

## ***1. Flexible jobs among recent graduates***

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### **Abstract**

This paper shows that flexible jobs are very common among graduates entering the Dutch labour market, and that these jobs are generally less attractive relative to permanent jobs. Our main conclusion is that the selection of recent graduates into either permanent or flexible jobs in the Netherlands mainly takes place at the demand side of the labour market, i.e., by employers. There is no indication that flexible work among graduates entering the labour market is related to their willingness to take risks. Only at university level are there any indications that the selection process is different.

**Keywords:** Flexible work; job characteristics, job mismatch, temporary contracts, recent graduates, willingness to take risks.

**JEL classification:** J21, J24, J41, M51.

### **1. Introduction**

The central difference between temporary and permanent contracts is grounded in employment protection legislation. If employers are faced with declining demand for products or poorly performing employees, they have to pay high costs to fire the permanent workers. In contrast, fixed-term employees are excluded from all redundancy procedures and severance pay when their contracts terminate. Moreover, temporary employment agencies supply workers on the so-called spot market, which makes it possible for companies to adjust their workforce quickly. Temporary employment is very common among recent graduates, which makes it important to understand which groups of recent graduates have the largest probability of a temporary job and for what reasons. However, only few studies have examined why recent graduates enter into temporary contracts.

The main question in this paper is to what extent the probability of flexible employment among recent graduates is driven by labour demand, such as business cycle effects, or reflects the characteristics and preferences of the graduates. We distinguish between the two main categories of temporary jobs among recent graduates that are both regarded as flexible employment: fixed-term and temporary agency jobs. We use data of recent graduates from Dutch secondary or higher education to analyse the impact of educational level and field on the probability of entering into permanent or temporary contracts. Based on previous empirical studies (see Section 2) and our own analyses of job characteristics, we will argue that, in general, recent graduates in flexible jobs are worse off than those in permanent jobs. We will show that both the level and the field of education matter for the incidence of temporary work, and introduce five factors related to recent graduates' education that may explain the probability of a temporary job.

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First, labour demand is more susceptible to employment variations for some fields of study than for others. These variations can stem from the business cycle as well as from other factors, such as changes in government budgets for health care or education. From the theory of adjustment costs (Hamermesh and Pfann, 1996) we can infer that employers may be more likely to enter into temporary contracts with graduates educated in fields susceptible to large employment variations. Second, if unemployment is high for graduates with particular degrees, employers can allow themselves to screen recent graduates with these degrees more intensively by postponing a permanent contract offer. Therefore a high incidence of flexible employment in particular fields of study may be a manifestation of a weak labour market position (De Grip et al., 1997). Third, graduates educated in fields that are strongly attached to particular occupational domains may have a better position to enter into permanent contracts than more broadly educated graduates (Borghans and Heijke, 1998), since employers will be more certain about the tasks they are able to perform and consequently their productivity. Fourth, graduates can signal motivation, ambition and ability with their final exam grades (Spence, 1973). Employers may be more willing to engage in permanent contracts with graduates that can achieve high productivity. Fifth, graduates who are more willing to take risks may enter into temporary contracts first, since they demand less compensation from their employers for job insecurity (Rosen, 1986).

Our empirical analyses reveal that only the first four factors explain a significant part of the variance of temporary work among recent graduates. The willingness to take risks does not seem to matter for the incidence of temporary work. This leads us to the conclusion that the selection of graduates into either permanent or flexible jobs in the Netherlands mainly takes place at the demand side of the labour market, i.e., by employers. This conclusion is also supported by the finding that recent graduates with temporary contracts earn less, are more often overeducated, work more frequently outside their domain, and more often regret their choice of study. Moreover, we show that recent graduates, compared to employees, are often used as a buffer for dealing with fluctuations in the demand for personnel. Only at the university level are there some indications that the selection process is different. Some university graduates get fixed-term jobs that match their education better than university graduates in permanent jobs, their selection into temporary jobs seems to be less dependent on the business cycle, and university graduates with higher grades are more likely to have fixed-term jobs.

In connection to the five explanatory factors, the next section reviews the literature that addresses the most important reasons why graduates enter into temporary contracts. Section 3 discusses the data and the general trends of recent graduates working in flexible contracts, and compares these to all employees in the Dutch labour force for the period 1996-2008. In Section 4, we look at several job aspects and analyze how a higher prevalence of temporary contracts for recent graduates from particular fields of study may be interpreted. Section 5 presents an empirical model to explain the probability of a recent graduate receiving a temporary contract using educational level and field as predictors. Section 6 analyses to what extent the five factors mentioned above can explain the probability with which recent graduates at the different levels of education may be offered a temporary job. Section 7 concludes.

## **2. Previous Literature**

From previous literature, it follows that flexible work may be related to so-called 'bad jobs' in the secondary labour market segment (Doeringer and Piore, 1971; Reich et al., 1973; Rebitzer and Taylor, 1991). This may be particularly true for those groups that traditionally have a weak position in the labour market in terms of high unemployment and loose attachment to

the labour market. These groups include not only immigrant, low-skilled and female workers, but also young people entering the labour market. They may move from one flexible job to another, interrupted by periods of unemployment or inactivity. Young people, including recent graduates, must often accept temporary rather than permanent jobs when they are faced with high youth unemployment rates (Treu, 1992). Another explanation for a higher incidence of flexible jobs among recent graduates can be inferred from the so-called insider-outsider theory (Bentolila and Dolado, 1994). Permanent workers (insiders) dominate the labour unions and will make sure that their terms of employment are guaranteed as much as possible relative to the outsiders. These outsiders are the groups of people with a weak link to the labour market, including new entrants like recent graduates. Unfavourable job aspects for the outsiders' jobs may include temporary contracts and low wages as well as detrimental working conditions, more work accidents, lack of training opportunities and higher job strain (Houseman, 2001; Zijl, 2006).

Thus, an employer may choose to employ graduates on a temporary basis to offer lower wages, less training or worse working conditions. Another important motive for employers to offer graduates a temporary contract may be the screening motive (Winkler, 1987). The employer can offer permanent contracts to the most able graduates or those that meet the required standards. Autor (2004) asserts that temporary agency work is more important as a screening instrument than for dealing with fluctuations over the business cycle. Temporary employment agencies are able to gather important information concerning the quality and motivation of temporary agency workers by training and testing them. Thus, they may be better able to match graduates and vacancies than employers are.

