

# Overeducation in the early career

## An analysis using sequence techniques

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The literature on overeducation has considerably increased over the past decades

- Overeducation = as a situation in which workers have more education than their job usually requires
  - Overeducation is found to be a recurrent problem across various countries with incidences ranging from 10% to 40%
  - The jobs of overeducated workers are found to be inferior to those of adequately educated workers with a similar educational background: they earn less, receive less training, are less satisfied, ...
- Essential to know how overeducation evolves over the career of individuals

As long as labour markets are flexible, overeducation should not be a long-term problem

→ Labour markets clear by means of wage adjustments

Possibly, overeducation is some temporary stop in the transit to the perfect job due to:

- Search costs (Search Theory (Burdett, 1978))
- Imperfect a-priori information (Matching Theory (Jovanovic, 1979))
- Lack of practical skills (Career mobility Theory (Sicherman and Galor, 1990))

In the case of labour market rigidities, individuals might stay much longer overeducated

Also the educational sector is not able to resolve the imbalances in the short run because of

- Time-consuming nature of human capital investments (Freeman, 1976)
- Distortions due to government interventions

Within such a context, employers will face a queue of job seekers and, as described by Thurow, a process of job competition might take place

→ Those with less advantageous features, both objective (school quality, study results, ...) and subjective (gender, race, ...), will face the highest risk on long-term overeducation

If individuals stay overeducated for a longer period, even a process of ‘overeducation hysteresis’ might take place due to

- Loss of motivation to pursue job search activities
- The depreciation of the obsolete skills (Taubman and Wachter, 1986)
- Stigmatizing effects (McCormick, 1990)

Several contributions have already focussed on the career dynamics of overeducated workers

- Overeducation results in more on-the-job search and shorter job spells
- The main turnover destination seems to be a new job
- Whether this job-to-job mobility results in a better match seems to differ across countries

→ Studies for the US and The Netherlands typically conclude that overeducation is rather a temporary problem for individuals

Rubb (2003), e.g., noted a yearly exit rate out of overeducation of about 20%

→ For the UK and for Germany, it is often noted that overeducation is much more a long-term problem for individuals

Dolton and Vignoles (2000), e.g., found an overeducation incidence of 30% six years after graduation compared to 36% in the first job

▪ Also the characteristics of the worker are found to be important

→ Upward mobility is lower among older overeducated workers and those with less seniority

→ For Germany, there is some evidence on a positive relation between the quality of education and the transition to a good match (see Pollman-Schult and Büchel, 2004)

Each of these studies delivers interesting insight into the temporariness of overeducation

Yet, they fail to make a more complete assessment of the full match path of individuals as they are based on

- Aggregate statistics
- Just one overeducation spell
- Comparisons of the match status between two points in time



We make use of the Flemish SONAR data to track the over-education status of individuals over time

The paper is in two ways innovative:

(1) We try to look in a more detailed way into the ‘overeducation career’ of young workers transiting from school to work

- We investigate the match status of youngsters month by month up to seven years after leaving secondary education
- The choice for secondary education school leavers is mainly pragmatic due to the age-cohort nature of our data

- Yet, this focus is also interesting its own right
  - Recent evidence has shown that technological change rather resulted in a drop of medium-skilled jobs (see, e.g., Goos and Manning, 2007)
  - Only a limited share of the young people leave school without secondary education degree due to compulsory schooling until age 18 in Flanders
  - This suggests that overeducation is particularly a problem among the medium educated. SONAR-data for first jobs show that this is indeed the case

## (2) The application of optimal matching sequence techniques within the context of overeducation

- This methodology has already been applied to detect different patterns within the transition from school to work (Scherer, 2001; McVicar and Anyadike-Danes, 2002)
- We apply the methodology to detect different entry patterns with respect to overeducation
- In a second step, we investigate the extent to which (A) the different ‘overeducation trajectories’ are related to the characteristics of the school leavers and (B) these trajectories influence mental well-being

