Inequality in the risk of job loss among young and prime-age workers: Can it be explained by human capital or structural factors?

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Abstract

Our aim is to identify the determinants of the gap in the risk of job separation between young and prime-age workers. Using a Oaxaca-Blinder type of decomposition for binary outcomes and data from the Polish Labour Force Survey, we seek to disentangle the question of to what extent age heterogeneity in the risk of job separation is shaped by differences in the composition of young and prime-age workers with respect to their individual and job characteristics, and to what extent it is driven by different risks of job separation associated with those characteristics.

According to our results, differences in the composition of young and prime-age workers and differences in the returns to their characteristics in terms of employment stability contribute to similar degrees to the gap in the job loss risk between young and prime-age workers. Differences in the composition of the workplace characteristics of young and prime-age workers explain a considerable share of the overall gap in the risk of job loss, because young people tend to find less secure jobs than prime-age workers . At the same time, the diverging effects of workplace characteristics appear to narrow rather than widen the gap in job security between young and prime-age workers. In other words, jobs that tend to be precarious do less harm or provide more benefits to young people.

JEL codes: J13, J21, J42, J63

Keywords: unemployment, job separations, youth

1. Background and research objectives

The aim of this paper is to identify the factors that drive the inequalities in the risk of job loss among young and prime-age workers, and to quantify the magnitude of their impact. We build on recent research that has emphasised the role of structural influences in labour market inequalities (DiPrete & Nonnemaker, 1997; Gerber, 2002, 2012; Gerber & Hout, 1998; Shin, 2007). We examine the question of to what extent the gap in employment stability between young and prime-age workers can be explained by the differences in their skills and experience, and we compare the effects of those factors to the effects of workplace characteristics and of macro-level structural changes. Moreover, we look at the question of whether individual characteristics protect young and prime-age workers to varying degrees. Finally, we explore the question of whether workplace characteristics and macro-level structural changes have diverging effects on the risk of job loss for young workers and for prime-age workers.

This paper contributes to the debate on the patterns of labour market inequalities in post-socialist societies. So far, research on this topic has focused on the effects of skills, experience, or access to social networks (Cao & Nee, 2000; Wu & Xie, 2003; Zhou, 2000). Nevertheless, empirical studies on the determinants of employment career dynamics (Gerber, 2002; Zhou, Tuma, & Moen, 1997) and income (Clarke, 2002; Gerber, 2006) have suggested that structural factors may have a stronger influence on an individual's labour market opportunities than his or her skills, experience, and social capital. Especially in countries undergoing rapid restructuring processes, workers' employment opportunities may be determined above all by the specific situation of their employer, including its branch of the economy and the region where it is located. Thus, it has been asserted that the expansion or the contraction of particular industries or classes of occupations may actually have a more pronounced effect on an individual's career than his or her personal resources.

For our empirical analysis we consider Poland, a country that has made a successful transition from having a centrally planned economy to having a market economy (Woo, 1994). Unlike Russia or China, the two case studies that have been used in most previous empirical research on the stratification in post-socialist societies, Poland has become a democratic country, with market rules operating in virtually every sphere of the economy. Moreover, many of the problems that have arisen in countries of the former Soviet bloc—such as overregulation, corruption, nepotism, and economic activity concentrated in the shadow economy—have been alleviated through reforms. In Poland, the economic transition has led to a rapid reallocation of labour within and across sectors, industries, and occupations. The dynamic sector-specific expansions and contractions that have taken place in the country make Poland a very good laboratory for conducting research on the mechanisms through which structural factors affect individual opportunities and risks.

We focus on the age dimension in the inequality of job loss. Relative to prime-age workers, young people tend to be disadvantaged on the labour market because they have less work experience and less access to social networks. This is especially the case in Poland, which has an extremely high level of youth unemployment compared to other European countries (Scarpetta, Sonnet, & Manfredi, 2010). Moreover, over the whole period of transition from centrally planned to market economy, job losses were higher among young people than among prime-age workers, and those losses were more closely linked to macroeconomic conditions (Baranowska-Rataj & Magda, 2013). Getting off to a bad start at the early stages of a working career increases an individual's risk of joblessness in the future,

and hence negatively affects his or her well-being, wages, and career prospects even later in life (Gregg & Tominey, 2005; Stewart, 2007). Thus, it is very important that we explore the reasons why these inequalities arise.

2. The post-socialist transition and the labour market in Poland

Poland has undergone substantial economic and institutional changes over last three decades. The transition to a market economy started in the early 1990s with radical and comprehensive reforms aimed at reducing state intervention in both the labour and the products markets (Aghion & Blanchard, 1994). These reforms were launched simultaneously and proceeded at a rapid pace. Increasing competition, restructuring, and privatisation resulted in massive layoffs. However, Poland started to recover from the transitional recession as early as in 1992, and in the mid-1990s employment began increasing gradually. Further growth was brought to a halt by the Russian crisis in 1998, in which a devaluation of the Russian currency led to a default on both domestic and foreign debts and a collapse of the stock market (Lokshin & Ravallion, 2000). After weathering the Russian crisis, the Polish economy and labour market were negatively affected by the global economic slowdown in 2001-2002, when the unemployment rate in Poland rose to over 20%. The economic recovery in 2005 brought substantial improvements in the labour market. The worldwide economic downturn in 2008 was again accompanied by a surge in unemployment, with the overall rate rising to 10% in 2011.

The transition from centrally planned to a market economy brought deep structural changes to Poland. Among those changes were the reallocation of labour from agriculture to the other sectors and across industries; and from industries which were less competitive but which remained large because of state subsidies, to industries which were underdeveloped during socialism and which did not start to grow until after the fall of the Iron Curtain. At the beginning of the transition to a market economy, large shares of Polish workers were employed in agriculture (more than 23%) and heavy industries, whereas the service industries were relatively underdeveloped. Immediately after the transition, as well as in the aftermath of the Russian crisis, agricultural employment was a source of secondary income and an employment opportunity of last resort for laid-off workers and pensioners. Moreover, a lack of skills among farmers reduced labour mobility out of this sector. Still, employment in agriculture had declined to 13% by 2011. The share of all workers who were employed in the industrial sector remained rather stable throughout the course of the transition, at about 30%. But there were important changes within this sector: the heavy, textile, and leather industries contracted sharply, while more modern industries started to develop. The share of workers employed in the service sector also increased steadily, from less than 40% in the early 1990s to 57% in 2011. Employment growth in the services was especially strong in sectors such as trade and repair, financial services, and hotels and restaurants (Kwiatkowski, Socha, & Sztanderska, 2001; Newell & Socha, 2007). The structure of occupations changed as well: the share of skilled manual workers declined, while the share of professional and sales workers increased. The rates of job reallocation across industries and occupational groups were relatively high throughout the 1990s compared to other developed countries (Rutkowski, 2002).