Nevertheless, the minimization of adjustment costs of the workforce can be seen as the main motive for employers to offer temporary contracts. Fluctuations in the demand for goods and services (like seasonal work) and temporary absences of incumbent staff due to for example holidays or sickness are the most prevalent motives for employers to hire flexible workers (Houseman, 2001; Storrie, 2002). Other related motives for employers to choose flexible workers include filling a position temporarily to bridge the time until an appropriate permanent worker is found, and hiring expertise required for specific projects. It is, however, not known to what extent these motives are relevant for recent graduates.

Two empirical studies specifically analyse the labour market position of recent graduates, and point to the less attractive aspects of temporary jobs among these graduates. Wieling and Borghans (2001) show that the incidence of temporary work for Dutch graduates of different educational programs depends on excess supply of people educated in these programs on the labour market. They find that working for a low wage, below the educational level (i.e., the graduate is overeducated) or outside the occupational domain are other job aspects associated with temporary jobs that indicate a weak labour market position for recent graduates. Furthermore, Try (2004) shows that temporary jobs are widespread among recent graduates in Norway, and that temporary jobs are generally associated with working below the educational level and for lower wages.

Graduates will usually prefer permanent over flexible jobs. According to the theory of compensating wage differentials (Rosen, 1986), employees should only accept a temporary job if they receive a higher salary than that of permanent workers. However, as has been argued above, compensation for temporary workers is lower than for permanent workers with the same background characteristics and occupying the same kind of job (European Commission, 2003). These so-called wage penalties vary from 5 percent in France, Germany, Belgium and Austria to more than 15 percent in the Netherlands. Nevertheless, it may be expected that graduates who

are least risk averse (i.e. most willing to take risks and require the smallest compensation), will have the highest probability to end up in flexible work (Dohmen et al., 2009).

Of course, temporary contracts make it possible for recent graduates whose manpower is only required on a temporary basis to be employed and have income anyway. Temporary contracts may increase the probability that unemployed graduates enter the labour market, which reduces unemployment duration<sup>207</sup>. When people are offered employment by means of temporary contracts, they can obtain work experience, acquire essential competencies that make them more attractive for other employers, demonstrate their motivation and capacities and develop their informal network. Thus flexible jobs may serve as a stepping stone toward a permanent job (Booth et al., 2002; Heyma and De Graaf-Zijl, 2009). Try (2004) indeed finds evidence that recent graduates consider some flexible jobs (in particular, research fellowships) as a good investment opportunity.

There are many other motives for choosing flexible jobs (Ecorys-NEI, 2002; Houseman, 2001), which may in particular hold for recent graduates. They can use flexible jobs for screening interesting jobs or employers, choose for flexible jobs if they like variation in their work, or bridge the time to another (permanent) job. Flexible work may provide extra income relative to receiving unemployment benefits, or can be supplementary to earnings in another job or to a study grant.

### 3. Data Preview

Data are drawn from large-scale graduate surveys conducted annually in the Netherlands by the Research Centre for Education and the Labour Market (ROA). These surveys include recent graduates of pre-vocational secondary (VMBO), upper general secondary (HAVO), pre-university (VWO), secondary vocational (MBO, excl. apprentices), higher professional (HBO<sup>208</sup>) and university (WO) education. To construct the sample of permanent and temporary graduates in this paper, we exclude the small groups of on-call and self-employed workers and include all recent graduates working at least one hour per week. A sample of almost 300,000 graduates remained for the period from 1996 to 2008<sup>209</sup>.

The surveys take place 18 months after graduation and focus on aspects of the education-to-work transition. Extensive information is collected on the graduates' educational background as well as their current job. The information on graduates' current job includes income, hours worked, type of contract and a variety of other indicators of the quality of the job match. To measure the match between education level and current job, the survey uses an employee self-rating method in which respondents are asked to indicate the education level required by the employer and the match between their field of study and their current job. For this paper we use the surveys conducted between 1996 and 2008, which refer to the 1994/1995 to 2006/2007 graduate cohorts. Table A.1 of the Annex shows the summary statistics of the data set used.

Figure 1 shows the proportion of recent graduates in flexible jobs, broken down by level of education for the period 1996-2008. Except for university graduates (WO), the figure suggests that the share of flexible work among recent graduates is cyclical. From 1996 to 2001, continuing economic growth, declining unemployment and a rising number of vacancies increased the bargaining position of workers, including recent graduates, and resulted in a lower percentage

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207 For example, Wieling and Borghans (2001) refer to the possibility of a trade-off between different job aspects, including temporary work.

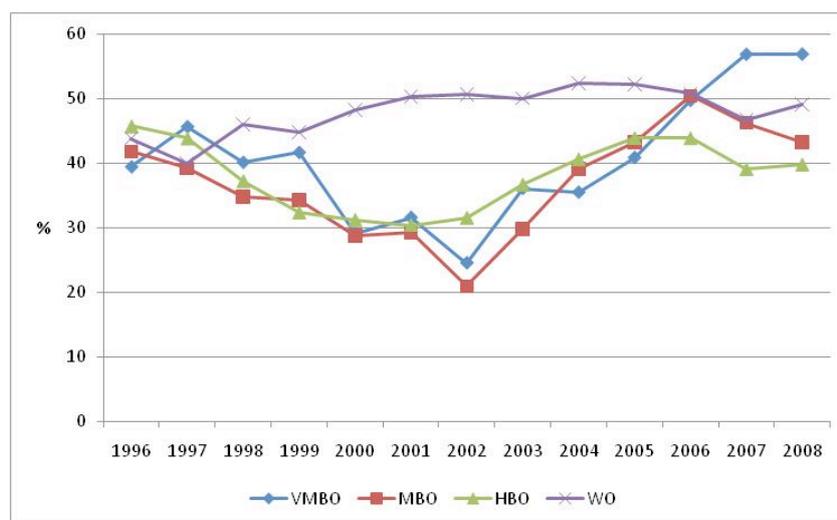
208 HBO-institutions profile themselves internationally as universities of applied sciences.

209 For many analyses in Section 5, the number of graduates is lower since a shorter period must be used due to missing variables.

of graduates accepting flexible work positions. When economic growth declines or the economy shrinks, it is cheaper for employers to fire the flexible workforce first. Since Dutch economic growth began to decline in 2001, and remained just above zero in 2002, we can explain the low percentage of flexible work in 2002. The labour market situation dramatically changed during 2002; unemployment rose sharply, peaking at about 6.5 percent in 2004/2005. For graduates of pre-vocational and secondary vocational education (VMBO and MBO), the percentage of flexible work reached a minimum in 2002, whereas for graduates of higher professional education (HBO), the minimum was reached one year earlier.

