theoretical and empirical backgrounds on EPL show that the relationship between EPL and youth labour market chances is not always clear, so that it seems logical to consider other factors that might influence this interaction. The interplay of different factors seems to have been somewhat neglected in the literature so far (with the exceptions of Breen, 2005 and Brzinsky-Fay, 2017). From a very detailed comparison of several countries, Zimmermann et al. (2013) conclude that a variety of factors influence the labour market situation of young people in a country, including the interplay of economic growth, labour market regulation or education and training systems. Avdagic (2015) also argues that the sole liberalisation of employment protection laws by governments will remain unsuccessful in the fight against unemployment. In line with these interconnectivity arguments it is argued that EPL might not have a universal effect on youth unemployment but must be considered in an interplay of institutional factors - what this work envisages to do with a focus on the educational system. Since better educated young people generally have better employment opportunities the connection to education is theoretically sound. A large number of studies have empirically stated the positive effects for young people of a closer link between training and the labour market through vocational education paths (Allmendinger, 1989; Gangl, 2003; Julkunen, 2010; Kerckhoff, 1995, 2000), which leads to a reduction of youth unemployment (Breen, 2005; Gangl, 2003; Quintini and Manfredi, 2009; Quintini et al., 2007; Wolbers, 2007). Countries that have robust and broad Vocational Education and Training (VET) systems and strong employer-worker linkages had better transitions for labour market entrants so far and have performed best during the recession with regard to labour market outcomes for youth - especially dual apprenticeship systems such as Germany or Austria (Caroleo et al., 2017).

Education systems are characterised by very different features such as investment in education, the teacher-student ratio, compulsory school years, tracking or vocational specificity. From all these facets a factor is sought that represents a close link to the labour market, since the problems of young people (compared to adults) on the labour market are to be investigated. Hence, vocational specificity seems to be the most promising element as it has a major influence on the success rates of the school-to-work transition period (Banerji et al., 2015; Cahuc et al., 2013; Eichhorst et al., 2013; O'higgins, 2001). It is understood as the degree to which an education system sends clear signals to employers about a pupil's qualification and can be measured by the share of students enrolled in vocational tracks. It indicates to what extent vocational specialisation already takes place in schools (Brzinsky-Fay, 2017), whereby it is intended to teach young people practice-oriented knowledge and skills (Eichhorst et al., 2012), which are usually also transferable between different employers (Beck and Katz, 2011). Especially in an age of financial crises and austerity, VET is often seen as a silver bullet for tackling the problem of youth unemployment (Eichhorst et al., 2012). Sociologists have come to the consensus that the two central factors that are important for young people seeking their first job are the degree of specific rather than general skills and the strength of the link between educational systems and the labour market (Allmendinger, 1989; Hannan et al., 1996; Maurice et al., 1986; Müller and Shavit, 1998). When a company wants to hire new employees, who are just leaving school, it is a challenge to assess the potential benefits of this new recruitment as there is no prior work experience to rely on. Thus, one of the main reasons for youth unemployment is the lack of information an employer has about the qualifications of a labour market entrant (Levels et al., 2014; Spence, 1973). A greater focus on vocational training should facilitate transition from school to work by creating a closer link between schools and employers that sends a clear signal to employers about the productivity and skills of a potential applicant (Breen, 2005; Spence, 1973; Stigler, 1962; Stiglitz, 1975).

As important as vocational specificity seems to be for young people and their connection to the labour market, Brzinsky-Fay concludes that this is not the only aspect that can lead to an improvement in youth unemployment, as this area must always be addressed in interaction with other institutions. (Brzinsky-Fay, 2017)

> H4: Vocational Specificity has no main effect on the level of youth unemployment and the youth-to-adult unemployment ratio

In their studies Breen (2005) and Brzinsky-Fay (2017) examine the interplay between vocational specificity and employment protection legislation and show that youth unemployment appears to be low in countries with strong educational signalling and liberal labour market policies. The results imply that an education system with a strong vocational component and a link between education and the labour market can compensate for the negative effects of strong employment protection against dismissal. For the combination of EPL regular and vocational specificity, it is assumed that it is best for young people to have low regulations for regular contracts, so that employers can hire them without fear of high dismissal costs, and, additionally, high educational signalling to ensure early on that employers can assess the abilities of

Table 1: Overview Hypotheses and Previous Results

Notes: Empty fields indicate that these aspects have not yet been investigated in the two highlighted studies, as only EPL on regular contracts has been studied.

Hypotheses	Results from:	
	Breen (2005)	Brzinsky-Fay (2017)
H1: EPL on regular contracts has no significant impact on the level of youth unemployment and the youth-to-adult unemployment ratio	Strict EPL regular = Higher youth-to-adult unemployment	Effect only measured in conjunction with other institutional variables
H2: Strict EPL on temporary contracts is decreasing the level of youth unemployment and the youth-to-adult unemployment ratio	-	-
H3: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL regular and high EPL temporary	-	-
H4: Vocational Specificity has no main effect on the level of youth unemployment and the youth-to-adult unemployment ratio	Effect only measured in conjunction with other institutional variables	Effect only measured in conjunction with other institutional variables
H5a: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL (regular) and high vocational specificity	confirmed	confirmed
H5b: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with high EPL (temporary) and high vocational specificity	-	-

potential applicants to establish a strong connection between schools and employers.

> H5a: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL (regular) and high vocational specificity

With regard to the interplay between temporary EPL and vocational specificity, it is assumed that young people have the best labour market opportunities if temporary contracts are subject to high regulations so that employers cannot employ them continuously in these insecure and often more poorly paid jobs without regulations.

> H5b: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with high EPL (temporary) and high vocational specificity

3. Analytical Strategy

3.1. Comparative Research Design

Since youth unemployment levels and the youth-to-adult unemployment ratio as the dependent variables differ substantially across countries and over time, a comparative quantitative analysis with a statistical, variable oriented approach seems most promising (Della Porta, 2008; Lijphart, 1971). Cross-national and time-series data are used to find out how these variables are influenced by the two EPL types and how this relationship may be moderated by vocational specificity. To ensure that the countries are as similar as possible and that sufficiently harmonised data is available to make meaningful comparisons the analysis here limits itself to an OECD sample of 28 countries. As many countries as possible were selected that have different labour market regulations and also represent a balanced sample of Liberal, Conservative, Mediterranean and Social-Democratic employment regimes (Bukodi and Robert, 2007). The case selection is based on variations in the independent variables, i.e. large enough variation when it comes to labour market regulations and vocational approaches in education which is important for a conclusive research design (Della Porta, 2008; King et al., 1994). A timeframe from 1985 - 2013 is selected to cover as many years as possible, including the whole period of EPL data that is currently available from the OECD.