Marked changes also occurred in the ownership structure of Polish employers (Jackson & Mach, 2009). While the ownership of private companies was heavily restricted under socialism, it was not completely abolished. Yet at the beginning of the 1990s, less than 20% of employment was in the

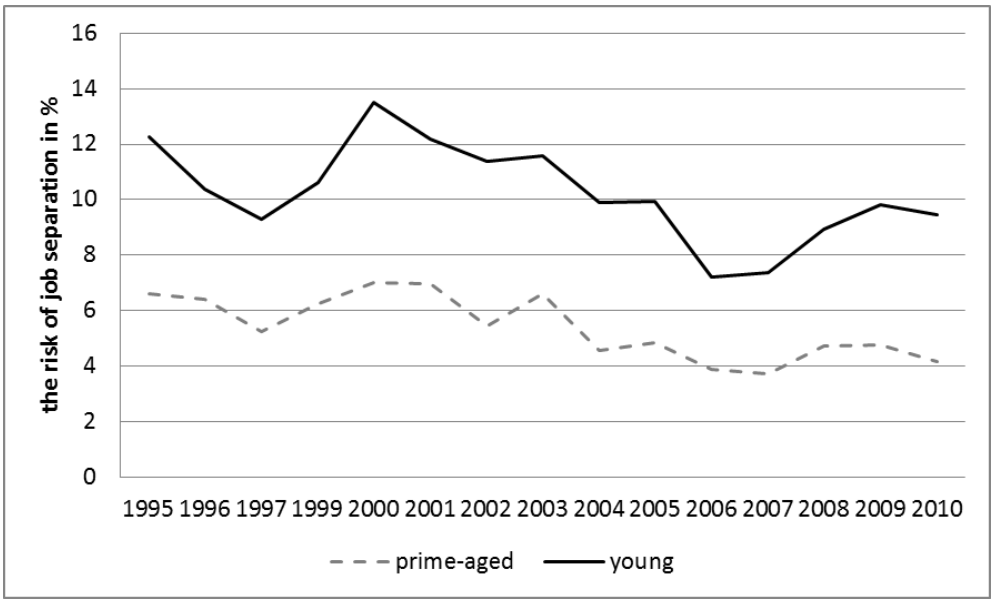
private sector. The passage of the privatisation law of 1990, followed by a surge in private entrepreneurship and the collapse and/or privatisation of state-owned companies, led to a rapid expansion of the private sector. The share of employees who were working in private companies had risen to 66% by 2011. These developments were important determinants of the levels of job creation and destruction (Faggio & Konings, 2003).

The flexibility of labour market arrangements also increased in Poland. Until the end of the 1990s, full-time work performed on the employers' premises on the basis of a permanent contract was the prevailing employment arrangement. This was largely a holdover from the rigid labour regulations of the socialist system. But at the end of the 1990s, the labour laws were reformed to better meet the needs of a modern economy (Kwiatkowski et al., 2001). Since then, comparative studies examining the rigidity of labour regulations have shown that Poland has neither very restrictive nor exceptionally liberal labour laws (Venn, 2009). In 2002, as a response to the high unemployment rate, the Polish government liberalised the use of fixed-term contracts. These contracts became increasingly common: 12% of all employment arrangements in 2001 were based on fixed-term contracts, but the share had risen to 28% by 2011.

The transformation of the Polish economy has led to major shifts in the kinds of opportunities and risks young people face at the beginning of their employment careers. On the one hand, the move away from a centrally planned economy towards a market economy meant that graduates could set career goals beyond the reach of previous generations. On the other hand, those who were not able or willing to invest in education before entering the labour market entry had much greater difficulties in finding a stable job than was the case before the transformation. Figure 1 shows that job separation rates—defined as the proportion of employees who make the transition out of employment—generally followed similar patterns among both young people (aged 18-29) and prime-age workers (aged 30-54). Still, the dynamics of changes in job separation rates was much higher among young people[1]. Specifically, poor macroeconomic conditions during the early 1990s in the wake of the Russian crisis, as well as during the most recent economic downturn, led to much stronger increases in the risk of exiting a job among young people than among the prime-age group.

[1] We do not differentiate between voluntary and involuntary separations because information on the reason for separation is subjective, and hence may be subject to recall bias.

Figure 1. Job separations among young and prime-age workers



Source: Polish LFS data.

While it is evident that the employment prospects of young people are more sensitive to macroeconomic changes than those of prime-age workers, it is not entirely clear what the main drivers of these patterns are. The studies that have examined the causes of the labour market disadvantages of young people in Poland have largely attributed these problems to inadequate education and limited work experience. These authors have stressed that despite the expansion of tertiary education, which should have led to an increase in human capital among younger cohorts, young people in Poland lack job-specific skills. Concerns have been raised that due to rapid increases in enrolment rates, higher education institutions have been lowering the standards of their services, and that the value of the credentials these institutions offer is subject to inflation (Hildebrandt-Wypych, 2012). Moreover, it has been argued that young people who pursue tertiary education tend to choose fields of study that do not necessarily match the structure of labour demand: i.e., that students focus on social sciences or humanities rather than on more practical subjects such as engineering (Sztanderska, 2008). Meanwhile, empirical studies have shown that the youngest cohorts of employees face a high risk of persistent overeducation relative to the jobs they actually hold (Kiersztyn, 2012). In parallel to the tertiary education expansion there has been a rapid decline in the number of vocational education students, and an accompanying decrease in the number of graduates with technical skills (Kogan, 2008).

In the discussion on the labour market disadvantages of young people, many scholars have also blamed the increasing flexibility of employment relationships, which would affect young people to a greater extent than workers in other age groups (Szafraniec, Boni, & Arak, 2011). Since the reforms have been implemented, the increasing use of temporary contracts by employers has mainly affected labour market entrants; as most labour market entrants are young people, younger workers are obviously more likely than prime-age workers to be employed under a fixed-term contract. This discrepancy makes the employment rates of young people much more susceptible than those of prime-age workers to macroeconomic changes: i.e., employers who need to cut their workforce usually do so first by not renewing fixed-term contracts, and only then resort to laying off workers

with permanent contracts. However, much less is known about whether—and, if so, to what extent—other characteristics of jobs and workplaces might have mediated the risk of job separation across age groups, such as firm size, firm sector, or the occupation- or industry-specific dynamics in the economy.

