

# Status growth, unemployment duration and its consequences on the Job Quality

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## ***Abstract:***

This paper analyzes the determinants of unemployment duration and post unemployment wages in Great Britain for inflows into unemployment using the British Household Panel Survey. We focus on the risk of unemployment and the impact the unemployment has on the quality of the post-unemployed job and later on post-unemployment career. In other words we want to investigate over-education phenomenon (the status loss between the post-unemployed job and the last job) and whether this loss is of transitory character or whether unemployed can recap the status loss. In our empirical analysis of unemployment duration we apply recently developed methods which are based on status growth analysis and random effects models. We reason that these methods are able to capture a variety of effects which are suggested by economic theory.

Our estimation results suggest that the length of entitlement periods has only a weak effect on the conditional distribution of unemployment duration; however higher education ensures better re-integration chances into the labor market while the low qualified employees. Furthermore, re-entry status increases when 20 percent of individuals with tertiary education are still searching a job. Prolonged job search for tertiary education seems to improve re-entry status. As we argued previously, high educated persons to take the first available job might be not the best strategy.

**Keywords:** status growth analysis, over-education, unemployment duration, unemployment benefits, job quality

**J.E.L classification:** J64, J65, J68

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All remaining errors are the authors.

## **1. Introduction**

Our paper aims at analyzing the careers of job beginners and their development in the first ten years. Our main focus is the risk of unemployment and which impact unemployment has on the quality of the post-unemployed job and later on post-unemployment career. In other words we want to investigate over-education phenomenon (the status loss between the post-unemployed job and the last job) and whether this loss is of transitory character or whether unemployed can recap the status loss. Approaching the subject under discussion we especially study which education groups have better chances to gain in status, which educational groups are more at risk to become unemployed and have better chances to regain employment and whether some of educational groups perform better after unemployment phase.

Education and training are the most important investments in human capital. Many studies have shown that high school and college education positively affects individual income, even after netting out direct and indirect costs of schooling. Economists agree that better educated perform better on the labor market in terms of the starting position but also regarding their chances for upward mobility.

However the impact of unemployment on the quality of the post-unemployment and subsequent gains is less investigated. As it has been shown unemployment envelops negative consequences on the individual level not just in terms of losing income in phase of unemployment but also in re-employment phase: reemployed workers face significant and sustained income losses. Several studies investigated the effects of unemployment on the re-entry wages but also on long-term impact on the wages. The estimated loss for USA after period of unemployment amounts to 10-25 percent comparing to those without unemployment spells (Fallick, 1996). In UK the estimated losses of 6-10 percent are less pronounced than in USA and Germany displays only 3.4 percent (Burda and Mertens 2001). In contrast to popular assumptions among economists the initial wage losses are far away of being transitory. In the United Kingdom, the 6% wage penalty at the re-entry of the job amounts to 14% penalty after the first three years after leaving unemployment (Arulampalam 2001). Gregory and Jukes (2001) estimated for the country 10% loss after 12 months of unemployment. Though these results cover few countries it is obvious that unemployment phase have negative impacts not only on the initial re-entry wages but also on the subsequent gains of the wage income.

The amount of income loss in USA, UK and Germany differentiate across these countries owing to institutional factors, such as the structure of the respective benefits system, educational system, and employment protection legislation. For example in German context unemployed are entitled to relatively generous benefit payments allowing them for search for an adequate position (Gangle 2002). Vocational system and rigidity of the labor market also play an important role for the quality of the post-unemployment job. Standardized vocational system provides employers with reliable signals reducing uncertainties about the skills and abilities of employees. This enhances the chances of employees to start in an adequate position. Strict employment protection legislation also contributes to reducing over-education phenomenon. Since the dismissals are very costly it is in interest of employers to find an employee who suffice the job demands.

Starting from the British context, we will discuss in short institutional settings important for our expectations: employment system, educational system and employment benefits. Referring to institutional setting we will introduce its implication on the careers of job beginners. After a brief description of the data, the model and the methods we will present our results which will be summarized.

## 2-The British institutional context:

In contrast to most Western European countries, the U.K political system can be classified as uncoordinated market economy with decentralized and dualistic systems of industrial relationships. Uncoordinated market economies are characterized by the lack of coordination between corporative actors; such as the financial sector, intra-firm cooperation, trade unions and employers' associations. British entrepreneurs are rather oriented towards high-profits and act in short-time horizon manner. In consequence the British production regime determines the kind of employment relationships described as low-trust relationships, with easily monitored and less interchangeable workers having a limited scope for firm-internal decisions, which makes them easily substitutable (Soskice 1991, 1999). Thus, employers are reluctant to invest in a solid on-the-job training especially for lower-skilled workers preferring instead academically well-educated persons for higher positions. Employment protection legislation is the lowest in European countries enabling employers to dismiss workers easily.

While attempts aiming at the standardization and centralization of general education in Britain (Steinmann 1998/1999) have been successfully implemented, the standardization of vocational system can be considered a failure. Attempts to standardize and stratify vocational

training were difficult to materialize as collective actors in uncoordinated market economies pursue different interests (Soskice 1991). But likewise in the public, new measures were met with disapproval. In 1983, the government introduced the Youth Training Scheme (YTS)<sup>3</sup> to facilitate the entry of poorly qualified youth into the labor market. Prima facie the program worked but looking more closely it turned out that the employers used the program to identify promising workers and to hire them instead of waiting still they end their apprenticeship (Bynner 1999). Thus information about youth's abilities is more important than their training. Some efforts have also been made since 1980s to classify and standardize practical and transferable vocational skills (National Vocational Qualifications, NVQ). But again these attempts suffer under insufficient standards of curriculum settings and lack of examinational standards.