The effect of a growing economy on the volume of flexible relative to permanent work develops in two stages (Zijl et al., 2003). First, after economic stagnation, a growing economy results in an increase in demand for flexible workers in order to meet the increasing need for goods and services. Figure 1 indeed shows a rising share of flexible jobs among graduates entering the labour market after 2002. Second, continuing economic growth leads to tight labour markets and many hard-to-fill vacancies. Since 2004, the economy (i.e., GDP) grew at a rate of 2 percent per year or more (particularly in 2006 and 2007). After 2006, the share of flexible work decreased due to the rising bargaining power of employees (in particular for MBO- and HBO-graduates), assuming that employees usually prefer a permanent contract to a temporary contract.

**Figure 1.** Percentage of flexible workers among recent graduates in paid employment by level of educationa, 1996-2008



**Notes:** (a) VMBO = pre-vocational secondary education; MBO = secondary vocational education (excl. apprentices); HBO = higher professional education<sup>210</sup>; WO = university education.

**Source:** ROA (SIS).

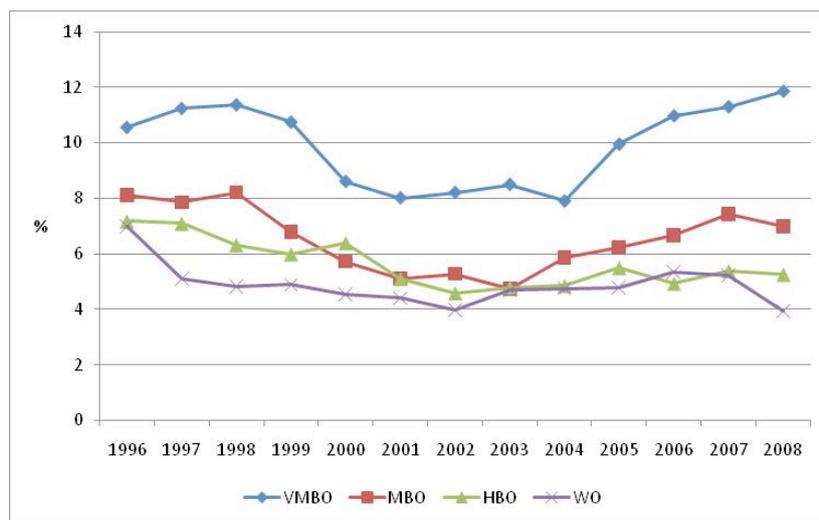
The cyclical movement suggests that flexible work among recent graduates primarily functions as a buffer in the workforce to adapt to changes in labour demand. Only for university graduates (WO) did the percentage of flexible jobs remain at a high level – about 50 – during nearly all of the study period. This may indicate that university graduates are more often engaged in temporary contracts for other purposes, like screening and training. University graduates may in particular hold trainee posts at hospitals, traineeships in banks or insurance companies or PhD positions at universities. The share of flexible jobs among university graduates entering the labour market may be therefore less susceptible to business cycle fluctuations than it is among

<sup>210</sup> HBO-institutions profile themselves internationally as universities of applied sciences.

graduates at the lower education levels.

Figure 2 shows the percentage of flexible workers by level of education for the total group of employees in the period 1996-2008. These data are drawn from the Dutch Labour Force Survey (LFS). It is obvious that flexible work is much less common among employees than among recent graduates. This indicates that employees who have gained several years of experience in the labour market generally have a better labour market position in terms of job security. In addition, Figure 2 indicates that the percentage of flexible workers diminishes with the level of education. Note that this relationship with educational level does not hold for the percentage of flexible jobs among recent graduates shown in Figure 1. Of all employees with an HBO diploma, less than 6 percent had a temporary contract in 2008, and of those with a university degree, this percentage was even smaller (3.9 percent). The share of flexible workers among the total group of employees decreased at all education levels after 1998, reached the lowest level around 2003. Thereafter, the share rose again, in particular at the two lower education levels. During the last few years of the period under consideration the share of flexible workers, in particular at the higher levels, declined due to the recovery of the economy. The fluctuations in the percentage of flexible workers are much smaller among the total group of employees than among recent graduates. This indicates that the absorption of the labour market inflow of graduates is particularly important to cope with fluctuations in labour demand caused by the business cycle.

**Figure 2.** Percentage of flexible workers among employees by level of education, 1996-2008



**Notes:** See Figure 1 for explanations of abbreviations. MBO includes apprentices.

**Source:** Statistics Netherlands (LFS).

#### 4. Flexible work and other job aspects

In this section we examine the relationship between having a flexible job and eight distinct aspects of graduates' jobs. These job aspects are retrieved from the graduate surveys of ROA discussed in the previous section. Logistic regression analyses have been performed in order to estimate the marginal effect of having a temporary contract on (among others) the probability that graduates work outside their discipline, work part-time or are dissatisfied with their job. The analyses in this section are conducted for graduates with a fixed-term contract as well as graduates in temporary agency work. In both analyses, graduates with a permanent contract are the reference group. We conduct separate analyses for each job characteristic for recent graduates of secondary vocational education (MBO, excl. apprentices), higher professional education (HBO)

and university education (WO)<sup>211</sup>. We control for gender, ethnicity, age, work region, survey year, level of the course (solely for MBO) and final exam result. Before discussing the results, it is important to note that the marginal effects of temporary contracts on each of the job aspects are not necessarily causal.

### *Graduates in fixed-term jobs*

Table 1 shows the impact that a fixed-term contract has on the incidence of several job aspects for graduates of MBO, HBO and WO. It can be concluded from the table that secondary vocational (MBO) graduates with a fixed-term contract work significantly more often outside their discipline, in a job below their educational level, and in a part-time job<sup>212</sup>. They are more often dissatisfied with their job, experience a poorer transition between study and job, regret their choice of study more often and are trained less than MBO graduates with a permanent contract. Moreover, the gross hourly wage of MBO graduates with a fixed-term contract is 3.2 percent lower than for MBO graduates with a permanent contract. We find similar results regarding the impact that a fixed-term contract for higher professional (HBO) graduates has on the job aspects. On average, gross hourly wage is 3.3 percent lower for graduates with a fixed-term rather than a permanent contract.