3. Data and methods

In our paper, we apply the recently developed extension of the Oaxaca-Blinder decomposition method to the discrete dependent variable models (Powers et al. 2011), which allows for a decomposition of the nonlinear probability of job loss. We compare the determinants for exiting a job of two population groups: namely, young and prime-age workers. We can attribute the differences in the likelihood of losing a job to (1) the varying characteristics of the young and the prime-age groups, such as differences in their levels of skills and experience; or (2) the structural factors driving the allocation of individuals to different types of firms that provide varying "returns" on these characteristics. Thus, due to structural forces, skills and experience may protect young and prime-age groups against job loss in different ways, resulting in a higher risk of unemployment for young than for prime-age workers.

Formally, we assume that there is a latent variable representing the risk of job loss, which is specified as follows: $Y_i^* = X_{i\beta} + u_i$ (we suppress the age group-specific subscript). What we observe is that there is a dummy variable Y_i of actually experiencing a job loss, whose value is one if $Y_i^* > 0$, and is zero otherwise. The likelihood of losing a job for *i*-th worker ($Y_i = 1$) is estimated by $F(X_i\beta)$, where F is the logistic cumulative distribution function; that is, $F(X_i\beta) = 1/[1 + \exp(-X_i\beta)]$. The differences in the risk of losing a job between the two population groups, young workers (group A) and prime-age workers (group B), can be decomposed in the following way:

$$\bar{Y}_A - \bar{Y}_B = \left[\overline{F(X_A\beta_A)} - \overline{F(X_B\beta_A)}\right] + [\overline{F(X_B\beta_A)} - \overline{F(X_B\beta_B)}],$$

where the first and the second components on the right-hand side represent the characteristics effect and the coefficient effect, respectively; and $\bar{Y}_A$ and $\bar{Y}_B$ denote the values of the sample averages of the risk of job loss among young and prime-age workers.

Employing the decomposition approach chosen in this paper has a number of advantages. First, any comparison of the impact of individual and structural characteristics on the labour market outcomes is a complex issue if these outcomes can be measured by discrete variables, as in the case of job loss. The coefficients from commonly used nonlinear models (such as logit models or hazard models) cannot be directly compared. The decomposition proposed by (Powers, Yoshioka, & Yun, 2011) explicitly takes into account the discrete nature of the dependent variable, making it possible to quantify and compare the magnitude of the impact of specific characteristics on labour market inequalities. Second, most of the previous studies on stratification in post-socialist societies have not investigated in detail the differential effects of individual or structural characteristics, even though exploring the heterogeneity of their impact has been recommended as a promising direction of further research in the most recent contributions to the literature (Gerber, 2012). Finally, the decomposition method developed by (Powers et al., 2011) is superior to other decomposition methods in that it allows us to solve the problem of the normalisation of dummy variables. We know

from the econometric literature that the results of a detailed decomposition that assesses the contribution of each of the covariates are sensitive to the choice of the reference category (Oaxaca & Ransom, 1999). Our chosen decomposition method uses a transformation algorithm advanced by (Yun, 2005) that averages the coefficient effects of a set of dummy variables, while permuting the reference groups.

The analyses are based on micro-data from the Polish Labour Force Survey (PLFS) covering the period from the mid-1990s to 2012. The PLFS is particularly suitable for use in the analysis carried out in this paper. First, the survey data cover the recent crisis. Second, the PLFS is regarded as the most reliable source of information on labour market developments in Poland. Because it is supervised by EUROSTAT, the PLFS is standardised and internationally comparable. The design of its rotating panel tracks individuals for two consecutive quarters in two consecutive years, allowing us to observe those entering and exiting employment at quarterly and/or yearly intervals. Finally, the PLFS provides very rich information about both the personal and the workplace-related characteristics of employees, while simultaneously generating macro-level data on job creation and job destruction rates in industries and occupations.

In our analysis, we include information on the gender of employees. We made this decision in response to a large number of studies on gender differences in labour market outcomes which have shown that, for many reasons, women—and especially women of younger reproductive ages—have a higher risk of exiting employment. We look at a number of individual characteristics, including measures of individual resources which are considered crucial to success in the labour market: namely, those related to education and experience. Educational attainment in general measures individual resources that reduce the likelihood of leaving a job (Mincer, 1991). We would therefore generally expect to find that workers with tertiary education have the lowest separation rates. However, in light of the discussion on the possible devaluation of university degrees after the massive expansion of higher education in Poland, it is possible that the benefits of tertiary education are not equal across cohorts (Hildebrandt-Wypych, 2012). This issue requires attention, especially as research on post-communist economies has shown a significant decline in the economic returns to higher education (Hu, 2013).

However, the risk of separation from employment may depend not only on the level, but also on the type of completed education. For example, having vocational education may decrease the risk of job loss relative to having other forms of secondary education, because it provides workers with occupation-specific qualifications. From the point of view of employees, occupation-specific skills increase the cost of changing jobs (Blossfeld & Mayer, 1988; Ivančič, 2000; Shavit & Müller, 1998). It is also possible to argue that occupation-specific skills raise the costs of laying off workers for employers, because these workers cannot be easily replaced with employees who have more general skills. The question is whether in the context of Poland—where the system of vocational education has eroded and tends to provides labour market entrants with largely obsolete skills—having occupation-specific qualifications provides any advantage on the labour market, especially among younger cohorts who were educated after the collapse of the educational system.

Regarding work experience, the PLFS provides detailed information on tenure, or the number of years worked at a given employer. Hence, tenure captures the accumulated knowledge and skills that are specific to a given workplace (McCall, 1990; Weiss, 1984). In the Polish context, tenure may

affect the job loss risk for reasons related to labour regulations, which impose higher firing costs for employees with longer tenure. Workers employed for more than three years are entitled to a three-month notice period (compared to a one-month notice period for employees with shorter tenures) and a severance pay that is three times larger than the amount paid to workers dismissed after less than three years on the job. While in general tenure should decrease the risk of job loss, there may be differences in the effects of this job-related experience for younger workers and for prime-age workers. The tenure accumulated by prime-age workers may have a lesser impact on job security because it was acquired during the socialist era, and may therefore be less valued in the market economy. We include a variable that measures having tenure that exceeds two years [2].