Breen (2005) and Brzinsky-Fay (2017) studies are chosen as the most immediate departure studies as they both examine the influence of EPL on youth labour market chances and its interaction with vocational specificity. While they deal only exclusively with EPL on regular contracts, this paper makes a distinction between EPL on regular and temporary contracts, which hasn't been paid much attention yet (in interactions with vocational specificity). Since young people in particular are increasingly entering the labour market on temporary contracts and deregulation of these contracts in recent years has led to increased uncertainty, a more detailed examination of these two forms can shed new light on the effects of EPL reforms. A study which exclusively examines

the influence of regular EPL on youth in the labour market oversees the majority of young people who are employed on temporary contracts and are not affected by the mechanisms of regular EPL. Compared to both previous studies, the time period is extended by 24 (compared to Breen) and 19 years (compared to Brzinsky-Fay). EPL trends across European and OECD countries have shown fewer changes and reforms regarding regular EPL, but a clear trend towards deregulations of temporary contracts – providing a new contribution by observing both EPL variables over a longer time-period. Lastly, compared to Breen (2005) the defined age group of adults is extended from 25-54 years to 25-64 years, since this division represents the labour market situation much more realistically, based on the average retirement age of 65.8 for men and 65.5 for women across OECD countries (Organisation for Economic Cooperation and Development, 2019).

3.2. Variables and Operationalisation

My dataset comprises observations from 28 OECD countries while covering a time period from 1985 to 2013 to study how EPL for regular and temporary contracts is influencing youth labour market chances and how this link might be conditioned by a country's vocational specificity. Annual data is included from the following countries: Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Czech Republic (CZE), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Hungary (HUN), Ireland (IRL), Italy (ITA), Japan (JPN), Korea (KOR), Mexico (MEX), Netherlands (NLD), New Zealand (NZL), Norway (NOR), Poland (POL), Portugal (PRT), Slovak Republic (SVK), Spain (ESP), Sweden (SWE), Switzerland (CHE), Turkey (TUR), United Kingdom (GBR) and the United States (USA). Summary statistics for each country can be found in the Appendix in Table 1.

3.2.1. Dependent Variables

Two different dependent variables are chosen to reflect the labour market situation of young people: The level of youth unemployment and the youth-to-adult unemployment ratio. The level of youth unemployment is chosen because it was used as the dependent variable in a number of influential previous studies (e.g. Noelke, 2015). Young people are considered to be all people aged 15-24. Even though there is no "clear cut definition of youth" (Eurostat, 2009, p.17), this range is chosen here in order to ensure the greatest possible comparability with previous studies in this research area (e.g. Noelke, Breen and Brzinsky-Fay). Results regarding the interaction of the variables can thus be seen more easily in the context of previous research. Data is taken from the OECD Labour Force Statistics (LFS) database. For the second dependent variable – the ratio of youth to adult unemployment – the same database is used where the youth unemployment rate (15-24 years) is divided by the adult unemployment rate (26-64 years), which is a measure that can partially control for cyclical economic conditions (Breen and Buchmann, 2002). This is in line with research from Breen and Brzinsky-Fay and moreover, in contrast to the youth unemployment rate alone, it can reflect the disadvantages of young people in relation to the adult working group.[2]

3.2.2. Key Explanatory Variables

A central key explanatory variable is the degree of EPL where measures are taken from the OECD Employment database. The strictness of employment protection is divided in two separate measure – indicators on regular and temporary employment – with scores ranging from 0 to 6 and higher values indicating stronger worker protection against dismissal. The 'EPL regular' indicator summarises the inconveniences for employers when they want to dismiss individual workers on regular or open-ended contracts, as well as rules on notice periods, severance pay or valid reasons for dismissal in general. The second indicator 'EPL temporary' refers to the severity of the regulations for the creation of fixed-term contracts and temporary work contracts on the one hand and contractual regulations concerning wages, recruitment procedures and working conditions on the other (Organisation for Economic Cooperation and Development, 2019). Although weaknesses of these indicators were taken into consideration (Eichhorst et al., 2008), they are used here due to a lack of comprehensive alternatives. The period to be examined (1985-2013) was chosen according to the availability of EPL data for the majority of countries. The 1980s show hardly any reform activities without record of any reforms or only changes with a marginal impact (fRDB-IZA Social Reforms Database, 2010). The following 1990s and 2000s, on the other hand, show more significant changes in several countries, both for regular and temporary employment (see Venn, 2009 for a detailed assessment of EPL reforms). My country selection of 28 OECD countries shows six different trends regarding the development of EPL: A partial deregulation, where regular EPL remains constant and only temporary EPL is deregulated, upward and downward trends for both types of EPL, no changes at all, a deregulation of regular contracts combined with a higher regulation of temporary contracts and lastly an initial deregulation with subsequent re-regulation of temporary contracts. Accordingly, Figure 1 in the Appendix shows how the two EPL types have developed from 1985 to 2013 - exemplarily illustrated with individual countries - with blue lines representing regular EPL and orange lines representing temporary EPL.

For the other key explanatory variables – vocational specificity - Worldbank data is used for vocational, general and total enrolment in secondary education. The strength with which an educational system sends clear signals to employers about the performance of potential applicants is calculated by dividing the secondary vocational enrolment by the secondary total enrolment. The selected OECD countries form a large variety with regard to their educational design of the ideal skill formation regimes according to Busemeyer and

[2] Due to data limitations, it is unfortunately not possible to take the NEET rate here, which could potentially capture the labour market situation of young people even better.

Iversen (2012), who classify countries according to the two categories "public investment in VET" and "firm involvement in VET".[3] The literature shows several alternatives as to how different VET systems can be classified and which countries are assigned to them (see as an example Hanushek et al., 2011 in the Appendix Table 2; Eichhorst et al., 2015; Pohl and Walther, 2007). Hadjivassiliou et al. (2015) highlight Germany and the Netherlands as the most successful examples with the most efficient integration of 15-19 years into the labour market with resulting high employment figures among young people over several years and stability during in various economic phases, such as the financial crisis (Hadjivassiliou et al., 2015). Even though some scholars specifically focus on upper secondary education when it comes to the share of vocational education (Breen, 2005) only the general secondary level is used here as the Worldbank provides the most comprehensive dataset regarding my country sample and time frame but does not distinguishing between various levels of secondary education. However, this does not represent a limitation since the expectations do not differentiate between different stages of vocational education nor do other scholars in their research (Caroleo et al., 2017). It should be further noted at this point that I am aware that this indicator represents a questionable operationalisation, since no distinction can be made between school-based and workplace-based training and the pure enrolment statistics can be misleading without sufficient background knowledge of the design of the respective education systems of the countries. It is precisely a dual system of apprenticeship, as in the German-speaking countries, that can ensure a smooth school-to-work transition through a positive effect of vocational specificity (Russell and O'Connell, 2001; Van Der Velden and Wolbers, 2003). However, there are countries such as Italy or the Czech Republic, which also have high enrolment rates in vocational education programmes, but their link between schools and employers is very weak and thus a lack of specific skills of vocational pupils does not result in better positioning on the labour market (Avdagic, 2015). But since no comprehensive data is yet available for these detailed differences, this analysis draws on the general share of vocational enrolment, whereby a closer examination of these differences can be an exciting task for future research.