**Table 1.** Impact of a fixed-term contract on job aspects of graduates by level of education, graduates with permanent jobs are the reference group, marginal effects based on logistic regression analyses, 2002-2008

Job aspects	MBO <sup>b</sup>	HBO <sup>b</sup>	WO <sup>b</sup>
Outside discipline	0.046 ***	0.030 ***	-0.035 ***
Below educational level	0.021 **	0.010 ***	-0.082 ***
Part-time	0.031 **	0.049 ***	0.050 ***
Dissatisfied in job	0.013 ***	0.009 ***	0.004 **
Poor study-job transition	0.031 ***	0.015 ***	-0.006 **
Regret education	0.041 ***	0.031 ***	0.018 ***
No training	0.065 *	0.098 ***	0.134 ***
Log gross hourly wage <sup>c</sup>	-0.032 ***	-0.033 ***	-0.076 ***

**Notes:**

(a) The following control variables are used in the analyses: gender, ethnicity, interaction gender\*ethnicity, age, age squared, work region, survey year, final exam result, and level of the course (for MBO only).

(b) The number of stars indicates the statistical significance of the marginal effects: \*\*\* = 1%; \*\* = 5%; \* = 10%.

(c) The effect of having a fixed-term contract on log gross hourly wage is estimated by means of an OLS regression.

211 There are not enough observations for VMBO and HAVO/VWO graduates in employment to conduct similar analyses. The regressions are restricted to the 2002-2008 period since information on the final exam results of graduates was not available for earlier years.

212 Part-time work is another aspect of so-called 'atypical work' that may indicate a disadvantageous situation for the worker (De Grip et al., 1997).

The results of the logistic regression analysis concerning university (WO) graduates differ to some extent from the results at the lower educational levels. For WO graduates, the labour market position occasionally seems to be better for employees with a fixed-term contract instead of a permanent contract. WO graduates with a fixed-term contract work less often outside their discipline, are less often overeducated and experience a poor study to job transition less frequently than university graduates with a permanent contract. This remarkable result may be explained by the fact that university graduates often have jobs with an enormous learning content such as trainee posts (hospitals), traineeships (banks or insurers) or PhD positions (Try, 2004). Employers may screen these graduates for ability, motivation and discipline. Moreover, for graduates these positions may be a stepping stone to a permanent job. The unique job aspects of university graduates may explain why the share of temporary contracts among university graduates exhibits almost no co-movement with the business cycle (see Figure 1). However, for the other job aspects, WO graduates remain worse off with a fixed-term contract. They get considerably less training and earn significantly less than graduates in permanent jobs.

#### *Graduates in temporary agency jobs*

We conduct analyses for temporary agency workers in the same way as for fixed-term workers. Table 2 presents the marginal effects on several job aspects for graduates with a temporary agency contract instead of a permanent contract. At the secondary vocational (MBO) level, temporary agency work is significantly positively related to all unfavourable job aspects. In addition, it can be concluded that MBO graduates with a temporary agency contract are worse off in terms of their gross hourly wage, since they earn 14 percent less than MBO graduates with a permanent contract. This is also worse than for MBO graduates with a fixed-term contract (see Table 1).

At the higher professional (HBO) level, graduates in temporary agency jobs are worse off on all eight job aspects compared to graduates in permanent jobs. This is similar to the results for fixed-term workers. Graduates in temporary agency jobs are particularly more likely to work outside their discipline and below their level, and are trained less often than permanent workers of this level, as can be concluded from the high marginal effects (25, 21 and 15 percent, respectively) relative to those for MBO graduates. Moreover, they earn 18 percent less per month than permanent workers, whereas fixed-term workers earn 3 percent less than permanent workers (see Table 1).

At the university (WO) level, the job aspects of graduates in temporary agency jobs are also considerably worse than similar aspects of graduates in permanent and fixed-term jobs. Unlike some job aspects for fixed-term graduates at the university level, this holds for all job aspects. The effects on the unfavourable job aspects of WO graduates in temporary agency jobs are usually even stronger compared to those of HBO graduates. University graduates in temporary agency jobs are particularly more likely to work below their educational level than university graduates in permanent jobs (40 percent). Finally, there is a vast difference in gross hourly wages between temporary agency jobs and permanent jobs for WO graduates. The former group of jobs pay 27 percent less per month than the latter, which is also considerably less than temporary agency jobs at the HBO level and fixed-term workers at the WO level (see Table 1).

**Table 2.** Impact of a temporary agency contract on job aspects of graduates by level of education, graduates with permanent jobs are the reference group, marginal effects based on logistic regression analyses, 2002-2008

Job aspects	MBO	HBO	WO
Outside discipline	0.161 ***	0.250 ***	0.350 ***
Below educational level	0.092 ***	0.214 ***	0.396 ***
Part time	0.113 ***	0.235 ***	0.283 ***
Dissatisfied in job	0.044 ***	0.057 ***	0.140 ***
Poor study-job transition	0.057 ***	0.169 ***	0.342 ***
Regret education	0.071 ***	0.107 ***	0.111 ***
No training	0.208 ***	0.145 ***	0.325 ***
Log gross hourly wage	-0.137 ***	-0.179 ***	-0.266 ***

**Notes:** See Table 1

### 5. Explanatory model for flexible work among recent graduates

In this section we examine the impact that educational background has on the probability of a temporary employment relationship. The temporality of a job is usually perceived as a less attractive job characteristic that many recent graduates have to accept out of necessity when the labour market situation deteriorates. The previous section indeed shows that a flexible job is strongly associated with several less favourable job aspects. However, as has been mentioned in Sections 1 and 2, there may be other reasons for a high incidence of flexible work among graduates in particular fields of study. In the next section we return to the explanations of the differing probabilities of flexible work in each educational program. Table 3 presents the marginal effects of the educational programs of recent graduates on the probability of having a fixed-term or a temporary agency job by means of logistic regression analyses. The reference group consists of recent graduates with a permanent contract. The table focuses on the marginal effects of the educational programs on the probability of working in either a fixed-term job or a temporary agency job. The control variables included are gender, ethnicity, age, work region and survey year<sup>213</sup>. The results for the control variables are presented in the Annex of this paper, but will be briefly discussed here<sup>214</sup>. There are alternative estimation models and specifications that would also make sense in our context. Next to the one presented in this paper we have estimated the regressions using multinomial and ordered logit models. Intuitively, it would make sense to order the outcomes from permanent via fixed-term job to temporary job, with unemployment as an additional worst alternative. While this might suggest a logical order in the different job options ranging from a permanent job to being unemployed, the estimation results of the ordered logit model showed that this assumption is violated. The alternative, using unordered end-nodes, is the multinomial logit analysis. Given that the estimates were strongly comparable to the ones from the simple logit model, we choose to only present the estimates from the latter. The

<sup>213</sup> The logistic regression model can be expressed as follows

$$\frac{p}{1-p} = \exp\left(\sum_{i=1}^n \beta_i x_i\right)$$

where  $p$  is the probability of flexible work (fixed-term or temporary-agency) and  $x_1, \dots, x_n$  are the explanatory variables.