Workers' productivity in a given workplace may depend not only on their individual characteristics, but also on the extent to which their qualifications match the requirements of the given job. Workers whose skills do not reach specific occupational standards may face a higher risk of job loss (Breen, 1992). However, overeducated employees whose qualifications exceed the requirements of their position may also be concerned about job loss (McGuinness & Wooden, 2009). Skills mismatch—both undereducation and overeducation—usually implies a wage penalty (Hartog, 2000), which may motivate workers to search for a new job. Indeed, both overeducated and undereducated workers have been found to have greater job mobility (Sicherman, 1991). Therefore, we include in our analysis measures of skills mismatch as potential determinants of job separation.[3] We identify overeducated and undereducated workers by looking at the distribution of the years of education in an individual's occupation (at the ISCO three-digit level), and assigning a status of "skills mismatch" to those individuals who spent more or fewer years in education than the mean number +/- a standard deviation.

While earlier studies on the risk of job exit have focused on the role of individual resources, more recent literature has argued that the research on the impact of workplace characteristics and structural changes should be integrated into the analysis of labour market inequalities (Gerber, 2002, 2012; Shin, 2007; Uunk, Mach, & Mayer, 2005).

First, we consider the impact of the type of contract an individual has. Previous research has shown that workers with non-standard working arrangements—such as those with a fixed-term contract or a part-time job are more likely to quit than permanent full-time workers (Buddelmeyer & Wooden, 2011; D'Addio & Rosholm, 2005). According to the literature on precarious employment forms, having worked in a fixed-term or part-time arrangement may have different effects on the future employability of young and prime-age workers. On the one hand, it is possible that employers are less likely to view these arrangements negatively if the candidate is young. Because fixed-term or part-time employment is common among students and recent graduates, these arrangements may be less stigmatising for young people. By contrast, being in a non-standard arrangement may be interpreted as a sign of failure for a prime-age worker. On the other hand, it is possible that having a

[2] We tested more detailed specifications with a set of dummies for each year of tenure, but the results did not differ. Clearly, the effects of tenure differed the most at the threshold of two years.

[3] Ideally, we would also like to take horizontal mismatch into account, especially given the common concerns regarding the discrepancy between the fields of study among the graduates and the actual structure of the demand for labour (Sztanderska, 2008). However, the data regarding fields of study in Polish LFS are only available from 2005 onwards. Moreover,, Reimer, Noelke, and Kucel (2008) as well as Baranowska-Rataj and Unt (2012) have shown that in general in CEE countries, the field of study matters surprisingly little when it comes to labour market opportunities.

series of precarious jobs may be more stigmatising for younger workers than for prime-age workers, because prime-age workers have more work experience. Thus, a short recent spell of non-standard employment may not necessarily be seen as a strong sign of lower productivity for a prime-age worker.

We also consider the effect of firm size. Previous research has suggested that firm size plays an important role in the risk of job separation, because larger firms are more likely than smaller firms to have the resources to cope with rapid changes in the macroeconomic environment, and may therefore hoard labour (Carroll & Mayer, 1986; A. L. Kalleberg & Mastekaasa, 1998)). Some empirical studies have suggested that employment in a large firm shelters workers from job loss, especially those with more limited individual resources (Gerber, 2002). Moreover, labour code regulations in Poland make it more expensive for larger firms (with more than 20 workers) to fire workers, which is likely to result in lower job rotation levels. We also include information on whether the individual is employed in the public or the private sector, as jobs are in the public sector are better protected (Anghel, de la Rica, & Dolado, 2011; Clark & Postel-Vinay, 2009).

The gap in the risk of job loss can also be attributed in large part to differences in the workplace characteristics of young and prime-age workers. One the one hand, young workers may be more likely to take jobs in expanding occupations and industries in which new jobs are being created, whereas prime-age workers may be overrepresented in declining industries. On the other hand, young workers in Poland often start their careers in non-standard jobs which are less well-paid and which do not match their skills, and they are therefore more likely to change jobs. Hence, it is not evident a priori whether the differences in the composition of young and prime-age workers are favourable for the former group. We expect to find diverging benefits from the allocation of young and prime-age workers to jobs in specific workplaces and in different occupations and industries. On the one hand, the contraction of an industry may cause an employer to dismiss young and inexperienced workers first. On the other hand, employers may decide which employees to dismiss in certain occupations based on their expectations regarding the career prospects of individual employees. For example, an employer may consider that younger workers have a longer careers ahead of them and are cheaper to fire, and will therefore favour this group when job cuts are necessary. In other words, structural influences may disproportionately increase the risk of losing a job for younger workers, and may thus contribute to inequalities in levels of job stability between the generations. We include these potential explanations in our analysis by adding information on industry-specific job separation and job hiring rates (calculated as the share of those exiting or accessing jobs in a particular industry group between *t* and *t+1*).

We define young workers as those aged 18-29 and prime-age workers as those aged 30-54. Older workers are excluded from the analysis in order to avoid the potential bias resulting from earlier labour market withdrawal to inactivity. As we are studying job separations, we limit the sample to those who were working in the first period. Job separation occurs if an individual employed in year *t* is unemployed or inactive in year *t+1*[4]. We further limit the sample and include only employees, as both supporting family members and the self-employed (especially those working in the agricultural

[4] Although we do not differentiate between voluntary and involuntary separations, we assume that voluntary separations are much more likely to results in job-to-job transitions and not in unemployment. Transitions to inactivity are very low among those under age 54 .

sector) cannot be strictly defined as workers (i.e., they have no employment contract). Thus, our final sample includes approximately 350 000 observations. Table 1 presents the final sample's structure.

Table 1. Sample structure

	1995		2010		average	
	Prime-	Young	Prime-	young	prime-	youn
Women	50%	43%	50%	44%	49%	43%
Tertiary education	14%	7%	28%	32%	20%	20%
Secondary education	38%	39%	34%	44%	37%	43%
Vocational education	33%	45%	32%	18%	34%	30%
Lower education	15%	9%	6%	6%	9%	7%
Overeducated	15%	14%	17%	28%	15%	22%
Undereducated	15%	12%	13%	10%	13%	10%
No educational mismatch	69%	74%	70%	62%	72%	68%
Tenure : 3 years +	79%	45%	77%	36%	78%	39%
Fixed-term contract	4%	8%	20%	50%	13%	33%
Part-time workers	5%	7%	4%	7%	5%	8%
Public sector employment	75%	53%	39%	21%	53%	29%
Large firm (100+)	46%	34%	31%	23%	37%	27%
Medium firm (11 - 100)	30%	28%	41%	37%	37%	34%
Small firm (0-10)	24%	38%	28%	40%	26%	39%
Managers	6%	1%	6%	3%	6%	2%
Professionals	13%	9%	20%	15%	16%	12%
Technicians, associate professionals	16%	13%	13%	13%	15%	13%
Clerical support workers	10%	9%	8%	13%	9%	12%
Service and sales workers	8%	15%	11%	18%	9%	18%
Skilled agricultural, forestry and	1%	1%	1%	1%	1%	1%
Craft and related trades workers	24%	33%	19%	17%	21%	24%
Plant and machine operators, and	11%	10%	13%	12%	12%	11%
Elementary occupations	12%	9%	11%	8%	11%	8%
Industry-specific layoffs	8.44304	9.56172	5.66677	6.35913	6.83	7.65
Industry-specific hirings	8.61197	9.84208	5.59864	6.32167	6.84	7.95

Source: Polish LFS data.