3.2.3. Control Variables

As it is the core of statistical interference to incorporate control variables in order to consider potential confounding factors (Angrist and Pischke, 2009), three macroeconomic controls are used in this study. Poor macroeconomic conditions can increase competition for jobs between young people, making smooth transitions into the labour market more difficult and exposing young people to the risk of dismissal due to the overall economic situation, as they are the least protected (Gangl, 2002). GDP per capita from the Worldbank database is used to control for the impact of macroeconomic conditions on activities of the welfare state and public expenditures for labour market programmes. In order to capture the influence of inequality, the GINI coefficient from the World Inequality Database (WID) and the Estimated Household Income Inequality Data Set (EHII) is also taken into account. Finally, the general level of unemployment is controlled for with data on general unemployment (15+ years) from the International Labour Organisation (ILO) but only in models where the ratio of youth-to-adult unemployment is used as a dependent variable. All data used was collected before this research and is publicly available.

3.3. Methods

To find out what influence the two versions of EPL have on the level of youth unemployment and the youth-to-adult unemployment ratio and whether this relationship may be moderated by vocational specificity, OLS regressions with robust standard errors are calculated. As the individual observations within a country are not independent, the standard errors are clustered by countries to control for the correlation between the errors within the same country-unit over time. This technique is used to generate robust estimates of standard errors that compensate for the fact that the observations are independent between countries, but not within them (see also Breen, 2005).

3.3.1. Missing Data

The biggest challenge in creating the dataset is the problem of missing data points. This missingness was addressed by using linear interpolation to fill in missing values, assuming a country-specific linear time trend for the gaps in the data (StataCorp, 2015). A maximum of four missing years were interpolated. The fact that a variable has no values at the beginning or at the end of the sample period was not addressed further, as no substantial statistical problems arise (Beck and Katz, 2011). Missing data should ideally be addressed by multiple imputation (Beck and Katz, 2011), where relevant information is extracted from the data and then multiple values are imputed for each data-gap, creating multiple "complete" datasets (Honaker and King, 2010; Honaker et al., 2011). Even though this does not limit the following analyses, it can be addressed in future research.

3.3.2. Robustness Checks

To ensure that my results are not driven by any one country, I re-estimate all models excluding one country at a time. The evaluation of these models can provide information on whether the model is susceptible to changes in the sample and whether individual countries strongly influence the overall results. Furthermore, a distinction of two periods is made (pre-2000 and post-2000) to check whether the results differ based on the time period chosen. This is to control for major institutional changes over time.

[3] For a very detailed overview of an analysis of different country clusters regarding vocational education see Zimmermann et al., 2013.

3.3.3. Stages of Analysis

At the beginning, all variables are displayed descriptively first. For this purpose, an average is calculated for all 28 countries for each year from 1985 to 2013 in order to make general trends visible across all countries. The results can be seen in Figures 1-4. Then OLS regressions with robust standard errors are calculated for different models. All analyses are calculated with the level of youth unemployment as the first dependent variable (Table 1), followed by the ratio of youth-to-adult unemployment as the second dependent variable (Table 2). A total of nine models are calculated each for both dependent variables. Models 1-3 test the influence of the two types of EPL on the dependent variable. Control variables are not included in any model. Model 1 tests the sole influence of EPL for regular contracts, Model 2 the sole influence of EPL for temporary contracts and Model 3 combines both types. Starting with Model 4, the two control variables GDP per capita and GINI coefficient are added to the level of youth unemployment, while the overall unemployment rate is added additionally in Table 2. In Model 5, the third key explanatory variable vocational specificity is introduced, so that in this model all key explanatory variables are examined together. Finally, the Models 6-9 test interaction effects, whereby Model 6 examines the interaction between EPL regular and EPL temporary, Model 7 the interaction between EPL regular and vocational specificity, Model 8 the interaction between EPL temporary and vocational specificity and Model 9 all three interaction terms. Robustness checks are displayed in Tables 3 to 6.

4. Results

4.1. Descriptive Results

Figure 1 compares the development of youth unemployment rates and adult unemployment rates across all 28 countries from 1985 to 2013. It shows that the level of adult unemployment (orange line) has hardly changed over the entire period and moves exclusively between the 5 and 10% mark. Youth unemployment (blue line), however, shows strong fluctuations and, with one exception in 2010, is always higher than adult unemployment, so young people seem to have it more difficult in the labour market than adults when it comes to their employment prospects. The figures for youth unemployment range from around 7% (in 2010) to peak values of over 30% in the crisis years 2007/2008, showing a significant negative impact of the financial crisis on the labour market situation of young people (compared to a moderate impact on their adult counterparts). Figure 2 adopts the blue graph of youth unemployment and now shows in orange - displayed on the secondary Y-axis - the youth-to-adult unemployment rate, which lies predominantly between 2.5 and 3%. Hence, Figure 2 shows the two dependent variables to be examined. Figures 3 and 4 show the three key explanatory variables, whereby EPL for regular and EPL for temporary contracts are summarized together in Figure 3. Across all countries temporary EPL saw a clear downward trend and is continuously deregulated, while regular EPL remains mostly constant. Furthermore, it can be seen that already at the beginning in 1985 regular contracts are regulated much more strictly than temporary contracts, whereby regulations for regular contracts at the end of the measurement period in 2013 just reach the starting point of regulation for temporary contracts with a value of 2 (on a scale of 0-6). The often-stated trend towards 'partial deregulation' is thus also evident in the countries used here. Examples of individual countries showing various EPL trends over time can be found in Figure 1 (Appendix). Figure 4 concludes by summarising the development of vocational specificity in secondary education, although no clear trend can be discerned here. Overall, the values are between 22 and 30%, which describes the proportion of pupils who are in a vocational track compared to the total enrolment in secondary education across all countries. A more detailed country-by-country table displaying the main descriptive results of the dependent and all independent variables can be found in the Appendix (Table 1). Figure 5 plots youth unemployment and the youth-to-adult unemployment rate against both EPL indicators for regular and temporary contracts. In this comprehensive sample there appears to be little support for the often-proclaimed relationship between strict regulation and higher youth unemployment when looking at the bivariate associations.

4.2. Regression Analyses

Table 1 reports estimates from ordinary least squares (OLS) regression with country clustered robust standard errors using the level of youth unemployment. Table 2 adopts the same model building structure but uses the youth-to-adult unemployment ratio instead.

In Table 1 no regression coefficient of the main effects or the interaction terms is statistically significant. It shows that neither EPL for regular contracts, nor EPL for temporary contracts, nor the vocational specificity have a significant influence on the level of youth unemployment in the 28 countries of this sample. Table 2 shows the same nine models but this time using the ratio of youth-to-adult unemployment as the dependent variable. Again, a stronger regulation of regular contracts has no statistically significant impact on the ratio of youth-to-adult unemployment. The results for both dependent variables thus confirm the results of Noelke (2015) who found no consistent evidence that stronger regulation of regular contracts is associated with higher youth unemployment. Yet they disagree with Breen (2005) who found a significant effect indicating that higher EPL for regular contracts will lead to an increase in youth unemployment.