<sup>214</sup> The results are the same as in Bertrand-Cloodt et al. (2011), who also include a similar logistic regression analysis for all employees in the labour force.

multinomial logit analyses can be seen as robustness checks.

In addition, university graduates (WO) have higher probabilities of a fixed-term job (compared to a permanent one), which seems to follow its own time trend (see Figure 1). The reason for this is that in WO it is more common to have fixed-term contracts, like trainee posts or PhD positions. The analyses of tables 3 to 7 have also been performed including interaction effects between WO and year dummies<sup>215</sup>, which resulted in almost equal estimates.

As has been argued before, both types of flexible work may point to a disadvantageous labour market situation of graduates, since they are related to several negative job aspects and since graduates usually prefer permanent over temporary jobs. Based on simple logit analyses Table A.2 of the Annex to this paper shows that female graduates and graduates from minority groups have a larger probability of fixed-term and temporary agency jobs. This confirms the often reported result in empirical studies that the labour market position of these groups is relatively weak. Fixed-term work initially increases with age, but the age effect is parabolic. The impact of work region on flexible work shows that the labour market is loosest in the North (i.e., the most rural part), and tightest in the West (i.e., the most urbanized part) of the Netherlands. The estimated effects for the year dummies suggest that the business cycle impacts the probability of flexible work.

The effect of the educational program of recent graduates on the incidence of flexible work in Table 3 is estimated relative to the reference group of VMBO Theory (i.e. the general track within pre-vocational secondary education). The results show that educational program has a greater effect on fixed-term than on temporary agency contracts. It can be concluded that VMBO graduates in all fields of study generally have a high probability of being offered either type of contract. Graduates from HAVO/VWO frequently have a temporary agency contract. MBO graduates with a degree in health care have the lowest probability of fixed-term and temporary agency jobs, and therefore have a high level of job security, indicating a good labour market situation. This also holds at the HBO for graduates with a degree in paramedics. In general, we interpret a low probability of temporary work as an indication that graduates of a particular educational position enjoy a relatively good labour market position.

Interestingly, the results differ substantially for the probability of graduates on fixed-term and temporary agency jobs at the university level (WO). While university graduates in several fields of study have a rather low probability of accepting a temporary agency contract, the same cannot be concluded for university graduates with a fixed-term contract. At the university level, graduates of almost all fields of study are relatively likely to have a fixed-term contract. This is especially true for those obtaining a degree in medical science. Only university graduates with a degree in economics and law have a smaller probability of a fixed-term contract than the reference group. Fixed-term contracts might be highly prevalent among recent university graduates not because these graduates face a poor labour market situation, but rather because they pursue positions that are more likely to include fixed-term contracts, like trainee posts (hospitals) or PhD positions (universities)<sup>216</sup>.

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215 Table 8 only covers one year, 2008, so the interaction effects cannot be computed.

216 See also Try (2004) on this point.

**Table 3.** The impact of educational program on the probability of having a fixed-term or temporary agency job<sup>a</sup>, marginal effects after binomial logistic regressions, 1996-2008

<i>Educational program<sup>a</sup></i> (ref.: VMBO Theory)		<i>Fixed-term job<sup>c</sup></i> (ref.: permanent)		<i>Temporary agency job<sup>c</sup></i> (ref.: permanent)	
VMBO	Agriculture	-0.054	***	-0.003	
	Engineering	-0.051	***	-0.021	**
	Economics	-0.043	***	-0.002	
	Care & welfare	-0.052	***	0.001	
	Other/remaining	0.004		0.073	***
HAVO/VWO		-0.096	***	0.018	**
MBO	Agriculture	-0.145	***	-0.050	***
	Engineering	-0.133	***	-0.036	***
	Social & cultural	-0.163	***	-0.032	***
	Health care	-0.215	***	-0.065	***
	Economics	-0.115	***	-0.033	***
	Other/remaining	-0.137	***	-0.038	***
HBO	Education	-0.114	***	-0.061	***
	Social & cultural	-0.066	***	-0.030	***
	Agriculture	-0.010		0.005	
	Engineering	-0.106	***	-0.058	***
	Paramedical	-0.168	***	-0.062	***
	Economics	-0.100	***	-0.052	***
	Other/remaining	-0.055	***	-0.050	***
WO	Language & literature	0.079	***	-0.022	***
	Agriculture	0.147	***	-0.004	
	Engineering & science	0.030	**	-0.074	***
	Medical science	0.270	***	-0.077	***
	Economics & law	-0.069	***	-0.092	***
	Other/remaining	0.170	***	-0.049	***
Control variables		Yes		Yes	
Observations		N= 222,494		N= 162,821	
Log likelihood		-139,039.9		-56,124.45	
Pseudo R <sup>2</sup>		0.039		0.053	

**Notes:**

(a) The following control variables are used in the analyses: gender, ethnicity, interaction gender\*ethnicity, age, age squared, work region and survey year. See Table A.2 of the Annex for the marginal effects of the control variables.

(b) VMBO = pre-vocational secondary education; HAVO/VWO = general secondary education; MBO = secondary vocational education (excl. apprentices); HBO = higher professional education; WO = university education.

(c) The table shows the statistical significance of the marginal effects: \*\*\* = 1%; \*\* = 5%; \* = 10%.

## 6. Labour market situation, characteristics and preferences

In this section we present five different factors that are related to the graduates' education and which may explain the probability of a flexible job. We analyse to what extent the following five factors can explain differences in the incidence of flexible work among graduates entering the labour market: employment variation, unemployment rate, labour market dispersion, final exam result and willingness to take risks. These factors have been introduced and discussed in the first two sections of this paper. The first three factors are measured for each of the more than 100 educational types, which fall within 25 broader educational programs<sup>217</sup>. The last two factors represent the ability and preference of each individual graduate<sup>218</sup>. We expect that the five factors can explain differences in the probability with which graduates of different educational programs accept flexible jobs. The estimations below are based on the same explanatory model as in Section 5, but do not include the dummy variables that indicate the differences between educational programs. In this way we should be able to uncover some explanations for the differences between educational programs with regard to the incidence of flexible work.