Men are slightly overrepresented in the group of young employees, and this does not change much over time. There are no strong differences between young and prime-age workers in terms of the shares who have tertiary education; though this was clearly not the case in the mid-1990s, when prime-age people were much more likely than young people to have university degrees; a pattern which reversed over time. Prime-age workers are more likely to have vocational secondary education, whereas younger employees are more likely to have general secondary education. Moreover, the proportion of young people with vocational and secondary education decreases substantially over time. Consistent with the findings of (Kiersztyn, 2012), our analysis shows that young workers are more likely than prime-age workers to be overeducated for the jobs they hold, and that this problem intensifies considerably over the study period. Young people are also more than twice as likely to hold fixed-term contracts, but it is clear that the rise in the share of temporary employment has affected both age groups to a similar extent. The shares of young and prime-age

workers in part-time work do not differ significantly. While prime-age workers are overrepresented in large firms and in the public sector, the likelihood of working in either a large company or the public sector decreases over time for both age groups. Changes in the occupational structure follow similar patterns for young workers and prime-age employees, although the latter group are more likely to hold managerial and professional positions. Finally, there are differences in the shares of young and prime-age workers across industries with high/ low levels of job separations and hiring: young people are clearly more likely to work in sectors in which job creation and/or destruction are more common. It is rather intuitive that young people are more likely to work in industries that create a large number of new jobs, but it is less obvious why young people are more likely to work in industries with high levels of job destruction. This may be because certain industries have high levels of turnover or are more sensitive to macroeconomic changes, and that young workers are more likely to take jobs in these industries than in sectors that are more stable.

4. Empirical findings

Logit models of job exit

We start our analysis with an estimation of logit models in which we examine the impact of a set of individual and structural characteristics on the individual risk of job loss among young and prime-age workers. At this step, we cannot compare the differences between the two groups in terms of the magnitudes of the effects of these characteristics (Allison, 1999; Mood, 2010), but we can get some first impressions of the factors that raise the overall risk of job separation. Table 2 summarises these findings.

Table 2. Results from logit models of job loss risk

	Prime-age		**Young**	
	b	se	b	se
Women	0.26***	-0.020	0.56***	-0.030
Tertiary education	-0.35***	-0.050	-0.38***	-0.060
Vocational education	0.18***	-0.030	0.010	-0.040
Primary education	0.44***	-0.060	0.34***	-0.090
Overeducated	0.030	-0.040	-0.23***	-0.040
Undereducated	0.13***	-0.040	-0.010	-0.070
Tenure : 3 years +	-0.68***	-0.020	-0.51***	-0.030
Fixed-term contract	0.71***	-0.020	0.62***	-0.030
Part-time workers	0.32***	-0.030	0.46***	-0.040
Public sector employment	-0.05**	-0.020	0.13***	-0.030
Large firm (100+)	-0.13***	-0.02	-0.26***	-0.03
Small firm (0-10)	0.05**	-0.02	0.12***	-0.03
Managers	0.02	-0.07	-0.19	-0.14
Technicians, associate professionals	0.22***	-0.06	0.34***	-0.08
Clerical support workers	0.37***	-0.06	0.66***	-0.08
Service and sales workers	0.40***	-0.07	0.65***	-0.08
Skilled agricultural, forestry, and fishery workers	0.33***	-0.110	0.68***	-0.150
Craft and related trades workers	0.50***	-0.070	0.74***	-0.090
Plant and machine operators, and assemblers	0.33***	-0.070	0.57***	-0.100
Elementary occupations	0.57***	-0.070	0.99***	-0.090
Industry-specific layoffs	0.09***	0.000	0.08***	-0.010

Industry-specific hirings	-0.02***	0.000	-0.02***	0.000
Period 1999-2004	0.000	-0.030	0.07*	-0.040
Period 2005-2008	-0.36***	-0.030	-0.22***	-0.040
Period 2009-2011	-0.37***	-0.030	-0.09*	-0.050
Constant	-3.49***	-0.070	-3.61***	-0.090
Log likelihood	-49061.1		-25785.5	
N	262 485		87 614	

Source: Polish LFS data. Reference group: Men with secondary education, jobs with no mismatch, tenure shorter than 3 years, in permanent full-time jobs in the private sector, medium-sized firms (10-100 workers), in professional occupations, in years 1995-1998.

We begin by discussing the role of individual characteristics, paying special attention to the various measures of job-related skills. Women have a higher risk of job separation than men. Not surprisingly, having tertiary education decreases the risk of job loss more than having secondary education only. At the same time, having vocational education raises the risk of job loss among prime-age workers, but—somewhat surprisingly—it seems to have no significant effect among young people (compared to having secondary education). Obviously, people who have primary education only are at highest risk of job separation. Interestingly, it is not only the level of education that matters, but also the quality of the match between an employee's educational level and his or her job. Young people whose qualifications are above the educational standard in a specific occupation are less likely to exit employment. It is difficult to speculate about this very specific pattern, but it corroborates with the results of (Kiersztyn, 2012), who found the persistence of overeducation among young people. This factor is not relevant for prime-age workers, who are shown to be more likely to exit jobs if they are undereducated. In line with previous research on the effects of work experience on labour market opportunities, we find that employees with longer tenure are significantly less likely to lose their jobs.

