

DEPARTMENT OF ECONOMICS

**Education as investment, consumption or adapting to social norm:
Implications for educational mismatch among graduates**

Sana Sellami, Dieter Verhaest, Walter Nonneman & Walter Van Trier

UNIVERSITY OF ANTWERP
Faculty of Applied Economics



City Campus
Prinsstraat 13, B.226
B-2000 Antwerp
Tel. +32 (0)3 265 40 32
Fax +32 (0)3 265 47 99
www.uantwerpen.be

FACULTY OF APPLIED ECONOMICS

DEPARTMENT OF ECONOMICS

Education as investment, consumption or adapting to social norm: Implications for educational mismatch among graduates

Sana Sellami, Dieter Verhaest, Walter Nonneman & Walter Van Trier

RESEARCH PAPER 2015-014
MAY 2015

University of Antwerp, City Campus, Prinsstraat 13, B-2000 Antwerp, Belgium
Research Administration – room B.226
phone: (32) 3 265 40 32
fax: (32) 3 265 47 99
e-mail: joeri.nys@uantwerpen.be

**The research papers from the Faculty of Applied Economics
are also available at www.repec.org
(Research Papers in Economics - RePEc)**

D/2015/1169/014

EDUCATION AS INVESTMENT, CONSUMPTION OR ADAPTING TO SOCIAL NORM: IMPLICATIONS FOR EDUCATIONAL MISMATCH AMONG GRADUATES¹

Sana Sellami², Dieter Verhaest³, Walter Nonneman⁴, Walter Van Trier⁵

ABSTRACT

We investigate the role of four motives to participate in higher education – investment, educational consumption, student life consumption and social pressure – on field of study choices and academic performance and on three labour market outcomes - overeducation, wages and job satisfaction. We use data on three cohorts of about 3000 Flemish individuals documenting the transition from education to work. Principal components are used to identify the four study motives. Effects of study motives on field of study choices and academic performance are estimated using logit respectively Poisson regression. Effects on overeducation are measured by tobit regression and on wages and job satisfaction using standard and IV panel estimates. Key findings are that individuals motivated by education consumption are less likely to be overeducated but face a stronger job satisfaction penalty to overeducation than other workers. Our results also suggest that individuals who continue in education because of student life consumption have a higher likelihood of overeducation.

Keywords: educational motives, higher education, graduates, wages, job satisfaction, underemployment, over-qualification

¹ We thank Piet Coppieters, Karel Neels, Seamus McGuinness, Rolf van der Velden, and the participants of the workshop of the European Network on Transitions in Youth (Barcelona, 2014) for their comments and suggestions on an earlier version of this paper. This research benefited from financial support of the Flemish Government in the framework of the SONAR research program and the Policy Research Centre for Study and School Careers (SSL).

² Antwerp University, Faculty of Applied Economics, Department of General Economics; KU Leuven, Centre for Business Management Research (CBMR); sana.sellami@kuleuven.be

³ KU Leuven, Faculty of Economics and Business, campus Brussels, Centre for Business Management Research (CBMR) and Leuven Economics of Education Research (LEER); Ghent University, SHERPPA; dieter.verhaest@kuleuven.be

⁴ Antwerp University, Faculty of Applied Economics, Department of General Economics; walter.nonneman@ua.ac.be

⁵ Ghent University, SHERPPA; walter.vantrier@ugent.be

INTRODUCTION

Over the past decades, an increasing number of young people enrolled in colleges and universities, resulting in a rising number of labour market entrants holding a higher education qualification (see Barro & Lee, 2013). A widespread interpretation of this development relies on standard human capital (Becker, 1964; Mincer, 1974) or signalling (cf. Arrow, 1973; Spence, 1973) models. According to both models, the primary motivation to attend college is to improve future labour market chances. The use of these models is substantiated by the well-established fact that better educated individuals earn higher wages and have a lower probability to be unemployed than lower educated individuals.