In Table 2 the coefficients of EPL temporary are statistically significant at the 5% level in Models 2 to 5, showing a positive coefficient. Temporary EPL does therefore not affect the level of youth unemployment but the ratio of youth-to-adult unemployment. This means that in countries with a stricter regulation of temporary contracts, the number of unemployed youth increases compared to unemployed adults so young people are more affected by negative consequences

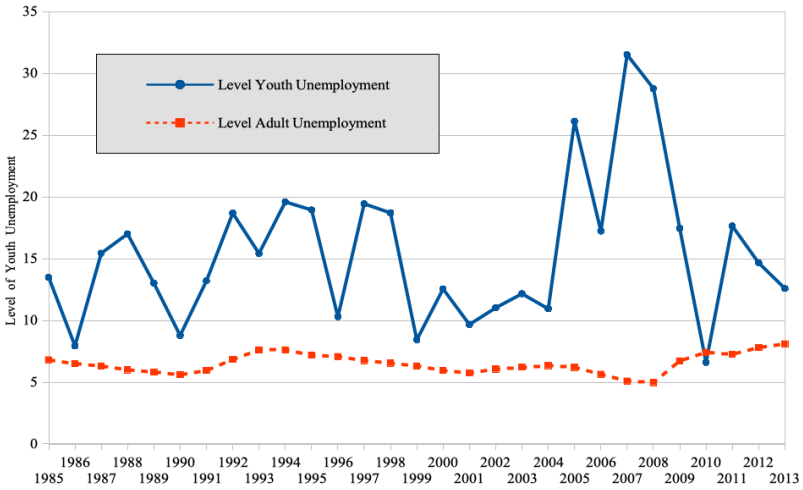

Figure 1: Levels of youth unemployment and levels of adult unemployment (average across 28 OECD countries), 1985-2013

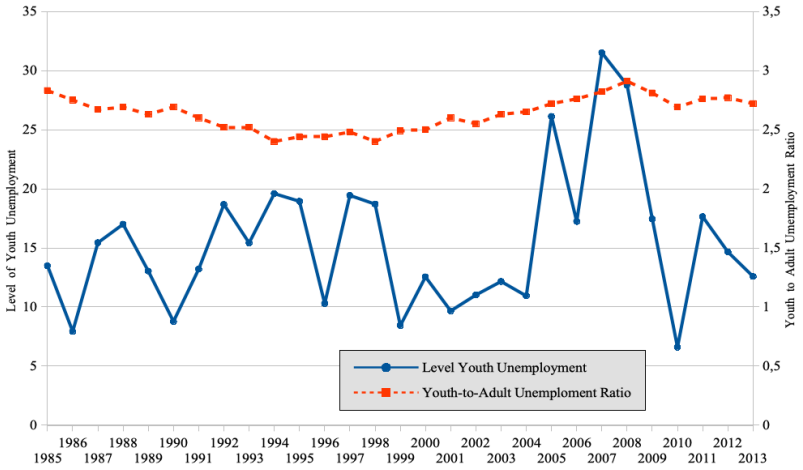

Figure 2: Levels of youth unemployment and the youth-to-adult unemployment ratio (average across 28 OECD countries), 1985-2013

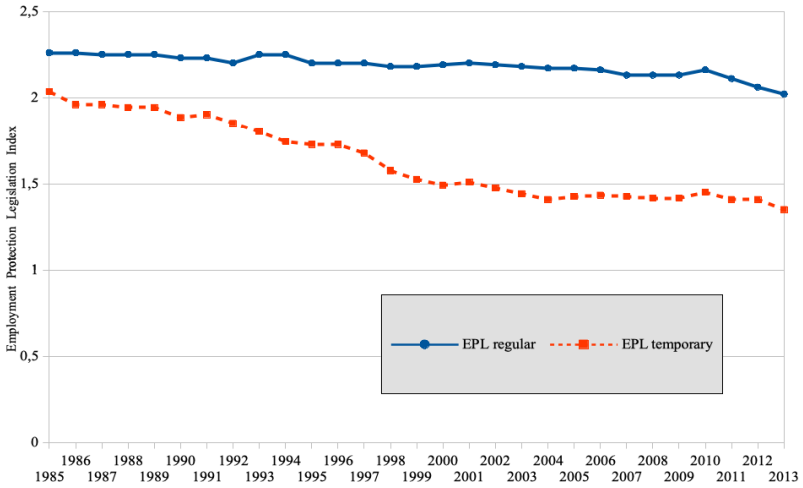

Figure 3: Employment protection legislation for regular and temporary contracts (average across 28 OECD countries), 1985-2013

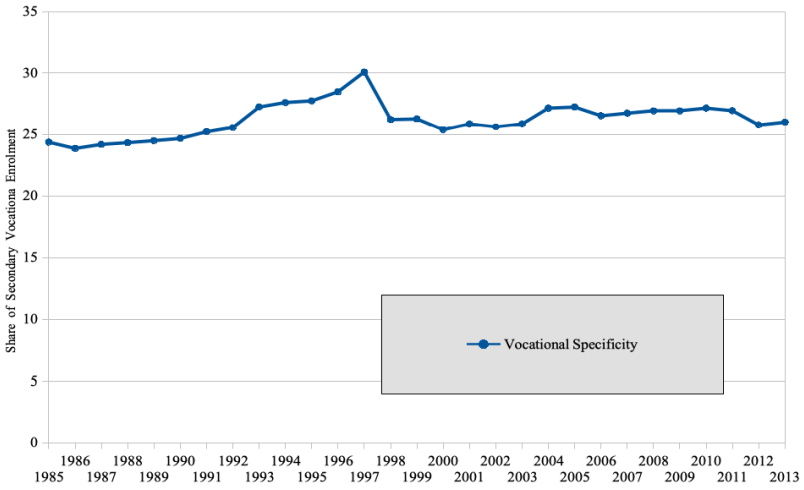

Figure 4: Share of secondary vocational enrolment in % (average across 28 OECD countries), 1985-2013