### *Employment variation*

As has been discussed in Section 2, employers may be more inclined to enter into temporary contracts when uncertainties regarding production volume and labour demand are larger. The employment variation by educational type is dependent on the employment changes (including business cycle effects) of both industries and occupations in which the educational types are most relevant. Apart from the indicator for employment variation (EV) by educational type, we include year dummies as the usual control variables for cyclical variations.

The first column of Table 4 accounts for the impact of employment variations of secondary education (reference group), HBO and WO graduates on the probability of having a fixed-term contract (relative to a permanent contract). Generally, if graduates have a diploma in a field of study that is more heavily subject to employment variations, they are significantly more likely to have a fixed-term employment relationship. For HBO and WO graduates, the interaction effect concerning employment variations is significantly negative. The net effect is significantly negative for WO.

Similarly, in the right-hand column we present the results for the probability of a temporary agency contract (relative to a permanent contract). Graduates whose field of study is heavily subject to employment variations are more likely to have a temporary agency contract, although the effects are smaller than for fixed-term contracts. For recent graduates from HBO and WO, the interaction effect is significantly negative. However, only for WO graduates are the net effect significantly negative. From Table 4 we can conclude that employers use graduates from secondary education primarily to adapt to cyclical changes in labour demand.

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217 Educational types are thus more differentiated programs than those presented in the last section. See ROA (2009) for an overview of educational programs and types..

218 See the Annex for more details on the measurement of the five factors.

**Table 4.** The impact of employment variation on the probability of having a fixed-term or temporary agency job, graduates with permanent jobs are the reference group, marginal effects after binomial logistic regressions, 1996-2008

<i>Labour market aspect</i>	<i>Fixed-term job<sup>c</sup></i>	<i>Temporary agency job<sup>c</sup></i>
Employment variation (EV)	0.361 ***	0.203 ***
EV*HBO <sup>b</sup>	-0.331 ***	-0.204 ***
EV*WO <sup>b</sup>	-0.711 ***	-0.320 ***
Control variables	Yes	Yes
Observations	N = 188,363	N = 133,364
Log likelihood	-118,300.78	-38135.56
Pseudo R <sup>2</sup>	0.035	0.049

**Notes:**

- (a) The following control variables are used in the analyses: gender, ethnicity, interaction gender\*ethnicity, age, age<sup>2</sup>, work region, survey year and level of education.
- (b) HBO = higher professional education; WO = university education.
- (c) The table shows the statistical significance of the marginal effects: \*\*\* = 1%; \*\* = 5%; \* = 10%.

*Unemployment rate*

As has been argued before, employers will take more time to screen graduates who face a poor labour market situation. Graduates encountering excess supply in the labour market have a weaker bargaining position and will more readily accept temporary instead of permanent contracts. To account for differences in the labour market position of educational programs, we include the average unemployment rates of the educational types for the period between 2002 and 2008 as explanatory variables for the incidence of flexible work among graduates. Table 5 reports the results. According to expectations, graduates in educational programs exposed to high unemployment have a higher probability of engaging in both types of flexible work. This holds even more strongly for university graduates. University graduates thus are less likely to obtain a permanent contract when they are in a poor position in the labour market than graduates at the secondary level of education.

**Table 5.** The impact of unemployment rate on the probability of having a fixed-term or temporary agency job, graduates with permanent jobs are the reference group, marginal effects after binomial logistic regressions, 2002-2008

<i>Labour market aspect</i>	<i>Fixed-term job</i>	<i>Temporary agency job</i>
Unemployment rate (UR)	0.019 ***	0.007 ***
UR*HBO	0.012 ***	0.002
UR*WO	0.008 **	0.014 ***
Control variables	Yes	Yes
Observations	N = 91,809	N = 61,220
Log likelihood	-59,361.79	-15,725.72
Pseudo R <sup>2</sup>	0.029	0.041

**Notes:** See Table 4.

### Labour market dispersion

Apart from unemployment, high labour market dispersion is another indicator for a weak labour market position of recent graduates from particular fields of education. Table 6 shows that the effect of labour market dispersion on the share of fixed-term contracts is significantly positive. Thus, as the occupations for graduates of a particular type of education grow more dispersed on the labour market, the probability with which graduates accept fixed-term contract increases. The more dispersed occupations on the labour market for graduates of a particular type of education are, the larger their probability to have a fixed-term contract. In other words, graduates' opportunity to choose from a wider range of alternative occupations comes at the cost of job security. For HBO graduates with fixed-term contracts this effect is even stronger, while the interaction effect is significantly negative for WO graduates. For WO graduates with fixed-term contracts, the net effect is close to zero. For temporary agency contracts, we find significantly positive effects at all three levels.

**Table 6.** The impact of labour market dispersion on the probability of having a fixed-term or temporary agency job, graduates with permanent jobs are the reference group, marginal effects after binomial logistic regressions, 1996-2008

<i>Labour market aspect</i>	<i>Fixed-term job</i>	<i>Temporary agency job</i>
Labour market dispersion (LMD)	0.005 ***	0,001 ***
LMD*HBO	0.003 ***	0,002 ***
LMD*WO	-0.004 ***	0,002 ***
Control variables	Yes	Yes
Observations	N = 188,363	N = 133,364
Log likelihood	-118,877.53	-38,117.09
Pseudo R <sup>2</sup>	0.030	0.050

**Notes:** See Table 4.

### Final exam result

Generally it may be expected that graduates with lower average grades have a weaker labour market position than more able (or more ambitious) graduates, and are therefore selected more frequently for fixed-term and temporary agency jobs. In Table 7 the results are presented for recent graduates in the period from 2002 to 2008. The effects of the final exam result on the probability of a fixed-term contract reveal that only the interaction between final exam results and WO is significant. Moreover, this marginal effect is positive, indicating that university graduates with higher grades are more prone to fixed-term employment relationships. This may be caused by the aforementioned specific type of temporary contracts for these university graduates, like trainee posts (hospitals) or PhD positions (universities).