While the results discussed above demonstrate that the level and type of skills clearly matter for employment stability, we are particularly interested in gaining more insight into the effects of the characteristics of certain jobs. In line with the literature on the precariousness of flexible employment forms (Kalleberg, 2009), we find that fixed-term contracts and part-time work increase the risk of exiting employment. Interestingly, this is also shown to be the case for young people employed in the public sector, which in most counties is regarded as being a more secure labour market segment (Anghel et al., 2011; Clark & Postel-Vinay, 2009). As was explained in Section 2, in the Polish context the pattern of increased risk of job loss among young employees in the public sector may be related to job reallocation from the public to the private sector, a trend which is more likely to affect young people due to the lower costs associated with their dismissal (usually related to tenure), and to the fact that they are less likely to be protected by the trade unions. The results for firm size are very interesting. Job separations are less likely to occur in large firms and are more likely to occur in the small firms. This may be because larger companies have more resources for retaining workers under adverse macroeconomic conditions, whereas small and medium-sixed companies tend to react to decreasing sales more flexibly, and cannot afford to hoard labour. Higher firing costs in the larger firms are also likely to matter.

Regarding the effect of the occupational groups, the analysis shows that having a job in either a managerial or a professional category is associated with the lowest risk of job separation. All of the

other categories of occupations are associated with a higher risk of exit from employment. According to our results, higher industry-specific job destruction rates raise the individual-level risk of being laid off, whereas higher job creation rates decrease it.

Decomposition of the risk of job separation

In the next step, we decompose the logit models' results, with the aim of assessing to what extent the gap in the job separation rates among young and prime-age workers can be attributed to the differences in the composition of these two groups, and to what extent they can be accounted for by different returns to the characteristics of these two groups in terms of employment stability.

Overall, the raw difference in the risk of job loss among the young and prime-age workers (0.046) is accounted for to a slightly greater extent by differences in the composition of workers with respect to their individual and workplace characteristics (0.028) than by differences in the returns to these characteristics in terms of employment security (0.018). In other words, 60% of the gap in the risk of job loss between young and prime-age workers can be explained by the fact that young workers have different types of education, less experience, and are more likely to be employed in different (less stable) jobs than prime-age employees. At the same time, 40% of the gap can be attributed to the fact that levels of education and experience among the young, and the characteristics of certain jobs, translate into lower levels of employment stability for young workers.

When we look at this issue from the firm's perspective, which is our main interest, we find that workplace determinants account for over 60% of the difference in the risk of job loss between young and prime-age workers. In other words, almost 40% of the total difference results from the fact that young people are more likely to be employed in jobs with a higher probability of job loss. At the same time, the contribution of returns to workplace characteristics is marginal and negative, which indicates that these are prime-age workers who, from an individual perspective, are more likely to be disadvantaged at the firm level and to have less job-related employment security.

We discuss the above findings in detail below. According to the general results of our decomposition, both of the components of the gap in job separation risk—i.e., the composition of young and prime-age workers and the differential effects of their characteristics—play important roles (cf. Table 3). We provide the results from this decomposition in Tables 4 and 5.

Table 3. Decomposition of job loss risk - summary

	Coef.	*Std. Err.*	*P>|z|*
Endowments			
	0.028	**0.001**	**0.000**
Individual	0.010	0.001	0.000
Firm-level	0.018	0.001	0.000
Coefficients	**0.018**	**0.001**	**0.000**
Individual	0.012	0.001	0.000
Firm-level	0.000	0.001	0.000
constant	0.006	0.001	0.000
Raw	**0.046**	**0.001**	**0.000**

Source: Polish LFS data.

Table 4 presents more detailed results of the decomposition, referring specifically to the role of the differences in the composition of young and prime-age workers—i.e., their individual characteristics and the characteristics of their workplaces—in the risk of job separation. The positive coefficients displayed in this table indicate that a given factor increases the gap in the risk of job separation between young people and prime-age workers due to the higher propensity of the former group to have characteristics (or workplaces with characteristics) that elevate the probability of exit from employment.

The differences in the gender compositions of both age groups of workers decrease the gap in the risk of job separation, because women are underrepresented among younger employees; and, as we have previously shown, being a women is associated with higher risk of job separation. We find no large effects of the composition with respect to educational attainment on the overall differences in the risk of job loss between young and prime-age workers. Only the smaller share among young workers of individuals with the lowest levels of education leads to a slight decrease in the gap. Furthermore, the fact that young people are more likely to be overeducated, combined with the overall low risk of job separation among overeducated workers, decreases the gap in the job loss risk between prime-age and young workers. In turn, the difference in the composition of young and prime-age workers with respect to tenure is an important reason for the labour market disadvantage among young people. Unsurprisingly, this seems to be the most important factor that drives the gap in the job loss risk when it comes to differences in the composition of young and prime-age workers. Tenure accounts for more than half of the impact of the contribution of compositional differences (and one-third of the total difference in the raw gap in the job loss risk between youth and prime-age workers).

Regarding workplace characteristics, the differences in the composition of employment of young and prime-age workers with respect to the type of contract (fixed-term versus permanent) are very important. The contract type is actually the second-most important “compositional” factor. Young people are more likely to be employed under a fixed-term contract, which, as we have shown, is associated with a substantially higher risk of exit from employment. The differential distribution of jobs by type of contract among young and prime-age workers explains about 20% of the total gap. When we look at part-time work, which is another “atypical” employment arrangement, we again

find that prime-age workers are in a more advantaged position. They are more likely to be working full-time, which decreases their overall risk of job loss, and this compositional difference contributes to the gap in the risk of job separation between young and prime-age workers. The contribution of differences in composition regarding working time is much smaller than the differences in the propensity to have a fixed-term contract.

Finally, the distribution of young and prime-age workers across firms of different sizes matters for the overall gap in job loss risk as well. Young workers are overrepresented in smaller firms, and this places them at a disadvantage because large firms are less likely to dismiss workers. At the same time, the fact that young workers are underrepresented in the public sector (where they face a higher risk of dismissal) decreases the gap. Differences in occupational structure between young and prime-age workers account for a very small share of the overall gap in the risk of job loss. The structure across industries seems to play a much more important role. Young people are far more likely to work in sectors in which there are high levels of both job creation and job destruction, but it appears that the effect of higher levels of job destruction is greater than the effect of higher levels of job creation.

Table 4. Decomposition of the job loss risk: the effects of differences in composition of workers.