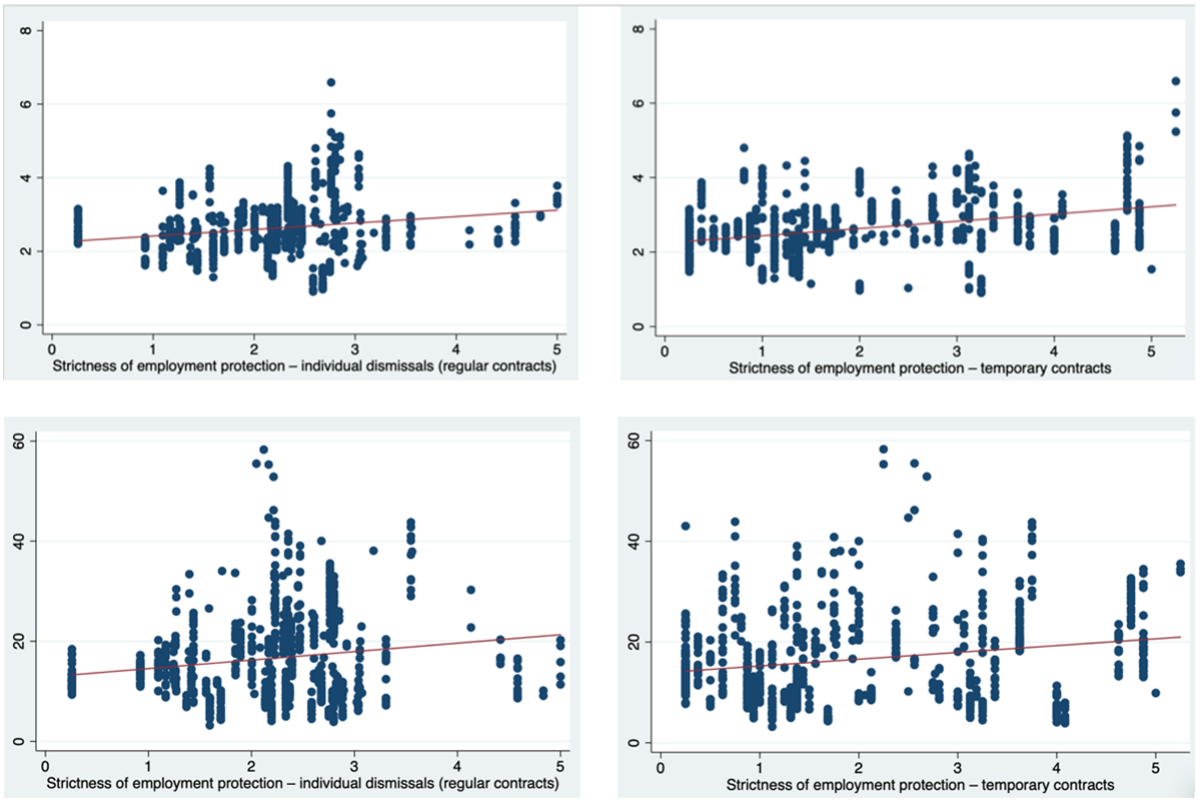

Figure 5: Bivariate associations between both types of EPL and youth-to-adult unemployment ratio (first row) and youth unemployment rates (second row), 28 OECD countries, 1985–2013

regarding their employment status than adults in the same country. Breen and Brzinsky-Fay did not investigate this relationship, but the results contradict the in previous literature embedded Hypothesis 2 that higher regulations of temporary EPL have a positive effect on young people and their labour market chances. Moreover, the interaction term of EPL regular and EPL temporary in Table 2 is significant in models 6 and 9. These positive coefficients states that higher levels of EPL regular strengthen the positive effect of EPL temporary. In a country with strict EPL on temporary contracts the labour market situation for young people is therefore worse compared to adults and they are more often unemployed, and this trend will be even stronger in countries that also have strict EPL on regular contracts. Vocational Specificity is not significant in any of the models as a main effect, confirming Hypothesis 4. Model 9 including all three interactions achieves the highest model fit (R-squared = 0.2557) whereby approx. 1/4 of the variance of the dependent variable can be

Table 2: OLS regression with country clustered robust standard errors – Level of youth unemployment

Country clustered robust standard errors are reported in parentheses. The constant is not reported. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Dependent variable Level of youth unemployment	M1	M2	M3	M4	M5	M6	M7	M8	M9
Key Explanatory Variables									
EPL Regular	1.69 (1.16)	-	0.73 (1.02)	1.18 (1.25)	0.31 (1.30)	-2.73 (2.38)	-0.06 (1.91)	1.61 (1.86)	-0.81 (2.72)
EPL Temporary	-	1.35 (0.85)	1.13 (0.92)	0.48 (1.00)	0.19 (1.06)	-3.84 (3.37)	0.22 (1.10)	-2.35 (2.09)	-4.80 (3.75)
Vocational Specificity	-	-	-	-	0.12 (0.09)	0.19* (0.10)	0.07 (0.22)	-0.04 (0.15)	0.06 (0.233)
Interaction Effects									
EPL regular* EPL temporary	-	-	-	-	-	1.73 (1.37)	-	-	1.29 (1.13)
EPL regular* vocational specificity	-	-	-	-	-	-	0.02 (0.10)	-	-0.01 (0.11)
EPL temporary* vocational specificity	-	-	-	-	-	-	-	0.09 (0.07)	0.07 (0.06)
Control Variables									
GDP per capita	-	-	-	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)
GINI coefficient	-	-	-	39.95 (29.97)	57.92* (33.78)	59.38* (31.74)	58.78 (34.84)	68.61** (29.48)	67.09** (29.82)
N	744	744	744	717	627	627	627	627	627
R2	0.0251	0.0456	0.0491	0.1377	0.1515	0.1707	0.152	0.1719	0.1816

explained by this model.

Tables 3-6 show a robustness check with two separate time-periods – before and after 2000. Again, both dependent variables are examined - the level of youth unemployment in Tables 3 and 4 and the youth-to-adult unemployment ration in Tables 5 and 6. Seven different models are calculated for each time period. Model 1 examines the influence of the two EPL key explanatory variables (EPL regular and EPL temporary) on the dependent variable. Model 2 adds vocational specificity. Models 3 to 5 additionally add single interactions while Models 6 and 7 combine interactions. All models include all control variables.

The robustness check with the level of youth unemployment as a dependent variable (Tables 3 and 4) shows a significant interaction of the two types of EPL before 2000 as already interpreted above. Moreover, M5 in Table 3 reveals a slightly significant value at the 10% level for the interaction of EPL temporary and vocational specificity. No coefficient in the after 2000 period is significant. Tables 5 and 6 with the ratio of youth-to-adult unemployment show several statistically significant values. Again - before 2000 - the EPL regular EPL temporary interaction is significant. Furthermore, it appears that stricter temporary EPL increases youth unemployment significantly more than adult unemployment. This is particularly the case before 2000 (Table 5). After 2000, this link appears to be conditioned by the degree of vocational specificity implying that the association only shows up in countries with higher level of vocational specificity (M 5-7 Table 6). The positive effect of temporary EPL on the youth-to-adult unemployment rate is therefore strengthened by a higher level of vocational specificity – and not weakened as assumed in theoretical section where it is argued that a stronger vocational orientation sends clear signals to employers about the skills of young people and thus reduces youth unemployment. So far, no sound arguments for this connection can be found in the literature. It is assumed that vocational specificity often only works in conjunction with other factors, but even then, only positively for young people. It might thus be the case that the very small effects with coefficients around 0.01 and a marginal significance at the 10% level may no longer be visible with a different country or time sample and varying variable operationalisations. As a further robustness check, the regressions were recalculated, whereby each time a different country was excluded from the analysis in order to test whether the results are driven by one country. However, the results show that the model is not susceptible to changes in the sample (see Tables 3-6 in the Appendix).