UK has got two forms of unemployment benefits (Jobseeker's Allowance JSA): contributions-based and income-based. Contribution-based Jobseeker's Allowance is conditioned on the contribution paid in one of the two complete financial years amounting at least to 25 times of Lower Earnings Limit. After expiring contribution-based benefits lasting for 6 months workers may claim for income-based Jobseeker's Allowance, which is means tested. Compared to other European countries contribution based benefits are very low: 30 percent of previous gross earning (OECD). In contrast to conservative regimes like Germany and France, strictly limited provision of unemployment benefits and low replacement rate of previous gross earning in UK expose unemployed workers under substantial economic pressure to accept the first possible job offer regardless of its quality and loss of income. Results for Germany show that non-recipients of unemployment benefits have a shorter unemployment spells, but at the costs of starting in overeducated positions (Pollmann-Schult and Büchel 2005). The effect of unemployment benefits in UK on the status of the post-employment job might be less pronounced than in Germany since the replacement rate and duration of benefits is very low (Gangle 2002).

Given these institutional settings we want to describe consequences for the early careers of young people. Unstandardized vocational training and low employment protections bestow

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<sup>3</sup> The Youth Training Scheme (YTS) was the former name in the United Kingdom of a course of on-the-job training for school leavers aged 16 and 17 who would otherwise have been unemployed. The scheme was first outlined in the 1980 White Paper *A New Training Initiative: A Program for Action*, and was brought into operation in 1983 by the government of Margaret Thatcher. Initially lasting one year, the scheme was amended in 1986 to be extendable to a second year.

the early careers in UK rather transitional character. Many job beginners start their first jobs in inadequate and precarious positions with the prospect to work their way up to better qualified jobs. Thus the educational achievements are important for upward mobility since self-binding commitments of employers towards low educated entrants is rather low and employers do not invest in low educated employees. Very low employment protection legislation enables companies to react to fluctuation of labor force demand by laying off mainly low educated employees.

Considering the status gain/losses after the unemployment spell we introduce two competing theories. According to job competition model from Thurow (1975) a longer phase of unemployment should lead to phenomenon of over-education accompanied with status loss. In contrast by pull/push concept we argue that for higher educated it might be better to stay longer in unemployment to find an appropriate job while for lower educated a prolonged unemployment phase might lead to disadvantageous re-entry. We will discuss both theories in following.

Once becoming unemployed lower qualified are also more likely to remain longer in this state than higher educated. We explain it in terms of job competition model (Thurow 1975). While employers employ preferably highest educated, employees are keen to find the most attractive job with the result that higher educated occupy most prestigious jobs and lower educated have to accept less favorable positions in the job queue. In a labor market with an ample supply of labor not all higher educated will get the best jobs suddenly competing with less educated employees. They have the best chances to get the next best jobs down the queue than less educated. As a consequence a crowding out down the queue takes place and at the end of the queue the lower educated have to compete with better educated. By means of this competition model we also explain the phenomenon of over-education at the re-entering the labor market after unemployment. Oversaturated labor market can not provide all higher educated with adequate jobs with a consequence that many of them start in positions below the status of their previous jobs. This mechanism goes down the queue till the lowest educated. Since the lowest educated already start their jobs in bad position and do not gain in status with labor market experience, there are no downward shifts comparing to the previous job. Thus there might be no effect of over-education for lower educated employees: competing with higher educated lower educated however are penalized by long-term unemployment. Indeed, studies conducted in the field of over-education research show that compared with their similarly educated counterparts, over-educated workers face not only a considerable loss in income

(Hartog, 2000), but also below-average income gains (Büchel and Mertens, 2004). In several studies it has been found that the chances of escaping over-education by securing a correctly allocated job are rather low (Büchel and Pollmann-Schult, 2002).

Economists explain income losses after the unemployment spell and in later career in terms of human capital theory. Mutatis mutandis it is also true for occupational status. Unemployment influences the devaluation of human capital in several ways. First of all, as long as employees do not start at the same working place the firm-specific capital becomes obsolete. High-productivity workers however are more likely to be recalled to their former employer and may choose to remain unemployed rather than to accept less prestigious and low-wage job (Rodriguez-Planas 2004). The main idea behind this recall model is that employers use information about original workers to employ the promising workers. Naturally not all laid-offs are also promising workers since workers with the lowest productivity are the first to be dismissed. However in times of recession accompanied by plant closing all workers are exposed to lay-offs. Those workers who know about their high productivity level of their original jobs and about possible re-employment by original employers take the risk for longer unemployment spells (Gibbons and Katz 1991). In extension to these ideas some authors argue that in general workers knowing about their high productivity take the risk of long unemployment in the hope to find an adequate position (Rodriguez-Planas 2004). Rodriguez-Planas (2004) found out that displaced through plant-closings, the post-displacement earnings of laid-off workers who find a job with a new employer *increase* with the length of their unemployment duration.