### What is optimal matching analysis (OMA)?

- Conversely to other techniques, it enables to take all the available career information into account
- OMA has its origins in Biology where it is used to compare genetic strings
- It has been introduced in the social and cultural sciences by Abbott and his colleagues which applied it to a wide number of issues such as traditional dances and the careers of musicians (see, e.g., Abbott and Forrest, 1986; Abbott and Hrycak, 1990)
- OMA is not an analytical technique, but delivers a matrix of similarities between the different career sequences

Consider the following example:

- We have the following career sequences consisting of successive months of overeducation (O) and good matches (G): *GGGGG*, *OGGGG* and *OOOOO*
- The idea of OMA is to transform one sequence into another by means of insertions, deletions and substitutions
- By associating with each operation a certain penalty, the minimal distance between these sequences can be computed
  - For a unit cost matrix, e.g., this delivers a distance of 1 between the first two sequences and a distance of 4 between the last two sequences

In its own right, the resulting matrix of career similarities has little analytical value. Yet, the matrix can serve as input to further analysis:

- Cluster analysis can be applied to summarize the information into a number of career typologies
- In a second step, the different career typologies can then be used as dependent or independent variables (see, e.g., McVicar and Anyadike-Danes (2002))

Our analysis is based on data for two cohorts of school leavers:

- SONAR project about the transition from school to work in Flanders
- The first cohort of about 3000 randomly chosen Flemish 23 years old (born in 1976) was interviewed at the end of 1999.
- The second cohort (born in 1978) was interviewed at the end of 2001
- Follow-up surveys were conducted for both cohorts at the age of 26, with response rates of respectively 68.3% and 69.9%
- Each survey registered all working periods and occupational spells on a monthly basis, with an occupational change being defined as a change in the tasks to be executed within the same firm or in a new firm

We focus on youngsters with a lower or higher secondary education degree who left school at last at age 19

- The standard trajectory in Flanders consists of secondary education until the compulsory schooling age of 18, with three options afterward: (1) labour market entry, (2) attending an extra seventh year, and (3) tertiary education
- Further limitation to those who participated in the follow-up survey delivers a sample of 873 individuals
- For this sample, we are able to analyse the early labour market career up to seven years after leaving school



The measurement of overeducation is based on the Standard Occupational classification of the Dutch CBS

- This classification is based on five levels of complexity, which correspond to the following educational levels: (1) less than lower secondary education (<LS), (2) lower secondary education (LS), (3) higher secondary education (HS), (4) lower tertiary education (LT), and (5) higher tertiary education (HT)
- A comparison of this level of complexity with the level of education of the school leaver (i.e. LS or HS) delivers a measure for overeducation

Except for the usual missings, the occupational codes are available for the following observations:

- 1976 cohort: the first and the last occupation in the survey at age 23, and all occupations in the survey at age 26
- 1978 cohort: all occupations in both surveys

In that way, we can reconstruct the full match path of 640 of the 873 individuals in the sample

→ All analyses are executed both on the basis of the restricted sample and on the basis of the full sample