Breen's findings on the interaction between regular EPL and vocational specificity show that vocational specificity can compensate for the problem of higher youth unemployment in countries with strict EPL regulation. It is confirmed that the ratio of youth-to-adult unemployment is lowest in countries with high educational signalling (Breen, 2005).

Table 3: OLS regression with country clustered robust standard errors – Ratio of youth-to-adult unemployment

Country clustered robust standard errors are reported in parentheses. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Dependent variable Ratio of youth-to-adult unemployment	M1	M2	M3	M4	M5	M6	M7	M8	M9
Key Explanatory Variables									
EPL Regular	0.18 (0.11)	-	0.01 (0.08)	0.04 (0.08)	0.05 (0.11)	-0.38* (0.22)	-0.02 (0.16)	0.12 (0.17)	-0.44 (0.34)
EPL Temporary	-	0.19** (0.08)	0.19** (0.08)	0.20** (0.09)	0.22** (0.10)	-0.38 (0.26)	0.22** (0.10)	0.08 (0.24)	-0.36 (0.28)
Vocational Specificity	-	-	-	-	0.00 (0.01)	0.01 (0.01)	-0.01 (0.02)	-0.01 (0.01)	0.00 (0.02)
Interaction Effects									
EPL regular* EPL temporary	-	-	-	-	-	0.25** (0.11)	-	-	0.25** (0.11)
EPL regular* vocational specificity	-	-	-	-	-	-	0.00 (0.01)	-	0.00 (0.01)
EPL temporary* vocational specificity	-	-	-	-	-	-	-	0.00 (0.01)	0.00 (0.01)
Control Variables									
GDP per capita	-	-	-	5.17e-06 (4.12e-06)	4.29e-06 (4.66e-06)	5.00e-06 (4.96e-06)	5.41e-06 (4.5.4e-06)	4.96e-06 (4.69e-06)	5.44e-06 (4.74e-06)
GINI coefficient	-	-	-	1.26 (2.78)	1.31 (2.87)	1.62 (2.60)	1.48 (2.91)	1.94 (2.62)	1.82 (2.51)
Overall Unemployment				-0.03 (0.02)	-0.03 (0.02)	-0.03* (0.02)	-0.03 (0.02)	0.03** (0.02)	-0.03* (0.02)
N	744	744	744	717	627	627	627	627	627
R2	0.0363	0.1268	0.127	0.1737	0.2008	0.2537	0.2030	0.2085	0.2557

Brzinsky-Fay corroborates this connection using QCA, confirming that strict regular EPL is only associated with high relative youth unemployment in case of low vocational specificity. However, vocational training alone is not sufficient to combat youth unemployment, as this must always be seen in conjunction with other institutions (Brzinsky-Fay, 2017).

As the findings of this thesis do not coincide with the results of Breen (2005) and Brzinsky-Fay (2017), individual countries will be examined in more detail in order to possibly get a better understanding of the results. Concrete country examples will be used to show how countries can be categorised with regard to regular and temporary EPL and how the two dependent variables look in the respective categories. For all 28 countries, the mean value for regular and temporary EPL over the entire period is used. Then the median for both types of EPL is calculated, whereby all countries above the median are divided into "strong" EPL and all below the median into "weak" EPL. The mean value of the dependent variables for each country is also calculated. Tables 5 and 6 show the allocation of countries based on the EPL categories and lists all countries if their level of youth unemployment or their youth-to-adult unemployment rates are above the median. Here, too, a division into before and after 2000 has been made.

The first table showing the level of youth unemployment finds no clear relationship between EPL regulations and youth unemployment. However, Table 8, where the ratio of youth-to-adult unemployment was chosen, shows a pattern regarding the relationship between EPL and the youth-to-adult unemployment ratio. In line with the regression analyses, countries where the youth are more hit by unemployment than the adults primarily tend to be those with strong EPL regulations, especially strong temporary EPL regulations. This country overview shows that significantly more countries have a comparatively high youth-to-adult unemployment rate if both temporary and regular contracts are subject to high regulations (pre-2000 in seven countries, post-2000 in six countries), while only two countries with weak EPL on regular and strong EPL on temporary contracts have comparatively worse labour market chances for young people compared to adults. Thus, in a country with strong EPL on regular contracts and also strong EPL on temporary contracts, the labour market situation of young people is worse compared to that of adults, which is the case for example in France, Greece or Italy both before and after 2000.

Table 10 shows once again all hypotheses and the results

Table 4: Robustness Check before 2000 – Level of youth unemployment

Dependent variable	Before 2000						
Level of youth unemployment	M1	M2	M3	M4	M5	M6	M7
Key Explanatory Variables							
EPL Regular	0.14	-0.62	-8.20**	-1.41	2.28	2.41	-5.17
	(1.78)	(1.91)	(3.29)	(1.83)	(2.71)	(2.96)	(4.30)
EPL Temporary	1.05	1.02	-7.81**	1.09	-3.35	-3.40	-8.96**
	(1.21)	(1.20)	(3.35)	(1.23)	(2.85)	(3.03)	(3.66)
Vocational Specificity	-	0.12	0.33**	-0.01	-0.13	-0.11	0.18
		(0.08)	(0.11)	(0.20)	(0.15)	(0.20)	(0.18)
Interaction Effects							
EPL regular* EPL temporary	-	-	3.84** (1.44)	-	-	-	3.23** (1.29)
EPL regular* vocational specificity	-	-	-	0.06 (0.09)	-	-0.01 (0.08)	-0.01 (0.09)
EPL temporary* vocational specificity	-	-	-	-	0.14* (0.08)	0.14 (0.08)	0.08 (0.06)
Control Variables							
GDP per capita	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GINI coefficient	18.78	25.87	23.01	27.79	51.41	51.43	38.05
	(41.35)	(45.61)	(41.65)	(46.86)	(44.30)	(44.23)	(42.95)
N	333	308	308	308	308	308	308
R2	0.1811	0.2023	0.3231	0.2072	0.2686	0.2687	0.3417

Table 5: Robustness Check after 2000 – Level of youth unemployment

Dependent variable	After 2000						
Level of youth unemployment	M1	M2	M3	M4	M5	M6	M7
Key Explanatory Variables							
EPL Regular	0.71	-0.74	-0.38	-1.65	-0.55	-1.68	-1.30
	(1.19)	(1.39)	(4.51)	(3.63)	(1.58)	(3.59)	(6.12)
EPL Temporary	0.75	-0.07	0.38	0.00	-0.82	-0.89	-0.56
	(1.05)	(1.14)	(5.39)	(1.18)	(2.59)	(2.58)	(5.92)
Vocational Specificity	-	0.09	0.09	0.00	0.03	-0.10	-0.10
		(0.09)	(0.12)	(0.36)	(0.24)	(0.43)	(0.43)
Interaction Effects							
EPL regular* EPL temporary	-	-	-0.20 (2.41)	-	-	-	-0.17 (2.38)
EPL regular* vocational specificity	-	-	-	0.04 (0.17)	-	0.05 (0.16)	0.05 (0.17)
EPL temporary* vocational specificity	-	-	-	-	0.03 (0.11)	0.04 (0.11)	0.04 (0.11)
Control Variables							
GDP per capita	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GINI coefficient	19.27	45.96	46.77	47.20	45.30	46.77	47.27
	(32.64)	(36.64)	(42.33)	(39.89)	(37.43)	(39.80)	(42.77)
N	384	319	319	319	319	319	319
R2	0.1441	0.1546	0.1547	0.1553	0.1556	0.1567	0.1568