Taking into account these considerations we argue that higher educated are pulled while lower educated are pushed into the labor market. Notwithstanding the increasing searching costs, accepting the first offer might not be the optimal strategy for the high qualified workers – a better offer may arrive in a future period. Due to their higher previous income, higher return wages, and savings higher educated do not take the first available job even if their right for unemployment benefits expire: they are not pushed to accept the first job offer but opt between alternatives. In contrast, lower educated, also competing with the higher educated, accept the next offer they get. Low replacement rates of the gross of previous income (30 percent) and sanction regime for the right of unemployment benefits in UK deteriorates especially the situation of the lower qualified unemployed. Voluntarily leaving work or refusing a notified vacancy is sanctioned by temporary reduction or even stoppage of benefit

payment. The sanction may be up to 26 weeks, and the length is decided by an adjudicator. Economic pressure thus pushes lower educated unemployed to accept the first offer they get. In order to clarify the effects of each theoretical argument and basing on british data, we will try to study the entry and the growth of status within the labor market, by emphasizing on the unemployment duration and the gains/losses of different educational groups after re-entering the labor market.

This paper will be organized as follow: in section 3, we present the data, while section 4 will be devoted to empirical results. In section 5 we study the status growth after the first unemployment, and finally section 6 concludes.

### **3- The data:**

The British Household Panel Survey (BHPS) is a sample of over 5,000 private households which give rise to approximately 10,000 interviews with individuals. Interviews have been repeated annually since 1991 and for this analysis only the first 7 waves of the BHPS are used, which refer to the 1991-97 period. Using this data we construct labour market histories for sample respondents. In addition to the data collected at each wave, we also map in data relating to the labour market histories of respondents prior to 1991 (hereafter the 'historical data'). Therefore, we have the complete labour market history of respondents from the time of entry to the labour market to their position in 1997.<sup>9</sup> Unfortunately, because of the absence of important covariate information like location of residence, partner's employment history and marital history for the period up to 1991, our analysis of transition behaviour has to be limited to the wave 1 and subsequent behaviour. However, the 'historical data' are used to construct cumulative measures of labour market experience. Our sample is further restricted to men aged 16-65 and women aged 16-60 in 1991, and who provided complete information for each wave they were present in the data. Censoring therefore occurs at either wave 7 or at the point an individual drops out of the survey. Our sample consists of 4,214 men and 4,862 women.

The construction of tenure in each state and transitions between states are worth some discussion. At each wave, individuals are asked to document their labour market histories over the previous year, including the timing of spells of employment, unemployment and periods out of the labour market. Given the start dates of each spell we are able to construct a measure of the length of time each individual spends in a particular labour market state. However, where an employment spell, for instance, begins between interviews dates (September each year) we set tenure to zero but then increment it by one month until an interruption to that state occurs. Because respondents are asked to describe their occupation if

they are in employment, it is possible to disaggregate employment spells into the states  $j=1-3$ , described above. Having constructed a measure of tenure in each state, this is converted to discrete time and the unit of analysis is one month - there are 104,989 male and 221,544 female person-months in our data. A labour market transition between any two months occurs when either an individual moves from say, employment to unemployment, or there is a job change involving a change of firm, or there is an intra-firm move. Job-firm changes can be within the same labour market segment (e.g.  $j=2$  to  $k=2$ ), or involve a movement up (e.g.  $j=2$  to  $k=1$ ) or down ( $j=2$  to  $k=3$ ) the occupational hierarchy. Intra-firm job changes occur when a worker is promoted from a lower ( $j=2$ ) to a higher ( $k=1$ ) occupation within the same firm. In view of previous work, we control for this by including a dummy variable to reflect the fact that the individual has been promoted.

The covariates included in the model refer to personal and family characteristics of the individual and labour market experience, all of which affect offer and acceptance probabilities. Labour market history is a cumulative variable which measures time spent in a particular state prior to a transition. It can therefore be regarded as exogenous, but is important insofar as it enables us to pick up 'persistence' effects. Contract type and firm-level characteristics are also included in the model. Contract-type is disaggregated into several categories – season/temporary, fixed-term, part-time and self-employed. One would expect that individuals in the first two categories, in particular, will have higher transition probabilities simply because contracts will expire after a certain length of time. However, what is of interest here is the effect of contract type on the risk of moving down the occupational hierarchy and into unemployment.

Other controls included in the model are measures of local labour market conditions, such as the unemployment rate, the number of vacancies and changes in total employment by industrial sector. A set of year dummies is also included in our model to allow for any non-stationarity in transition behaviour that is not captured by either individual covariates or the variables reflecting local labour market conditions.

## 4. Empirical results

### *4.1 Entry and growth*

Even though the institutional connection between the educational system and employment system in the UK is very weak, better educated entrants start their jobs in much better



positions than lower educated persons (table 1, figure 1). Entrants holding university degree start their first job about 10 points higher on ISEI score than entrants with college or polytechnics certificates. Polytechnics and college also guarantee much higher starting position (about 10 points) than A-level with and without qualification. Though statistically significant, A-level entrants start not in much better positions than O-level entrants (difference of two points). Primary with qualification start not in better positions than primary without qualification. These results are in line with human capital theory: the longer students stay in educational system the better turnovers they achieve.

As we argued before employers do not invest in the on-the-job training for lower-skilled workers preferring instead academically well-educated persons for higher positions. Owing to weak link between educational and employment system many entrants with tertiary education start their first job in inadequate positions. However, their academic education allows starting in promising jobs with good prospects to work their way up. The results support our argumentation. Better educated, holding tertiary, A-Level and O-Level degree display higher growth rates than primary without qualification: about 6 points for tertiary degree and about 2 points for A-Level and O-Level for seven years of research window. Poorly qualified entrants holding primary degree display no growth since their entry into the labor market (figure 1).