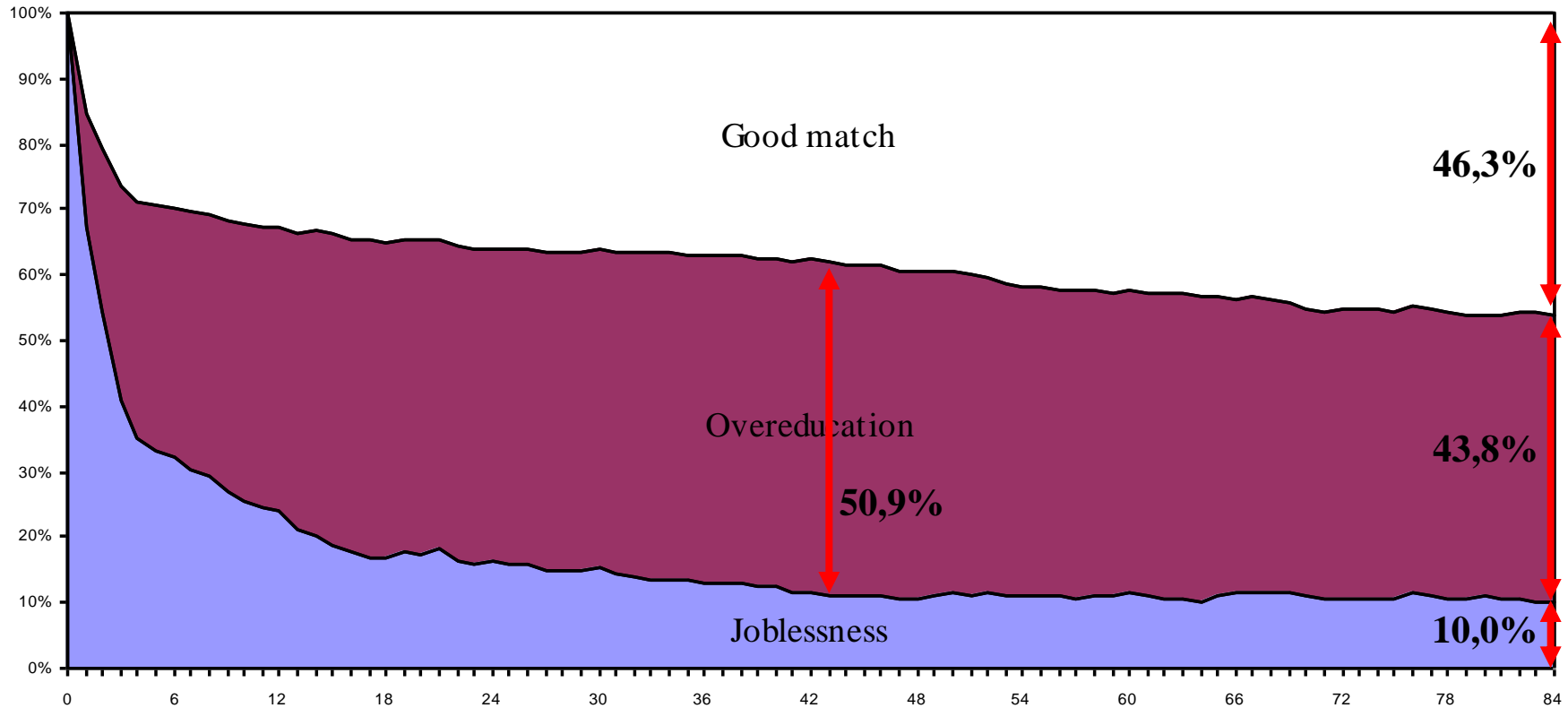
So, the following four states are distinguished:

- Joblessness (J)
- Overeducation (O)
- Good match (G)
- (Unknown match (U))