	Coef.	*Std. Err.*	*P>|z|*
Men	-0.001	0.000	-20.020
Women	-0.001	0.000	-20.02
Tertiary education	-0.000	0.000	-6.040
Secondary education	0.000	0.000	0.280
Vocational education	-0.000	0.000	-0.600
Lower education	-0.001	0.000	-4.990
No mismatch	-0.000	0.000	-3.190
Overeducated	-0.001	0.000	-3.730
Undereducated	-0.000	0.000	-1.420
Tenure 3+	0.014	0.001	17.92
Fixed-term contract	0.010	0.000	20.80
Part-time workers	0.001	0.000	0.000
Public sector employment	-0.002	0.001	0.000
Large firm (100+)	0.002	0.000	0.000
Medium firm (11 - 100)	-0.000	0.000	0.008
Small firm (0-10)	0.002	0.000	0.000

Managers	0.002	0.000	0.000
Professionals	0.001	0.000	0.000
Technicians, associate professionals	0.000	0.000	0.000
Clerical support workers	0.000	0.000	0.000
Service and sales workers	0.001	0.000	0.000
Skilled agricultural, forestry and fishery workers	-0.000	0.000	0.106
Craft and related trades workers	0.000	0.000	0.000
Plant and machine operators, and assemblers	-0.000	0.000	0.129
Elementary occupations	-0.001	0.000	0.000
Industry-specific layoffs	0.005	0.000	0.000
Industry-specific hirings	-0.002	0.000	0.000
Period 1995-1998	-0.000	0.000	0.034
Period 1999-2004	-0.000	0.000	0.000
Period 2005-2008	-0.000	0.000	0.000
Period 2009-2011	-0.000	0.000	0.257

Source: Polish LFS data.

The second part of the results from the decomposition shows whether there are any differences in returns to individual or workplace characteristics in terms of reducing the gap in job losses between young and prime-age workers. These detailed results are presented in Table 5. Positive coefficients displayed in this table mean that a given factor raises the gap in the risk of job separation between young people and prime-age workers due to lower returns in terms of job security among young people.

According to our findings, young men clearly have a lower risk of job exit than their prime-age colleagues, but women are more exposed to the risk of job loss if they are young. This could be attributed to voluntary job exits after childbearing, but it could be also related to discriminatory practices of employers towards women of childbearing age[5].

The different effects of tertiary and secondary education seem to slightly increase the gap in the job loss risk. However, the impact of the differences in the returns to education on the overall gap in the job loss risk is rather small and is not significant. Thus, it appears that education has the same benefits for young and prime-age workers in terms of protection against job separation. This finding appears to refute the validity of the commonly expressed concerns about the declining quality of education and the decreasing value of educational credentials among young people. Interestingly, in

[5] Unfortunately, a more in-depth inquiry into the role of childbearing is not possible here because the variables identifying mothers and their children in the household grid are available in the PLFS only from 2005 onwards.

line with what could be inferred from the logit models presented earlier in this section, our findings show that while vocational education is associated with an elevated risk of job separation among prime-age workers, it does not have an equally negative effect on job stability among young people. This difference in the effects of vocational education decreases the gap in the overall risk of job separation between young people and prime-age workers. One of the potential explanations for this difference is that the expansion of tertiary education was associated with a shift away from vocational education towards general secondary education (as the latter is a prerequisite for entry into university, see Kogan 2008), leading to a decline in the number of graduates from vocational schools. As there are relatively few labour market entrants with this type of education, they might enjoy better labour market opportunities, and their vocational skills are more likely to match the demand.

Another interesting finding is related to the role of over- and undereducation. Overeducation translates into a lower risk of job separation for younger workers than for prime-age workers. We can only speculate about the underlying reasons for this result: it could be related to the crowding-out of workers with lower qualifications by workers with higher qualifications (Pollmann-Schult, 2005; Teulings & Koopmanschap, 1989). Regarding undereducation, while the logit models presented earlier suggest that prime-age workers are more likely to exit a job for which they are underqualified, these differential returns to undereducation do not account for a large part of the gap in the job separation risk, and the impact turns out to be non-significant.

Interestingly, when we look at the differences in the returns of individual-level characteristics in terms of decreasing the risk of job separation, we again find that the most important factor is job tenure. According to our findings, tenure protects workers against job loss differently: i.e., it has a much stronger positive impact on job security among prime-age workers than among young workers. Hence, it does not appear to be the case that the tenure accrued by prime-age workers mainly during the socialist era has a lower value in the market economy. The question of why job-related experience does not decrease the risk of job loss to the same extent among young people as among prime-age workers should be investigated in more detail. We can only speculate that the experience gained via precarious jobs—such as fixed-term contract positions or jobs with requirements that go beyond individual skills—may be less beneficial. The fact that young people often end up in jobs of this kind could explain their lower returns from job experience in terms of employment stability.

Holding a fixed-term contract implies a slightly lower risk of exiting employment for young workers. Hence, while having a fixed-term contract is generally associated with an elevated risk of job separation, its effects on job stability among prime-age workers and young people are not very different. The same applies to part-time work, which has the same effects on job stability among young and prime-age workers.

The ownership sector of the enterprises, which has been shown to be relevant from a compositional perspective, is also found to contribute to the gap in the job loss risk: being employed by a public firm is associated with a much higher degree of job stability for prime-age workers, but not necessarily for young workers. It seems that public companies apply different human resources strategies depending on employees' ages. A different picture emerges when we look at the impact of the size of the firms: large firms seem to be more likely to retain young workers rather than prime-

age ones. While young people are more likely to find jobs in small and medium-sized enterprises, larger firms may actually offer them greater employment stability.

An interesting pattern emerges when we compare the differences in the job separation rates across occupations. The jobs in occupational groups such as managers and professionals seem to provide more employment stability for young people than for prime-age workers. By contrast, lower-level occupations seem to offer relatively a higher degree of employment stability for prime-age workers. There are no statistically significant differences between young and prime-age workers in terms of the risk of job separation related to the intensity of industry-specific job destruction. However, young workers are less likely to lose jobs in the sectors that have the highest rates of job creation. This suggests that employers may be more willing to retain young workers if they believe it will be difficult to find new employees. The aggregate economic situation, which is not related to job creation and destruction, resulted in an overall decrease in the gap in the job loss risk in the early 1990s, but then became increasingly disadvantageous for young people, especially after the start of the 2009 crisis.

Table 5. Decomposition of job loss risk: the effects of differences in the coefficients of workers' and workplaces' characteristics.