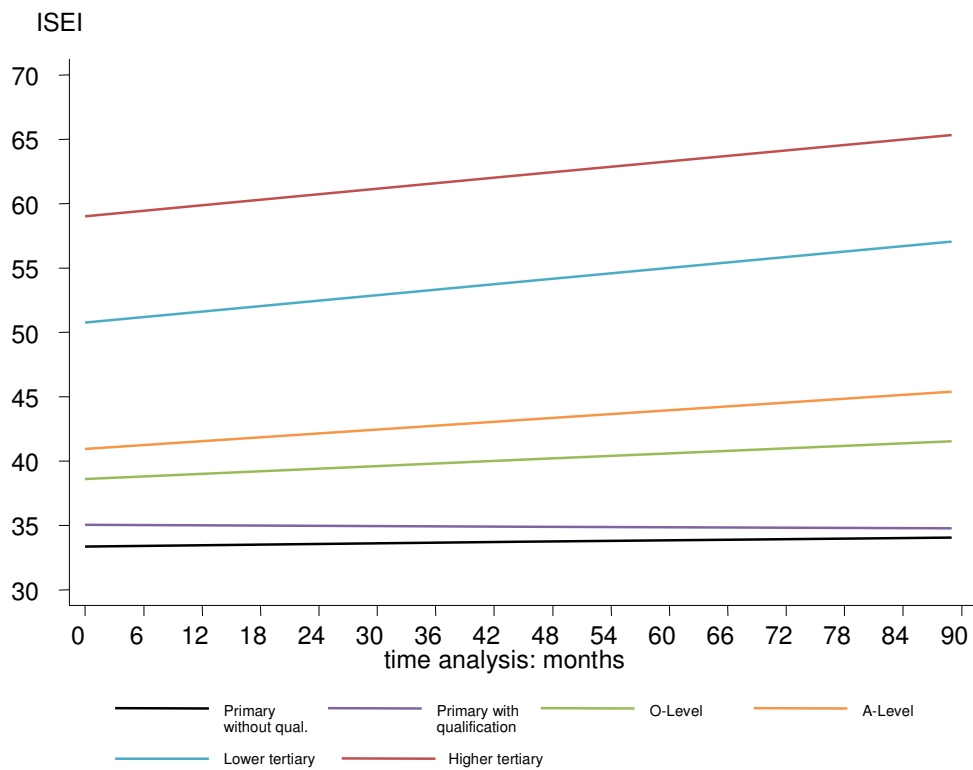
*Table 1: Random intercept and random slope models*

	Model 1		Model 2	
<i>Time</i>	0.04	***	0.01	
<i>Full (ref: part)</i>	2.00	***	2.43	***
<i>Permanent (ref: tempor.)</i>	2.25	***	2.13	***
<i>self-employed</i>	0.85	*	2.58	***
<i>Women</i>	1.53	***	1.50	**
<i>Cohorts (1980 ref.)</i>				
1985-1989	-0.57		-0.61	
1990-1995	-0.66		-2.01	*
1995-1999	-1.53	*	-3.30	***
2000-2004	-0.78		-1.18	
Panel vs. retrospective	0.26		0.62	+
<i>Primary without qualification (ref.)</i>				
Primary with qualification	1.89		2.00	
O-Level	5.12	***	5.16	***

A-Level	8.69	***	7.89	***
Lower tertiary	17.92	***	16.38	***
Higher tertiary	26.61	***	25.13	***
<i>Branch</i>				
Extractive	-4.37	***	-4.25	***
Transformative	-1.35	***	-1.19	***
Private	1.36	***	1.44	***
Unemployment (total)	-0.02	**	-0.00	
Unemployment (youths)	0.03	+	-0.00	
<i>Region</i>				
North	-0.13		0.15	
South	1.22	***	1.37	***
Scotland	-0.39		0.06	
Duration unemployment	-0.17	***	-0.20	***
Duration unempl^2	0.00	+	0.00	***
Duration of something else	-0.10	**	-0.06	
Duration som. else^2	0.00		0.00	**
Duration full education	-0.05		-0.11	**
Duration full-educ^2	0.00	***	0.00	***
End of job	-0.75	***		
<i>Time x</i>				
Women			-0.00	
Full			-0.02	**
Permanent (ref: tempor.)			-0.00	
self-employed			-0.02	+
<i>Cohorts (1980 ref.)</i>				
1985-1989			-0.00	
1990-1995			0.03	**
1995-1999			0.05	***
2000-2004			0.03	
<i>Primary without qual. (ref.)</i>				
Primary with qual.			-0.01	
O-Level			0.02	
A-Level			0.03	***
Lower tertiary			0.06	***
Higher tertiary			0.06	***
Duration unemployment			-0.00	
Duration something else			-0.00	
Duration full education			0.00	

Constant	30.13	***	30.50	***
Level 1 (s.e.)	-2.35	***	-2.37	***
Level 2 RI (s.e.)	2.37	***	2.37	***
Level 2 RS(s.e.)	-0.40	***	-0.39	***
Cov	2.04	***	2.04	***
Number of observation	16844		16844	
Number of subjects	2561		2561	
Log likelihood	-62516.64		-61913.16	
AIC	125103.28		123926.32	
BIC	125374.20		124312.90	

+ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001



#### 4.2 Leaving the first employment

The figure above suggests a gapless employment for the research window. However, many of the entrants are exposed to the risk of unemployment. The risk to end in unemployment also highly depends on the educational endowments. In order to calculate the risk for each educational group to become unemployed we run the transitional models and predicted the median life time for every educational group. The failure time ratio amounts to factor 4.7 for higher tertiary and to factor 3 for lower tertiary and A-Level compared to primary without

qualification: This means that belonging to higher tertiary or lower tertiary and A-Level delays time of failure (a month) to 370 percent and 200 percent, respectively. Other educational endowments also protect from the risks of becoming unemployed. We plotted the hazard rate and survival probability to demonstrate the distribution of unemployment risks for each educational group over the research window (figure 2).