Country clustered robust standard errors are reported in parentheses.
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Table 6: Robustness Check before 2000 – Ratio of youth-to-adult unemployment

Country clustered robust standard errors are reported in parentheses.
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Dependent variable	Before 2000						
Level of youth unemployment	M1	M2	M3	M4	M5	M6	M7
Key Explanatory Variables							
EPL Regular	-0.02	-0.04	-0.76**	-0.13	0.06	-0.04	-0.90**
	(0.13)	(0.15)	(0.29)	(0.18)	(0.20)	(0.22)	(0.37)
EPL Temporary	0.29**	0.36**	-0.49*	0.36**	0.21	0.25	-0.42
	(0.13)	(0.12)	(0.28)	(0.12)	(0.31)	(0.31)	(0.34)
Vocational Specificity	-	-0.00	0.02*	-0.02	-0.01	-0.02	0.01
		(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Interaction Effects							
EPL regular* EPL temporary	-	-	0.37**	-	-	-	0.37**
			(0.12)				(0.12)
EPL regular* vocational specificity	-	-	-	0.01	-	0.01	0.00
				(0.01)		(0.01)	(0.01)
EPL temporary* vocational specificity	-	-	-	-	0.00	0.00	0.00
					(0.01)	(0.00)	(0.01)
Control Variables							
GDP per capita	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**
	(7.78e-06)	(9.73e-06)	(0.00)	(0.00)	(9.81e-06)	(0.00)	(0.00)
GINI coefficient	1.47	-1.20	-1.21	-0.96	-0.27	-0.31	-1.57
	(4.07)	(3.91)	(3.43)	(3.91)	(3.72)	(3.70)	(3.51)
Overall Unemployment	-0.04*	-0.04*	-0.06**	-0.04*	-0.05**	-0.05**	-0.06**
	(0.02)	(0.21)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N	333	308	308	308	308	308	308
R2	0.3618	0.4263	0.5249	0.4328	0.4326	0.4361	0.5285

of this thesis regarding the two dependent variables. Only the results over the entire period from 1985 – 2013 are reported in the table, while further specifications from the robustness checks before and after 2000 are noted with asterisks if they differ from the general results. This overview suggests a complex interplay of regular and temporary EPL, and it seems conceivable that the temporary EPL effect is somehow conditioned on the level of regular EPL so these two do not act independently. A possible explanation for these unexpected results that temporary EPL has a positive and not a negative effect on the youth-to-adult unemployment rate is, that in case of strict temporary EPL employers are reluctant to hire young people even for insecure 'labour market fringe' jobs, as it is difficult to dismiss them later. The reasoning would therefore be similar to that of strict EPL for regular contracts, where it is assumed that employers would rather not hire any new employees than those for whom they later fear high dismissal costs. It would be possible that the nature of the employment contract is not a determining factor for employers to decide whether or not to recruit. If the regulations and thus the costs associated with dismissal are high, fewer people will be hired on both, regular and temporary contracts. Since young people enter the labour market primarily via temporary contracts, excessively high regulations can lead to a closure of this gate to the labour market for them, since employers do not hire new people. According to these results, deregulation of temporary contracts has a positive effect on the labour market situation of young people. For adults, however, the assumed best case is a combination of high EPL for regular contracts, as this protects employers as labour market insiders from dismissals, but also high regulations on temporary contracts, as employers would otherwise have a huge incentive to simply convert regular contracts into more insecure and less paid temporary contracts.

Gebel and Giesecke (2016) show two outcomes resulting from a partial deregulation: First, employers are expected to hire more workers because temporary contracts exonerate them from the otherwise feared dismissal costs. This results in a 'buffer' of temporary jobs which employers can build up and which can be quickly stocked up or dismantled depending on the market situation (Polavieja, 2003). For young labour market entrants, deregulation therefore means that jobs are created for them that would not exist otherwise with a higher regulation of temporary contracts. Secondly, it is argued that employers use temporary contracts as a 'screening tool' (Korpi and Levin, 2001) and thus test whether the worker's skills match the company's needs prior to final permanent recruitment. This mechanism is particularly relevant for young people, as employers have no information about the productivity in the labour market of new labour market

Table 7: Robustness Check after 2000 – Ratio of youth-to-adult unemployment

Country clustered robust standard errors are reported in parentheses.
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Dependent variable	After 2000						
Level of youth unemployment	M1	M2	M3	M4	M5	M6	M7
Key Explanatory Variables							
EPL Regular	-0.06 (0.12)	-0.08 (0.15)	-0.45 (0.41)	-0.37 (0.31)	0.00 (0.18)	-0.38 (0.29)	-0.99 (0.77)
EPL Temporary	0.15 (0.09)	0.09 (0.09)	-0.37 (0.40)	0.11 (0.11)	-0.22 (0.19)	-0.24 (0.18)	-0.75 (0.46)
Vocational Specificity	-	0.00 (0.01)	0.01 (0.01)	-0.02 (0.03)	-0.02 (0.02)	-0.06* (0.03)	-0.07* (0.04)
Interaction Effects							
EPL regular* EPL temporary	-	-	0.21 (0.19)	-	-	-	0.26 (0.23)
EPL regular* vocational specificity	-	-	-	0.01 (0.01)	-	0.02 (0.01)	0.02 (0.01)
EPL temporary* vocational specificity	-	-	-	-	0.01* (0.01)	0.02** (0.01)	0.01* (0.01)
Control Variables							
GDP per capita	3.47e-06 (4.32e-06)	4.33e-06 (4.74e-06)	3.02e-06 (5.40e-06)	4.86e-06 (4.40e-06)	3.34e-06 (4.48e-06)	3.90e-06 (4.03e-06)	2.72e-06 (4.74e-06)
GINI coefficient	-3.02 (2.18)	-0.83 (2.15)	-1.71 (2.09)	-0.44 (2.30)	-1.15 (2.15)	-0.67 (2.12)	-1.50 (2.03)
Overall Unemployment	-0..01 (0.01)	-0.02 (0.01)	-0.01 (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
N	384	319	319	319	319	319	319
R2	0.0788	0.0657	0.0897	0.0803	0.1024	0.1289	0.1600