**Table 7.** The impact of final exam result on the probability of having a fixed-term or temporary agency job, graduates with permanent jobs are the reference group, marginal effects after binomial logistic regressions, 2002-2008

	<i>Fixed-term job</i>	<i>Temporary agency job</i>
Final exam result (FER)	-0.004	-0.032 ***
FER*HBO	-0.005	0.003
FER*WO	0.033 ***	0.008 **
Control variables	Yes	Yes
Observations	N = 76,291	N = 50,344
Log likelihood	-49,729.10	-13,334.68
Pseudo R <sup>2</sup>	0.027	0.038

**Notes:** See Table 4.

The final exam result has a significantly negative effect on the probability of a temporary agency contract. This means that higher grades decrease the probability of a temporary agency job. For HBO graduates, there is no additional effect of the final exam result. For WO graduates, we find that exam result has a small but significantly positive effect on the probability of being a temporary agency worker, although the net effect is still negative.

#### *Willingness to take risks*

It may be expected that recent graduates who are more willing to take risks are also more likely to have a temporary contract. In Table 8 we present the results for the impact of willingness to take risks on the probability of flexible work among graduates in 2008. We do not find the expected relationship for the probability of a fixed-term job, or for the probability of a temporary agency job. On the contrary, we find that willingness to take risks has a small negative effect (only marginally significant) on the probability of a fixed-term contract, indicating that graduates who are more prone to take risks are less likely to have a fixed-term contract relative to a permanent contract<sup>219</sup>. Willingness to take risks of graduates doesn't seem to play a significant role in the selection of the type of contract when graduates enter the labour market.

219 Using alternative risk measures (see Annex A) or including interaction terms between willingness to take risks and educational levels still does not lead to significant results for willingness to take risks. Furthermore, we perform additional regression analyses that include both final exam result and graduates' willingness to take risks, and find no significant results.

**Table 8.** The impact of willingness to take risks on the probability of having a fixed-term or temporary agency job, graduates with permanent jobs are the reference group, marginal effects after binomial logistic regressions, 2008

	<i>Fixed-term job</i>	<i>Temporary agency job</i>
Willingness to take risks (WTR)	-0.023 *	-0.005
WTR*HBO	0.018	0.006
WTR*WO	0.021	0.006
Control variables	Yes	Yes
Observations	N = 3,277	N = 2,172
Log likelihood	-2,155.35	-729.68
Pseudo R <sup>2</sup>	0.030	0.059

**Notes:** See Table 4.

## 7. Conclusions

Our analyses of the job aspects of graduates in the Netherlands 18 months after entering the labour market show that recent graduates with temporary contracts earn less, work below their educational level (i.e. are overeducated) or outside their domain more often and are more likely to regret their choice of study. Only university graduates seem to be better off with fixed-term rather than permanent contracts with respect to the job match when they enter the labour market. Business cycle fluctuations impact the share of workers in flexible jobs at virtually all levels of education. This is particularly true for recent graduates, who usually have a higher probability of accepting a temporary contract than the average employee in the labour force. This indicates that recent graduates, compared to employees, are often used as a buffer for dealing with fluctuations in the demand for personnel. However, the business cycle does not seem to have the same effect on university graduates.

In the paper we attempt to explain why the probability of temporary contracts among recent graduates differs between fields of study. We find that recent graduates in fields of study that are more heavily subject to employment variations are significantly more likely to have a fixed-term or temporary agency job. This suggests that employers are more reluctant to enter into permanent contracts when uncertainty in labour demand is higher. However, the probability with which more highly educated graduates accept fixed-term positions seems to depend less on large variations in employment. Moreover, in fields of study with structurally higher unemployment or labour market dispersion, recent graduates are more likely to have accepted temporary contracts. Employers will take more time to screen graduates in fields of study with higher unemployment rates or with a loose attachment to the specific occupations in their companies. This indicates that the labour market position of educational programs can explain the share of flexible work of recent graduates from these programs. Thus a high incidence of flexible work can be interpreted as an indicator for a weak labour market position.

We find evidence that graduates with higher average grades face a better labour market position compared to graduates with lower grades. Employers can use final exam grades as a screening instrument to reduce the risk of a bad job match. Recent graduates with high grades are therefore selected less frequently into temporary contracts. In contrast, university graduates with higher grades are more likely to have fixed-term jobs. This may be caused by the specific type of

temporary contracts that many university graduates obtain to invest in their skills. Trainee posts in hospitals or PhD positions at universities may offer a stepping stone for a career. Furthermore, we find that willingness to take risks has no positive effect on graduates' probability of entering into either fixed-term or temporary agency employment.

This paper shows that flexible jobs are generally less desirable relative to permanent jobs for graduates entering the labour market. Our main conclusion is that the selection of recent graduates into either permanent or flexible jobs occurs primarily on the demand side of the labour market (choices made by employers rather than graduates). If labour markets become tighter, employers are more willing to offer graduates permanent contracts instead of temporary contracts, and graduates in fields of study with small employment variations are more likely to receive a permanent contract when they enter the labour market. In addition, the more able graduates are, the more often they are offered permanent contracts by employers. Only at the university level are there some indications that the selection process is different. Some university graduates get fixed-term jobs that match their education better than university graduates in permanent jobs, their selection into temporary jobs seems to be less dependent on the business cycle, and university graduates with higher grades are more likely to have fixed-term jobs. Finally, there is no indication that flexible work among recent graduates is related to their willingness to take risks. Graduates with a greater dislike for unsecure jobs have a probability of accepting a temporary contract that is equal to that of graduates with a greater willingness to take risks.