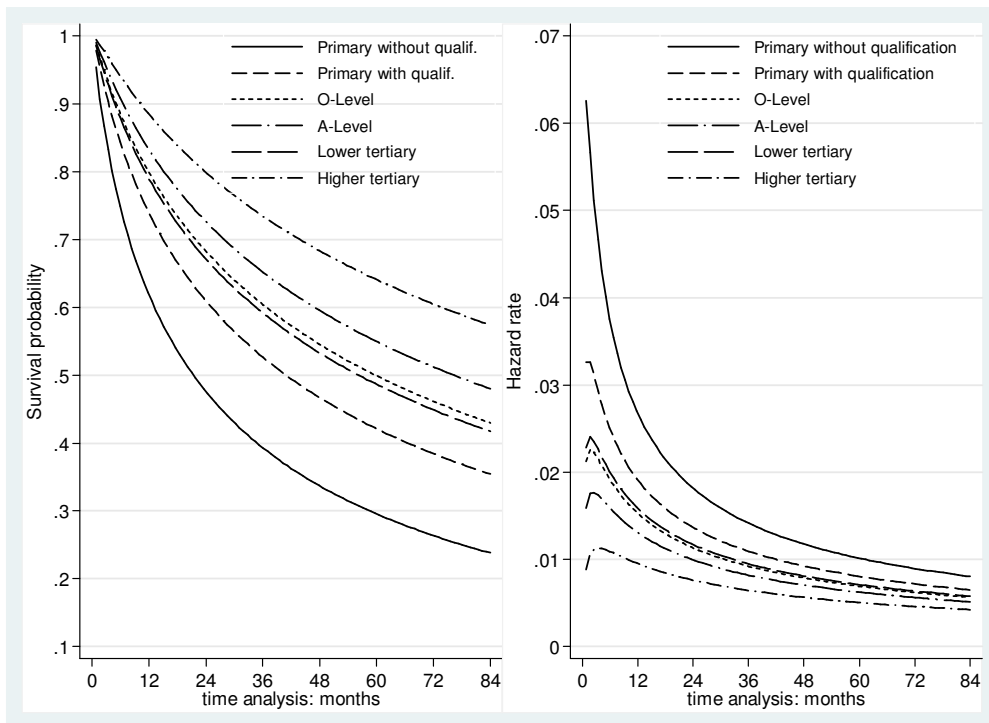
At the beginning of employment career the risk to end in unemployment is higher for all educational groups but it is especially pronounced for lower qualified entrants (graph b). While for higher tertiary the unemployment risk at the beginning is not much higher than at the end of research window primary with and without qualification are especially endangered to loose their job in the first two years: the unemployment risk for primary education is very high at the third month in employment and achieves moderate figures after two years in employment (figure 2). Other educational levels also show high risk at the beginning of employment career. We explain high unemployment risks at the beginning of employment for entrants with lower certificates in terms of signaling theory. While academic skills of higher tertiary education provide employers with reliable signals, lower certificates and certificates of vocational education fail to signal entrants' adequacy for the job. As we argued before, the government training was successful not insomuch in terms of imparting the skills but in terms of identification of promising workers. Thus employers filter promising workers on the job. Casual work also might explain high drop out rates at the beginning of employment career for employees holding primary education. It is striking that lower tertiary education performs not better than A-Level or O-Level (tests not shown). Apparently, for entrants with lower tertiary endowments is the same mechanism at work. College and polytechnics are mostly technical oriented institutions, which provide students not so much with broad academic skills but rather with narrow specialization. The lack of standardized certificates enhances the risks of mismatches. Additionally to hazard rate we also plotted survival probability of becoming unemployed. Already after two years in the first employment, about 50 percent of primary without qualification and 40 percent of primary with qualification end in unemployment (graph a). Given the very short employment periods of lower qualified workers, it is obvious that companies hardly invest in their on-the-job training. Thus, many workers in lower occupational classes are deprived of chances of getting a foothold in the labor market.

*Table 2: Transition in unemployment (piecewise constant exponential and log-normal model)*

	Model 1		Model 2	
<i>_t</i>				
tp1	3.15	***		
tp2	3.39	***		
tp3	3.92	***		
tp4	3.88	***		
tp5	4.09	***		
tp6	3.93	***		
tp7	4.15	***		
<i>Cohorts (1980 ref.)</i>				
1985-1989	-0.48	***	-0.61	***
1990-1995	-1.32	***	-1.86	***
1995-1999	-1.40	***	-1.92	***
2000-2004	-1.24	***	-1.62	***
Panel vs. retrospective	1.00	***	1.17	***
Women	0.28	***	0.31	**
Job search first job	-0.01	***	-0.01	***
Self-emp. vs. employee(f.job)	0.59	**	0.61	*
Perman. vs. temp(f.job)	0.81	***	1.15	***
Full vs. part(f.job)	0.44	***	0.64	***
<i>Primary without qual. (ref.)</i>				
Primary with qual.	0.54	**	0.76	**
O-Level	0.66	***	0.90	***
A-Level	0.82	***	1.10	***
Lower tertiary	0.79	***	1.06	***
Higher tertiary	1.26	***	1.54	***
<i>Branch</i>				
Extractive	-0.04		-0.10	
Transformative	-0.34	**	-0.52	***
Private	-0.13		-0.16	
Unemployment (total)	-0.00	+	-0.00	
Unemployment (youths)	0.01	*	0.00	