	Coef.	*Std. Err.*	*P>|z|*
Men	-0.004	0.001	0.000
Women	0.004	0.001	0.000
Tertiary education	0.000	0.001	0.564
Secondary education	0.002	0.001	0.028
Vocational education	-0.002	0.001	0.016
Lower education	-0.000	0.000	0.724
No mismatch	0.005	0.001	0.000
Overeducated	-0.001	0.000	0.011
Undereducated	-0.000	0.000	0.970
Tenure 3+	0.007	0.002	0.000
Fixed-term contract	-0.001	0.000	0.025
Part-time workers	0.000	0.000	0.006
Public sector employment	0.005	0.001	0.000
Large firm (100+)	-0.002	0.001	0.000
Medium firm (11 - 100)	0.000	0.000	0.383
Small firm (0-10)	0.001	0.000	0.000

Managers	-0.001	0.000	0.004
Professionals	-0.002	0.001	0.040
Technicians, associate professionals	-0.001	0.000	0.159
Clerical support workers	0.000	0.000	0.046
Service and sales workers	0.000	0.000	0.164
Skilled agricultural, forestry and fishery workers	0.000	0.000	0.237
Craft and related trades workers	0.001	0.001	0.265
Plant and machine operators, and assemblers	0.000	0.000	0.426
Elementary occupations	0.001	0.000	0.000
Industry-specific layoffs	-0.001	0.002	0.512
Industry-specific hirings	-0.001	0.002	0.476
Period 1995-1998	-0.001	0.000	0.000
Period 1999-2004	-0.001	0.000	0.043
Period 2005-2008	0.000	0.000	0.603
Period 2009-2011	0.000	0.000	0.000
Constant	0.006	0.003	0.073

Source: Polish LFS data.

5. Conclusions and policy implications

The recent economic crisis has led to sharp increases in youth unemployment rates, far above those observed for prime-age workers. This trend has led observers to ask about the reasons for this age disparity in labour market outcomes; thus, the issue of youth unemployment is again at the top of the policy agenda. A proper, well-designed identification of the factors driving the age inequality in labour market outcomes is crucial for the formulation of an adequate policy response. In this paper, we sought to identify the factors that contribute to the gap in the risk of job loss between young and prime-age workers. In particular, our objective was to disentangle the effects of differences in the composition of young and prime-age workers with respect to their individual and job characteristics from the impact of their different risks of job loss associated with those characteristics. Our results show that both the differences in the composition of young and prime-age workers and the differences in the returns to these characteristics in terms of employment stability contribute to similar degrees to the gap in the risk of job loss between young and prime-age workers.

Regarding the characteristics related to individual human capital endowments, we find that neither differences in distribution nor differential effects of education attainment place young people at a disadvantage. Despite the expansion of tertiary education, there was no indication that young people with tertiary education have lower returns to their credentials as measured by their job separation

rates. While the question of whether the benefits of schooling, as measured by wage differentials, changed after the educational expansion has yet to be fully assessed (Hu, 2013), our results suggest that Polish university graduates still enjoy relatively high levels of employment stability.

At the same time, we find that tenure plays a very important role in the gap in the risk of job separation between young and prime-age workers. First, as expected, young people are revealed to be at higher risk of job loss because they are less experienced on average. Second, the returns to tenure in terms of employment stability are shown to be lower among young people than among prime-age workers. In our view, more in-depth investigation is needed in order to explain why job-related experience does not translate into higher levels of employment stability among young people to the same extent as it does among prime-age workers. Our working hypothesis is related to the types of jobs young people tend to take on the Polish labour market: we find that young people have a higher propensity to take jobs for which they are overeducated, and that they are also more likely to work under a fixed-term contract, which is generally associated with fewer opportunities for the accumulation of job-specific capital (Cutuli & Guetto, 2013).

Regarding the effects of workplace characteristics or macro-level structural changes, we find that they actually tend to favour younger employees. Indeed, young people are more likely than prime-age workers to become temporary workers (rather than to be offered permanent contracts). They are also more likely to take a job in a more volatile small enterprise, in a private sector firm (which tends to react more strongly to changing economic conditions than a public sector employer), and in an industry with a high rate of job turnover. This specific allocation of young workers to these kinds of jobs makes them more likely to lose a job than prime-age workers. However, we find that having a position with a fixed-term contract is not necessarily a “trap” for a labour market entrant. Perhaps in a country where temporary employment is the dominant form of employment among young people, employers have less negative attitudes towards young job candidates with experience in atypical jobs than they would towards prime-age job seekers. Once they have hired young people, large companies tend to offer these workers more employment stability than prime-age workers. Finally, no statistically significant differences are observed between young and prime-age workers in the risk of job loss related to the intensity of job destruction in the sectors in which they work.

Moreover, the long-term structural changes on the Polish labour market—such as the shift away from the public towards the private sector—is likely to bring further improvements in young workers’ labour market opportunities. We find that young people are less likely to be employed in the public sector, which appears to be associated with age inequalities in job dismissal procedures. However, the role of the public sector in overall employment on the Polish labour market is diminishing.

Differences in the composition of workplace characteristics between young people and prime-age workers explain a considerable share of the overall gap in the risk of job loss, as young people tend to take jobs that are less secure. At the same time, the differential effects of workplace characteristics seem to narrow rather than to increase the gap in job security between young and prime-age workers. In other words, the jobs that appear to be more precarious seem to do less harm or to provide more benefits to young people than expected.

Further research is needed on the interplay between access to knowledge-intensive jobs for young people and their employment stability in these jobs. We can observe that the changes in the structure of the jobs available on the Polish labour market follow the direction implied by

technological change, with increases in the proportion of jobs that require high-level qualifications. At the same time, it appears that, for a variety of reasons, young people face barriers in gaining access to these jobs; and that they tend to find themselves in jobs for which they are overeducated. Combined with our finding of a surprisingly low risk of job separation among overeducated young people, it appears that there are overcrowding processes on the Polish labour market. This issue definitely requires more attention in further research.

These findings offer new hints and recommendations for public policies targeted at young people. First, as we provide evidence that job experience plays a crucial role in lowering the risk of job exit, policies that help young people accumulate this experience should be seen as a top priority. At the same time, emphasis must be placed on the quality of this experience, as so far years spent at a particular workplace appears to be more important for prime-age than for young workers. Second, working under a fixed-term contract does not appear to diminish the labour market prospects of young workers, and it might even help them gain crucial job experience. Thus, actions aimed at limiting access to these jobs might do more harm than good. Policies that take a flexicurity approach appear to be the best option, as labour market flexibility can ease young people's entry into the labour market, while active labour market policies and other measures (e.g., those that provide access to the housing market) can support them as they seek more secure positions. Finally, there is the question of the effects of the regulatory framework on young people's access to jobs with higher educational requirements. This issue calls for more evidence-based policy discussions about the extent to which regulations block access, hindering the employment opportunities of young people and protecting experienced insiders.

Acknowledgements

This project was developed within the ERSTE Foundation Fellowship for Social Research 2013. The authors wish to express their gratitude for the financial support provided for their research and for the very helpful comments received from the reviewers assigned by the ERSTE Foundation.

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