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## Annex

**Table A.1.** Summary statistics of variables used in the empirical analyses

Variable	Observations	Mean	Min	Max
Permanent contract	294,428	0.600	0	1
Atypical contract	294,428	0.400	0	1
Fixed-term contract	198,983	0.324	0	1
Temporary agency contract	272,154	0.076	0	1
Outside discipline	222,494	0.285	0	1
Below educational level	222,494	0.310	0	1
Part-time	222,494	0.298	0	1
Dissatisfied in job	146,692	0.027	0	1
Poor study-job transition	124,557	0.077	0	1
Regret education	222,494	0.200	0	1
No training	80,912	0.618	0	1
Gross hourly wage	222,494	10.825	0	67
Female	222,494	0.564	0	1
Immigrant	222,494	0.064	0	1
Age	222,494	24.372	15	39
Work region				
North	222,494	0.078	0	1
East	222,494	0.173	0	1
West	222,494	0.533	0	1
South	222,494	0.216	0	1
Year dummy's				
1996	222,494	0.065	0	1
1997	222,494	0.071	0	1
1998	222,494	0.102	0	1
1999	222,494	0.088	0	1
2000	222,494	0.078	0	1
2001	222,494	0.090	0	1
2002	222,494	0.081	0	1
2003	222,494	0.061	0	1
2004	222,494	0.069	0	1
2005	222,494	0.068	0	1
2006	222,494	0.074	0	1
2007	222,494	0.081	0	1
2008	222,494	0.073	0	1
VMBO	222,494	0.032	0	1
HAVO/VWO	222,494	0.028	0	1
MBO	222,494	0.155	0	1
HBO	222,494	0.467	0	1
WO	222,494	0.282	0	1
Employment variation	222,494	1.04	0.51	1.68
Unemployment rate	222,494	3.61	0	14.14
Labour market dispersion	222,494	9.96	1.22	36.34
Final exam result	170,337	3.56	1	6
Willingness to take risks	6,367	6.197	0	10
VMBO				
Theory	222,494	0.009	0	1
Agriculture	222,494	0.009	0	1
Engineering	222,494	0.005	0	1
Economics	222,494	0.006	0	1
Care & welfare	222,494	0.004	0	1
Other/remaining	222,494	0.001	0	1
HAVO/VWO	222,494	0.027	0	1
MBO				
Agriculture	222,494	0.022	0	1
Engineering	222,494	0.043	0	1
Social & cultural	222,494	0.050	0	1
Health care	222,494	0.018	0	1
Economics	222,494	0.054	0	1
Other/remaining	222,494	0.003	0	1
HBO				
Education	222,494	0.074	0	1
Social & cultural	222,494	0.111	0	1
Agriculture	222,494	0.018	0	1
Engineering	222,494	0.082	0	1
Paramedical	222,494	0.057	0	1
Economics	222,494	0.125	0	1
Other/remaining	222,494	0.003	0	1
WO				
Language & literature	222,494	0.080	0	1
Agriculture	222,494	0.007	0	1
Engineering & science	222,494	0.061	0	1
Medical science	222,494	0.026	0	1
Economics & law	222,494	0.098	0	1
Other/remaining	222,494	0.008	0	1

**Table A.2.** Control variables of Table 3

		<i>Fixed-term job (ref.: permanent job)</i>	<i>Temporary agency job (ref.: permanent job)</i>
Gender (female=1)		0.049 ***	0.017 ***
Ethnicity (minority=1)		0.031 ***	0.054 ***
Female*minority		0.013	0.006
Age		0.053 ***	0.004
Age <sup>2</sup>		-0.001 ***	-0.000 **
Location employer (ref.: South)			
North		0.078 ***	0.064 ***
East		0.030 ***	0.006 ***
West		-0.007 ***	-0.021 ***
Year (ref.: 1996)			
1997		-0.001	-0.016 ***
1998		-0.048 ***	-0.040 ***
1999		-0.069 ***	-0.060 ***
2000		-0.079 ***	-0.065 ***
2001		-0.083 ***	-0.070 ***
2002		-0.083 ***	-0.078 ***
2003		-0.037 ***	-0.070 ***
2004		-0.010 *	-0.050 ***
2005		0.009	-0.043 ***
2006		0.022 ***	-0.044 ***
2007		0.004	-0.056 ***
2008		0.020 ***	-0.057 ***

## Overview of the measurement of explanatory factors

### *Employment variation (EV)*

Employment variation across educational types is measured in three steps. First, the extent to which employment in sectors of industry varies from year to year is estimated. Time series from 1987 to 2008 are used. Second, the sensitivity of employment in occupations to employment variations per industry is measured. Third, the variation indicators for occupations are weighted by the shares of employment of these occupations in total employment of each educational type. The average value of employment variation is normalized to 1. A higher value indicates greater variation in employment.

The indicator of employment variation (which includes cyclical sensitivity) is determined over a period of 20 years, using the Labor Force Surveys from 1987-2008. It determines the occupation and sector specific responses of employment to business cycle fluctuations, budget changes by the government, and other economic shocks. It is computed for 127 occupational groups. We use the occupation specific indicator that captures the variation by sector, weighted by the importance of the sector for the occupation and the fluctuation of the occupation within a sector. The indicator is determined as follows (Cörvers et al., 2010):

$$EV_{ot} = \sum_s \frac{E_{ost}}{E_{st}} \alpha_{ost} EV_{st}$$

$EV_{ot}$  = employment variation of occupation  $o$  at time  $t$ .

$E_{ost}$  = number of persons employed in occupation  $o$  in sector  $s$  at time  $t$ .

$E_{st}$  = number of persons employed in sector  $s$  at time  $t$ .

$\alpha_{os}$  = extent to which employment in occupation varies with changes in employment in sector  $s$ .

$EV_{st}$  = sectoral employment variation.

Where

$$EV_{st} = 100 * \sum_t \frac{|E_{st} - \bar{E}_{st}|}{E_{st}}$$

$$\bar{E}_{st} = \frac{E_{st-1} + E_{st+1}}{2}$$

$EV_{st}$  is estimated on Labour force employment data from 1987-2008.

$EV_{ot}$  is estimated on Labour Force Survey data from 1996-2008.

### *Unemployment rate (UR)*

Unemployment rate for each educational type is calculated as the percentage of unemployed people for this educational type divided by the total number of people with the respective educational background in the labour force.

### *Labour market dispersion (LMD)*

Labour market dispersion is an indicator of the spread of the types of education across occupations. The indicator is similar to the Gini–Hirshman index (Cörvers et al., 2010). If all graduates of a particular educational type work in one occupation, then the index is equal to 1. The higher the indicator, the more an educational type is dispersed over different occupations. A larger dispersion points to a weaker position in a specific occupational domain, although the labour market risk is also more spread out amongst different occupations (Borghans and Heijke, 1998).

### *Final exam result (FER)*

The final exam result of a graduate is the average grade in the exam year of secondary or tertiary education. A higher grade indicates better performance.

### *Willingness to take risks (WTR)*

Willingness to take risks is measured by asking graduates to make a global assessment, specifically: 'How willing are you to take risks, in general?' (for more information, see Dohmen et al. (2009)). Respondents rate their willingness to take risks on a scale from 0 to 10 (an eleven-point scale). In addition to the question on willingness to take risks 'in general', responses to questions on willingness to take risks concerning financial matters and career were also used to perform some robustness checks.