<i>Region</i>			
North	-0.01	0.06	
South	0.08	0.11	
Scotland	-0.23	-0.18	
Constant		3.31	***
Constant (sigma)		0.65	***
<hr/>			
Subjects	2919	2919	
Failure	834	834	
Log likelihood	-2547.82	-2556.70	
AIC	5161.64	5169.40	
BIC	5430.39	5386.53	

+ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001



#### *4.3 Re-entry into the labor market:*

Before analyzing whether and which groups are losing in status after the first unemployment phase transitional models for the re-entry into the job from unemployment will shed the light on the chances of different educational groups to leave unemployment. Since accelerated failure time models (AFT) give a more outstanding role to analysis time, we will use AFT models to predict the median life time of each educational group. The predicted median life time of each educational group will be used later for calculating the gains/losses of different educational groups after re-entering the labor market. Log-logistic regression model provides best fit to the data (table 3, model 2). Gamma coefficient for the shape parameter gamma is smaller than one ( $\exp(-.396) = .6733$ ), which means that log-logistic hazard increases and then decreases. To avoid the misspecification of the “true” distribution we also fitted piecewise constant exponential model. It corresponds to log-logistic hazard: the rate achieves its pick in 1-3 months and then goes down. However, comparing to piecewise exponential model Bayesian information criterion is 68 times lower which makes log-logistic distribution more appropriate. Additionally to the scale parameter in model 2 we also introduced in model 3 the shape parameter gamma for educational groups (but also for cohorts and gender) allowing the effect of covariates to vary over time.<sup>4</sup> Since model 2 is nested in model 3 we performed a likelihood-ratio test. Introduction of scale parameters in model 3 improves significantly the fit to the data.

According to model 2, higher education ensures better re-integration chances into the labor market. For better understanding of re-employment process we plotted hazard rate and survival probability (figure3). Hazard rate of tertiary education reaches its maximum at the third month in unemployment while the pick of primary education is achieved at the 6 month in unemployment. We argued that due to their higher previous income and savings higher educated are not under economical pressure to take the first available job even if their right for unemployment benefits expires. Thus, high transitional rate in the third month give a first hint that higher educated are pulled into the labor market: they start the job before expiring of employment benefits and as we will see later deciding for good jobs. In contrast, transitional rate of primary education attains its pick at the month when the allowance for unemployment

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<sup>4</sup> In terms of hazard model conceptualization we deal with not-proportional hazard model. Though log-logistic has no natural proportional hazard interpretation of the form  $h(t) = h_0(t)\exp(x\beta)$  we could derive the hazard as  $h(t|x)$ .

benefits expires: lower qualified have to accept the job offered by job agency. Thus they are pushed into the labor market by institutions and not by their decision.

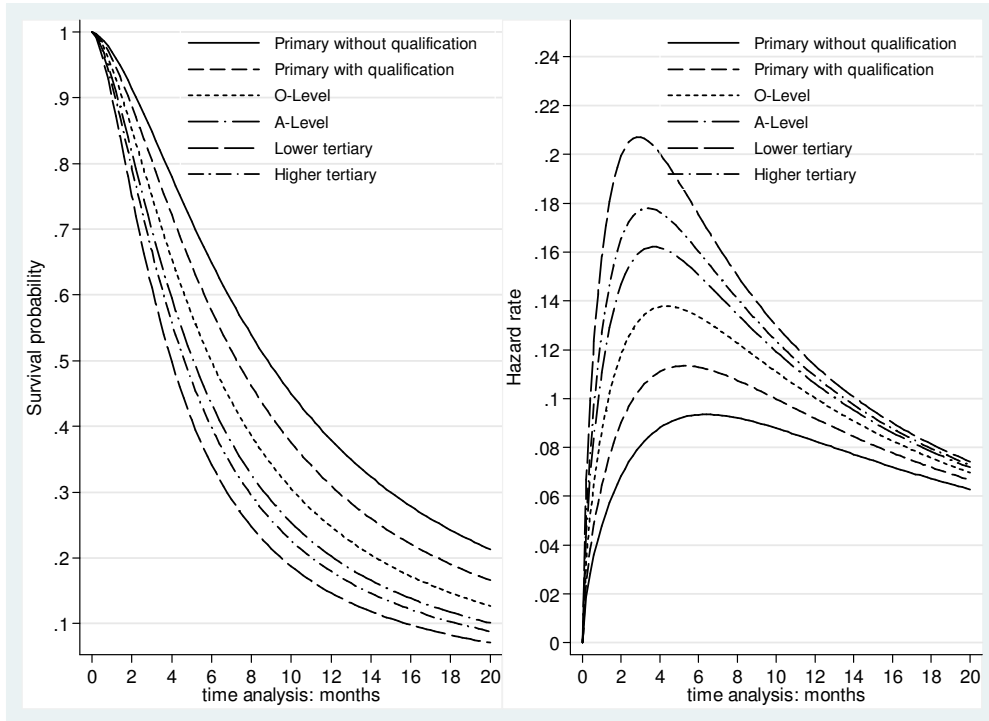
Over the time, we observe that higher education has also an accelerating effect on re-entry into the job (shape parameter model 3). Higher educated perform not only better at the beginning of the job searching process (scale parameter) but their chances of getting re-employed increase over time. Apparently, those lower qualified employees, who failed to find a job in the first months, are unemployable and face difficulties by re-entering labor market later. On the basis of the model 3 we predicted median life time for each educational group and plotted survival probability (figure 3). Median life time for higher tertiary education amounts to 4.5 months, for lower tertiary education to 3.8 months, for A-Level to 5 months, for O-level to 6 months, for primary with qualification to 6.8 months, and for primary without qualification to 8.8 months.