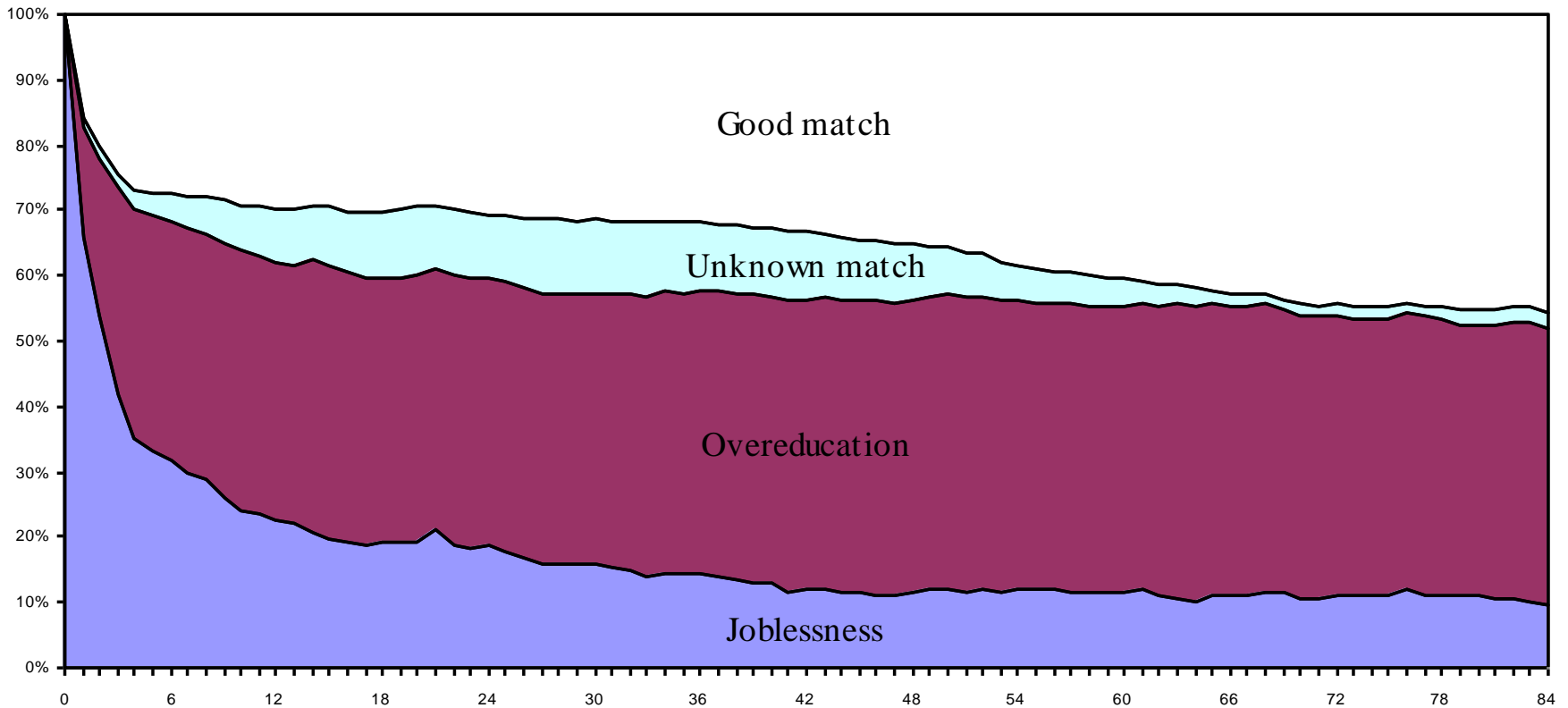
Those who are found to work in jobs with requirements that exceed their level of education are supposed to have a ‘good match’

The analysed sequences consist of 84 characters, representing the first 84 months of the early labour market career (e.g. *JJOOOOGGG...*)

(A) Sample 'Unknown match' excluded



(B) Sample 'Unknown match' included



## Most frequent sequence patterns

	(A) 'Unknown match' excluded		(B) 'Unknown match' included	
	N	%	N	%
JO	106	16.6%	106	12.1%
JG	87	13.6%	87	10.0%
G	60	9.4%	60	6.9%
O	57	8.9%	57	6.5%
JOG	37	5.8%	37	4.2%
JOJO	32	5.0%	32	3.7%
OG	21	3.3%	21	2.4%
JOJ	19	3.0%	19	2.2%
JOJOJO	14	2.2%	14	1.6%
JGO	13	2.0%	13	1.5%
JGJG	13	2.0%	13	1.5%
J	11	1.7%	11	1.3%
OUG	-	-	11	1.3%
OJO	10	1.6%	10	1.1%
JOJG	10	1.6%	10	1.1%
Other sequence patterns	150	23.4%	372	42.6%

## OMA and cluster analysis specifications

The following cost matrix is defined:

	indel	Joblessness	Overeducation	Good match	Unknown match
indel	0	1	1	1	1
Joblessness	1	0	1	1	1
Overeducation	1	1	0	1	0
Good match	1	1	1	0	0
Unknown match	1	1	0	0	0

The distances are clustered using centroid linkage with the squared Euclidian distance metric