Table 8: Country Examples – Level of youth unemployment

Dependent Variable Level of youth unemployment		Countries with youth-to-adult unemployment rates >median	
EPL regular	EPL temporary	Before 2000	After 2000
Strong	Strong	FRA, GRC, ITA, ESP, TUR	FRA, GRC, ITA, POL, PRT, ESP, TUR
	Weak	FIN, SVK	CZE, SVK, SWE
Weak	Strong	BEL	BEL, FIN
	Weak	AUS, CAN, HUN, IRL, POL, GBR	HUN, IRL

Table 9: Country Examples – Youth-to-adult unemployment rate

Dependent Variable Youth-to-adult unemployment ratio		Countries with youth-to-adult unemployment rates >median	
EPL regular	EPL temporary	Before 2000	After 2000
Strong	Strong	FRA, GRC, ITA, KOR, PRT, SWE, TUR	FRA, GRC, ITA, KOR, NOR, POL
	Weak	FIN, SVK	CZE, SWE
Weak	Strong	BEL, NOR	BEL, FIN
	Weak	USA, NZL, POL	HUN, NZL, GBR

Table 10: Overview Hypotheses and Results (1985-2013)

Notes: For some hypotheses the robustness checks reveal different results before and after 2000
* Strict EPL (temporary) = High youth-to-adult unemployment. ** Before 2000: Strict EPL (regular and temporary) = High youth-to-adult unemployment
*** Before 2000: Strict EPL (regular and temporary) = High youth-to-adult unemployment, After 2000: No interaction effect
**** After 2000: Strict EPL (temporary) and high vocational specificity = High youth-to-adult unemployment

Hypotheses	Level of youth unemployment	Youth-to-adult unemployment ratio
H1: EPL on regular contracts has no significant impact on the level of youth unemployment and the youth-to-adult unemployment ratio	Confirmed	Confirmed
H2: Strict EPL on temporary contracts is decreasing the level of youth unemployment and the youth-to-adult unemployment ratio	Disproved - No main effect	Disproved*
H3: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL regular, high EPL temporary	Disproved** - No interaction effect	Disproved***
H4: Vocational Specificity has no main effect on the level of youth unemployment and the youth-to-adult unemployment ratio	Confirmed	Confirmed
H5a: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with low EPL (regular) and high vocational specificity	Disproved - No interaction effect	Disproved - No interaction effect
H5b: The level of youth unemployment and the youth-to-adult unemployment ratio is lowest in countries with high EPL (temporary) and high vocational specificity	Disproved - No interaction effect	Disproved ****

entrants. More often they do not get a chance at all from employers to show their skills on the labour market in a highly regulated environment. This also shows that a stronger regulation of temporary contracts and the elimination of this screening tool for employers has different effects for young people and adults. Adults will most likely already have a labour market history, so that employers can assess their productivity and fit for the company by their previous employments when hiring new adults. For young people, however, there is no already existing work history in their school-to-work transition, so that a stronger regulation of temporary contracts leads to fewer young people being hired for new jobs compared to adults.

After a possible explanation was given why a strict regulation of temporary contracts has a more severe effect on young people and why a deregulation of these contracts can be positive for the labour market situation of young people in comparison to adults, a brief look will be taken at why this thesis possibly came to different results than Breen (2005) or Brzinsky-Fay (2017). The first difference is the choice of countries and the period to be examined. Breen only examined a period from 1995-1999, so his results are more of a snapshot without being able to pick up on changes and trends over time. Brzinsky-Fay takes a period from 1990 to 2009, which expands Breen's study, but covers fewer years than this thesis from 1985 to 2013. The end is set for 2009 to avoid possible distortions from the global economic crisis that might alter the post-2000 results of this thesis. Furthermore, it is the novelty of this thesis that for the first time the interplay between the two EPL forms (regular and temporary) and vocational specificity was examined. In addition, different results can always be obtained if different sources were used and the core variables were operationalised differently. Vocational specificity by Breen was confined to upper secondary education and in Brzinsky-Fay not further specified, while in this thesis the vocational enrolment was chosen for the entire secondary education. Breen and Brzinsky-Fay use the OECD Education at a Glance publications for this purpose, while this thesis vocational enrolment was manually calculated using the OECD database.

5. Conclusion

The results presented here support the argument from Noelke (2015) that there is no effect of regular EPL on the youth unemployment rate alone. High regulations on regular contracts only are thus not to blame for a high-level youth unemployment or high youth-to-adult unemployment rates. In line with previous research, it was expected that the deregulation of temporary contracts would have a negative impact on the labour market situation of young people, as they would be less protected. However, the results of this thesis show a different picture - namely that a stronger regulation of temporary contracts has a significantly negative effect on the youth-to-adult unemployment rate. One possible explanation for this is that employers are more inhibited in hir-

ing new employees under higher regulation - on both regular and temporary contracts - because they want to avoid higher dismissal costs. Since young people are particularly often recruited via temporary contracts and the screening function of these contracts is an important indicator of the productivity of future employees, stronger regulations of these contracts have negative effects especially for young people, but not so much for adults. The conclusion that can be drawn here is that the effect of EPL for temporary contracts may not be as one-sided as previously assumed in the literature, and that - as with EPL for regular contracts - there are ambiguous results on its effect, depending on how a model is specified and which countries and groups were considered over which period.

As this thesis was built upon the work of Breen (2005) and Brzinsky-Fay (2017) it was expected to find a statistically significant interaction between EPL and the vocational specificity of an educational system. However, these findings could not be validated, as no interaction was significant over the whole time-period from 1985-2013. The robustness check splitting this time in a pre- and post-2000 period however revealed, that at least for the ratio of youth-to-adult unemployment the post-2000 period showed a significant interaction of EPL for temporary contracts and vocational specificity. The interaction though implies a negative effect of high vocational specificity for young people, so that due to a lack of sound theoretical arguments for this it is assumed that the very small effects, which are predominantly only significant at the 10% level, might be eliminated by changes in the country sample or the time period. Despite these seemingly ambiguous results, it should however be clearly said that when designing policies to reduce youth unemployment, institutions should not be considered as stand-alone variables, but always in their complex interaction with other institutions.

For future studies, it should be noted that certainly other factors besides employment protection legislation and vocational specificity influence youth unemployment, such as union strength and bargaining power, which should be investigated. Micro level and longitudinal data could make it possible to include more control variables and test more detailed relationships and hypotheses. Furthermore, it has already been pointed out in this thesis that the classification of educational signalling based on the enrolment rate does not adequately reflect the actual education systems of the individual countries. Here, more in-depth country analysis, both qualitative and quantitative, could provide a better overview. Furthermore, it is possible to look at the labour market situation of young people not only by looking at the distinction between employed and unemployed but also by looking at other indicators that can capture the situation of young people (in comparison to adults), such as temporary employment rates. An examination of the NEET rate instead of the unemployment rates can moreover provide detailed insights and a more realistic picture of the youth labour market if sufficient data is available. Lastly, in this thesis, groups were formed exclusively on the basis of age, while the influence of labour market regulations possibly also has different consequences depending on one's educational level and for men and women. Future research should also see whether the results can be generalised here, preferably by including non-OECD countries.

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