*Table 3: Transition in re-employment (piecewise constant exponential and log-log model)*

	Piece-wise exponential (AFT)		Log-log (AFT)		Log-log parameter $\gamma$	(shape parameter $\gamma$ )
<i>tp1</i>	2.70		***			
<i>tp2</i>	2.39		***			
<i>tp3</i>	2.63		***			
<i>tp4</i>	2.85		***			
<i>tp5</i>	3.60		***			
<i>Cohorts (1980-1984 ref.)</i>						
1985-1989	-0.03		0.05		0.01	
1990-1995	-0.28	*	-0.23		-0.29	
1995-2004	-0.66	***	-0.55	***	-0.63	
<i>Panel vs. retrospective</i>	0.36	***	0.32	*	0.31	**
<i>Women</i>	0.13	+	0.07		0.07	
<i>Perman. vs. temp(f.job)</i>	-0.20	**	-0.28	**	-0.28	***
<i>Self-emp.</i>	vs.	-0.04	0.00		0.05	
<i>employee(f.job)</i>						
<i>Full vs. part(f.job)</i>	-0.14		-0.21	+	-0.12	
<i>Mismatch</i>			0.07		0.02	
<i>Primary without qual.</i> <i>(ref.)</i>						



Primary with qual.	-0.26		-0.23		-0.32	
O-Level	-0.27	**	-0.28	**	-0.31	**
A-Level	-0.39	***	-0.43	***	-0.43	***
Lower tertiary	-0.50	**	-0.50	*	-0.54	**
Higher tertiary	-0.52	***	-0.52	**	-0.54	***
<i>Branch</i>						
Extractive	-0.18		-0.13		-0.08	
Transformative	-0.20	+	-0.14		-0.14	
Private	-0.24	*	-0.17		-0.14	
Unemployment (youths)	0.01	*	0.02	**	0.02	***
Unemployment (total)	-0.00	*	-0.01	**	-0.01	***
<i>Region</i>						
North	0.18	+	0.15		0.08	
South	0.11		0.08		0.03	
Scotland	-0.03		-0.15		-0.14	
Constant			2.27	***	2.37	***
<hr/>						
<i>Ln gamma</i>						
Women					0.10	+
<i>Primary without qual.</i>						
<i>(ref.)</i>						
Primary with qual.					-0.20	
O-Level					-0.19	**
A-Level					-0.16	*
Lower tertiary					-0.28	+
Higher tertiary					-0.32	**
Constant			-0.40	***	-0.21	***
<hr/>						
Subjects	988		988		988	
Failure	757		757		757	
Log likelihood	-1386.08		-1364.04		-1346.92	
AIC	2824.15		2776.08		2759.83	
BIC	2984.02		2903.39		2934.88	
<hr/>						
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001						



### 5- Status and growth after the first unemployment

While in the previous section, we investigated the initial status and the average growth over 10 years, now we want to analyze the impact of unemployment on the quality of the post-unemployed job and status growth for different educational groups.

In coefficient random effect we introduced the duration of unemployment of each educational group (model 1, table 4). As mentioned above, we argued that higher educated are pulled into the labor market while lower educated are pushed into the labor market. The results confirm our argumentation. The effects for tertiary education are positive and significant. It means that with every month of employment search employees with higher education start their positions 40 percent higher on the status score than lower educated group. Insofar we compared status gain between the educational groups taking primary without qualification as base line group.

*Table 4: Random intercept and random slope models*

	<b>Model 1</b>		<b>Model 2</b>
Time	0.04	***	0.02
<i>Cohorts (1980 ref.)</i>			
1985-1989	-0.35		-0.59

1990-1995	-0.73		-2.13	**
1995-1999	-1.62	*	-3.31	***
2000-2004	-0.18		-0.73	
Women	1.33	**	1.33	**
Full (ref: part)	2.00	***	2.57	***
Permanent (ref: tempor.)	2.22	***	2.02	***
Self-employed	0.85	*	1.64	*
Panel vs. retrospective	0.31		0.48	
<i>Primary without qual. (ref.)</i>				
Primary with qual.	1.03		1.37	
O-Level	5.27	***	4.97	***
A-Level	8.26	***	7.52	***
Lower tertiary	18.44	***	16.86	***
Higher tertiary	26.44	***	24.83	***
<i>Branch</i>				
Extractive	-4.31	***	-4.20	***
Transformative	-1.41	***	-1.31	***
Private	1.33	***	1.41	***
Unemployment (total)	-0.01	*	0.00	
Unemployment (youths)	0.02		-0.01	
<i>Region</i>				
North	0.25		0.49	
South	1.23	***	1.14	**
Scotland	-0.37		-0.05	
Duration full education	0.01		-0.03	
Duration unempl <sup>2</sup>	0.00	**	0.00	*
Durat. of something else	-0.08	***	-0.04	
Duration unemployment	-0.28	***	-0.12	+
Duration unempl. x Edu2	0.05		0.05	
Duration unempl. x Edu3	0.03		-0.01	
Duration unempl. x Edu4	0.02		-0.03	
Duration unempl. x Edu5	0.36	**	0.26	*
Duration unempl. x Edu6	0.36	*	0.31	+
End of job			-0.65	*
End job x Edu2			0.17	
End job x Edu3			-0.21	