# IV. What are the different match paths?

## OMA and cluster results restricted sample

Clusters			Distribution	Average duration time			Average number of periods	Most frequent sequence patterns <sup>(S)</sup>		
2 clusters	3 clusters	7 clusters		Joblessness (J)	Overeducation (O)	Good match (G)		1	2	3
Good match	Good match	Good match career	0.331	0.050	0.025	0.924	2.6	JG	G	JGJG
		Slow transition to good match	0.052	0.473	0.048	0.479	5.1	(JG)	(JGJG)	(JGJGJG)
		Downward career	0.025	0.124	0.319	0.558	4.8	(JGO)	(GOJ)	(GJGO)
Under-utilization	Over-education	Overeducation career	0.338	0.055	0.938	0.007	2.4	JO	O	JOJO
		Slow transition to overeducation	0.114	0.366	0.563	0.072	4.8	JO	JOJO	(JOJOJO)
		Upward career	0.080	0.037	0.635	0.328	3.2	JOG	OG	(OJG)
	Joblessness	Joblessness career	0.061	0.871	0.099	0.030	3.4	J	(JOJ)	(JO)



# IV. What are the different match paths? OMA and cluster results full sample

Clusters			Distribution	Average duration time				Average number of periods	Most frequent sequence patterns <sup>(S)</sup>		
2 clusters	3 clusters	9 clusters		Joblessness (J)	Overeducation (O)	Good match (G)	Unknown match (U)		1	2	3
Good match	Good match <b>43%</b>	Good match career	0.299	0.050	0.028	0.881	0.040	3.1	JG	G	(JGJG)
		Slow transition to good match	0.070	0.420	0.039	0.470	0.071	6.1	JG	(JGJG)	(JGJGJG)
		Downward career	0.024	0.203	0.276	0.490	0.031	5.8	(JGO)	(GOJ)	(GJGO)
		Good match / unknown match	0.033	0.112	0.100	0.240	0.548	6.4	(JOUG)	(JGU)	(OUG)
Under-utilization	Over-education <b>52%</b>	Overeducation career	0.267	0.053	0.936	0.006	0.005	2.6	JO	O	JOJO
		Slow transition to overeducation	0.118	0.388	0.540	0.030	0.042	6.5	JO	JOJO	(JOJOJO)
		Upward career	0.071	0.045	0.602	0.327	0.026	3.6	JOG	OG	(OJG)
		Overeducation / unknown match	0.069	0.088	0.521	0.102	0.290	5.5	(OUO)	(GUO)	(JGUO)
Joblessness	Joblessness career	0.049	0.870	0.092	0.033	0.005	3.4	J	(JOJ)	(JO)	

## Multinomial logit estimates: Main findings of the 3 cluster outcome (Good match – Overeducation – Joblessness)

- **Women** face a 12 to 17 pp lower chance to enter the ‘good match’ group. This is mirrored in both a higher probability to enter the ‘overeducation’ and the ‘joblessness’ group
- **Ethnicity** mainly influences employment probabilities: school leavers with a non-Western background have a 6 to 7 pp higher risk to stay jobless for almost the entire seven years
- The most extensive is the effect of **the educational level**: those with a higher secondary degree have a substantially higher probability to be in the ‘overeducation’ group

- The study results are found to be important as well: those who were among the 25% best of their class have a 12 to 15 pp lower risk to enter an early career that is dominated by overeducation.
- Another significant factor is the search behaviour of the school leaver: starting the job search in time might reduce the risk on an overeducation trajectory with 8 to 11 pp.
- Also the urban context is found to be of major importance: school leavers living in a small city have a 13 to 16 pp higher chance on a ‘good match’ trajectory compared to those from non-urban municipalities.

Other investigated factors, such as social background, sort more moderate effects

- Youngsters with an educated parent have a small but statistically significant lower probability to enter a ‘joblessness’ career

Still other variables deliver outcomes that are not robust across the two analysed samples

- Evidence on the relevance of the educational track, e.g., is mainly found on the basis of the full sample. These results indicate that the technical track delivers a better preparation for the labour market compared to the vocational track

- The analysis of the full sample also finds that a seventh year degree enhances the probability on a good match path with 11 pp. Oppositely, there risks on an ‘overeducation’ and a ‘joblessness’ path are respectively 9 and 2 pp
- Some of the variables equally deliver only significant results on the basis of the restricted sample. We note a 13 pp lower risk on overeducation among individuals that started in tertiary education if this sample is considered.
- Also the region of residence is found to be a significant factor only on the basis of this sample

**7 or 9 cluster outcome (table 7 and 8)**

Some further interesting insights are delivered by the results on the sub-clusters:

- They further underline the weak labour market position of women.
  - Above all, they have a lower chance on getting into the preferable ‘good match career’.
  - Oppositely, they mainly face a high risk on the least preferable ‘slow transition to overeducation’ and ‘joblessness’ trajectories
  - Finally, they are found to have a higher risk on a ‘Downward mobility’ trajectory

**7 or 9 cluster outcome (table 7 and 8)**

- Also noteworthy are the results with respect to the educational track
  - They show that school leavers from the **technical track** have better labour market opportunities than those from the vocational track. Apart from a 1 to 2 pp lower risk on a joblessness career, they also face a 6 to 7 pp lower risk on entering a ‘slow transition to overeducation’ career.
  - Also school leavers from the **general track** seem to be better off: compared to those from vocational education, they face a considerably lower risk on overeducation persistence

**7 or 9 cluster outcome (table 7 and 8)**

- Finally, the analysis of the full sample suggest that intensive job search at labour market entry might have long lasting effects. Starting the search prior to leaving school would increase the likelihood on a good match career with 8 pp and would lead to a parallel drop in the risk on a ‘slow transition to overeducation’ career



- Standard indicators for subjective well-being such as happiness or life satisfaction are not available
- We make use of questions that were developed to measure feelings of social demotion:
- “Do you totally disagree, rather disagree, rather agree or totally agree:
  - (1) There are a lot of people that always will have a rough time and I am one of them
  - (2) In fact, I lost all the hope on a good job
  - (3) People like me and my parent don't have to expect a good future
  - (4) My parents have to work hard and are not rewarded for that. This is likely to be the case for me too

(5) Whichever way you look at it, we are the people that always have to do the hard and dirty work

(6) We lack the contacts and networks and so we will always have to drudge

(7) My parents had a rough time, I will have a rough time and also my children probably will have a rough time

(8) A good career is not for people like us

- We estimate ordered logit models with career trajectory dummies as explanatory variables (reference = “good match career”)
- The explanatory variables in the previous section are included as control variables

### Results for the 3-cluster outcome

- The coefficient of the joblessness dummy is generally found to be significantly positive
- Those with an overeducation trajectory do not differ from those with a good match trajectory on any of the items

### Results for the 7- or 9-cluster outcomes

- We note some evidence that a downward career and a slow transition to overeducation pattern are harmful for mental well-being
- We have no indications that those with a complete overeducation trajectory differ in their mental well-being from those with a full ‘good match’ pattern

The central aim was to deliver a detailed portrait of the overeducation path of young people throughout their early career.

The main conclusion to be made is that overeducation can be a years-long trouble for youngsters:

- About 30% of the school leavers were found to stay overeducated for nearly the full first seven years after labour market entry
- Another 20% combined overeducation with long periods of joblessness or even stayed out of work for almost the complete observation period
- Risk factors to enter some of these disadvantageous trajectories are, amongst others, being female, having a non-Western background, ending secondary education with below average study results, having a vocational degree or living in a rural municipality

- Overeducation is found to be associated with low psychological well-being if it is preceded by a ‘good match’ period or longer periods of joblessness.

Nevertheless, overeducation need not necessarily be a problem for the full career:

- This is illustrated by the 8% school leavers who were overeducated for a relatively long period prior to find ultimately an adequate position
  - Moreover, as the declining trend in the incidence of overeducation over the career suggests, this number is likely to grow further after our observation period
- To make a full assessment on the persistence of overeducation, further research should go even beyond the first seven years of the career

Finally, also research for other educational levels and countries, and on the basis of more subjective approaches to measure overeducation would be useful