End job x Edu4			-0.60	
End job x Edu5			-0.29	
End job x Edu6			-1.35	+
<i>Time x</i>				
<i>Cohorts (1980 ref.)</i>				
1985-1989			0.00	
1990-1995			0.03	***
1995-1999			0.05	***
2000-2004			0.03	
Women			-0.00	
Full (ref: part)			-0.02	**
Permanent (ref: tempor.)			0.00	
Self-employed			-0.02	*
<i>Primary without qual. (ref.)</i>				
Primary with qual.			-0.02	
O-Level			0.01	
A-Level			0.04	**
Lower tertiary			0.05	***
Higher tertiary			0.06	***
Duration unemployment			-0.00	
Durat. of something else			-0.00	
Duration full education			0.00	
Constant	29.88	***	30.80	***
Level 1 (s.e.)	-2.33	***	-2.36	***
Level 2 RI (s.e.)	2.36	***	2.35	***
Level 2 RS(s.e.)	-0.39	***	-0.39	***
Cov	2.05	***	2.05	***
Number of observation	16844		16844	
Number of subjects	2561		2561	
Log likelihood	-62874.88		-62289.19	
AIC	125823.75		124696.39	
BIC	126110.32		125152.86	

+ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

In the following, we will investigate which groups are loosing in status when re-entering employment but comparing now with their status of the end of the previous job. Thus, in

model 2 we introduced interaction effects of the last job and educational group. Additionally, we introduced several slopes. In order to compare whether re-enters loose or gain in status after unemployment Wald test statistics with linear constraints is used (Green 2003).

For primary without qualification we compare the main effects of covariates duration of unemployment and covariate of status of the last job.<sup>5</sup> For other educational attainments we calculated Wald test statistics introducing main effects and interaction effects for covariates duration of unemployment and covariate of status of the last job. In the first step we calculated Wald test statistics when persons spend only one month in unemployment. In table 5 we summarized results for Wald test statistics. None of the educational groups seems to loose in status at the re-entry into the labor market staying one month in unemployment. From the O-Level upwards re-enters even gain in status. However, we should keep in mind that lower qualified start their first job in very low positions and do not gain in status over time. Additionally, the risk of becoming unemployed is very high.

In the next step we calculated Wald test statistics for median life time – when 50 percent of each educational group left unemployment. Median life time represents a more realistic time for an average population of each educational group. The results show that the effect for O- and A-Level vanishes while the effect for tertiary education remains statistically significant and even gains in amount compared to one month in unemployment. Finally, we also calculated Wald test statistics when 20 percent of each educational group is still unemployed. Compared to one month and median life time of unemployment, re-entry status increases when 20 percent of individuals with tertiary education are still searching a job. Prolonged job search for tertiary education seems to improve re-entry status. As we argued previously, high educated persons to take the first available job might be not the best strategy. The results confirm our argumentation. In contrast prolonged phase for primary and secondary education does not improve their re-entry status. Prolonged waiting time seems even to deteriorate the re-entry status of lower qualified employees: O-Level and A-Level perform worse when staying longer than one month in unemployment. Primary education seems also to perform worse when staying longer in unemployment: the status amount turns from positive (when waiting one month) to negative sign (when waiting ‘real’ time).

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<sup>5</sup>  $E[Y_j | \text{duration unemployment} = 1] = E[Y_j | \text{last job} = 1]$ . [TO EXPLAIN](#)

**Table 5: Results for Wald test statistics**

	<i>Time in months</i>	<i>chi2(d.f. = 1)</i>	<i>p</i>	<i>amount</i>
<i>For one month</i>				
Primary with qualification	1	2.13	0.1447	0.49
Primary without qualification	1	0.42	0.5168	0.39
O-Level	1	4.53	0.0334	0.60
A-Level	1	12.2	0.0005	0.96
Lower tertiary	1	6.50	0.0108	1.3
Higher tertiary	1	12.6	0.0004	2.6
<i>Predicted median life time</i>				
Primary with qualification	8.8	0.49	0.4845	-0.57
Primary without qualification	6.8	0.02	0.8836	-0.17
O-Level	6	0.04	0.8360	-0.10
A-Level	5	0.35	0.5563	0.27
Lower tertiary	4	5.41	0.0201	1.77
Higher tertiary	4.5	9.04	0.0026	3.58
<i>20% at risk (predicted time)</i>				
Primary with qualification	23	1.52	0.2176	-2.19
Primary without qualification	17	0.14	0.7088	-0.76
O-Level	14	1.15	0.2842	-1.06
A-Level	12	0.37	0.5455	-0.53
Lower tertiary	9	2.74	0.0981	2.16
Higher tertiary	11	3.35	0.0670	4.02

## **Conclusion:**

In this paper, we analyzed the connection between the educational system and the labour market throughout the growth status. We find that better educated start in better positions and especially face a relatively less of risk of unemployment. In addition, empirical results reveal that the risk to end in unemployment highly depends on the educational level where belonging to higher tertiary or lower tertiary and A-Level delays time of failure (a month) to 370 percent and 200 percent, respectively. Our estimates show that higher education ensures better re-integration chances into the labor market while the low qualified employees, who fail to find a job in the first months, are unemployable and face several difficulties.

Finally, basing on a status growth analysis, we find that re-entry status increases when 20 percent of individuals with tertiary education are still searching a job. Prolonged job search for tertiary education seems to improve re-entry status. As we argued previously, high educated persons to take the first available job might be not the best strategy. Prolonged waiting time seems even to deteriorate the re-entry status of lower qualified employees: O-Level and A-Level perform worse when staying longer than one month in unemployment. Primary education seems also to perform worse when staying longer in unemployment.

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