However, recently some concerns have been raised about potential overinvestment in higher education. These concerns stem, amongst others, from studies showing that a significant number of individuals are employed in jobs below their level of education (Groot & Maassen van den Brink, 2000; McGuinness, 2006). This is a reason for concern since we know from the research literature that overeducated individuals receive lower earnings (Hartog, 2000; Rubb, 2003) and are less satisfied with their jobs (Tsang, 1987; Allen & van der Velden, 2001) than adequately educated individuals with similar levels of education. Another concern relates to the fact that rising participation rates in higher education as well as the labour market outcomes are not evenly spread amongst the different fields of education. Indeed, there are significant differences in risk of overeducation across graduates from different higher educational types and disciplines. College graduates who major in Engineering and Health tend to have lower probability of overeducation than graduates from majors such as Humanities, Arts and Theology (Frenette, 2004; Verhaest *et al*, 2015). Research also shows that graduates of different fields have different wages, individuals from majors in Business and Engineering have higher wages than graduates in major as Humanities and Arts (a.o. Hilmer & Hilmer, 2012).

Given that certain fields of study and qualification levels consistently yield a higher likelihood of overeducation, one may wonder why students keep on choosing these programs. A possible explanation rests on the classic distinction between education conceived of as either an investment or a consumption good (cf. Schaafsma, 1979; Kodde & Ritzen, 1984; Alstadsæter, 2011). Indeed, students may get immediate satisfaction from participating in higher education. They may enjoy acquiring knowledge; they may attend college because they dislike working or they may opt for the joys of student life. In each of these cases, the investment effect of participating in higher education on later labour market outcomes would be dominated or blurred, if not annihilated by the satisfaction from consuming education itself. Another possible explanation for why individuals participate in higher education and choose a particular educational field points at the importance of social norms guiding their choices. For many adolescents, going to college or choosing a particular field of study may be self-evident given the social context in which they grow up. While the role of the social norms has long been recognised within sociology (Coleman, 1961), its role has only recently attracted considerable attention

by economists. According to Akerlof and Kranton (2000; 2002), one's utility depends on the extent to which one's choices enhance her self-image, which in turn depends on the social environment.

Several studies have already demonstrated that a large part of the return to college is indeed related to the consumption value of education (see, e.g., Carneiro *et al.*, 2003; Arcidiacono, 2004). A number of recent papers have also demonstrated the role of social norms for educational and occupational choices (e.g. Falck *et al.*, 2012; Favara, 2012). However, to the best of our knowledge, no studies have yet looked at the relation between consumption or social norms as motives for participation in higher education and labour market outcomes such as overeducation. The specific reasons why and how young people participate in higher education may affect the likelihood to be overeducated through several channels. Firstly, to the extent that students are driven by other than investments motives, it may be rational to choose for programs that increase the risk of overeducation. Secondly, these motives may affect one's study effort and academic achievement in terms of grades, a factor which has been shown to influence the likelihood to become overeducated (Battu *et al.*, 1999; Büchel & Pollmann-Schult, 2004; Verhaest & Omeij, 2010). Finally, different motives are likely to be associated with different labour market aspirations, resulting in differences in occupational choices and, hence, differences in one's willingness to accept job offers (not) matching one's educational background. Moreover, apart from affecting one's likelihood to be overeducated, these differences in aspirations may also affect the impact that overeducation has on monetary and non-monetary outcomes.

In this paper, we explore, for a sample of graduates to what extent the likelihood to be overeducated indeed differs depending on the motive (investment, consumption, social norms) for participation in higher education. We also investigate whether overeducation has different consequences in terms of wages and job satisfaction depending on these motives. For this analysis, we rely on representative data regarding the transition from higher education to work in Flanders (Belgium). The data deliver several measures on overeducation, which allow to investigate the robustness of our outcomes for alternative measures and to account for measurement error. Moreover, panel-data techniques are applied to account for unobserved heterogeneity.

The remainder of the paper is structured as follows. In the next section, we explain our theoretical framework and formulate our hypotheses. Thereafter, we will present the data and the used methodology. Further, we give an overview of our results. We end with a discussion and some general conclusions.

THEORETICAL FRAMEWORK AND HYPOTHESES

There exists a vast literature on the factors influencing the choices of young people when entering tertiary education. In this paper we intend to add to this literature by investigating whether young people's educational motives account for the match between their education and labour market needs. The background of this question is the widely documented fact that young people keep choosing educational tracks with a high(er) probability of directing them to jobs for which they are overeducated. To study this question, we relate various

motives for participating in higher education (investment, educational consumption, student life consumption and adapting to social norms) to labour market outcomes.

FIGURE 1 CONCEPTUAL MODEL

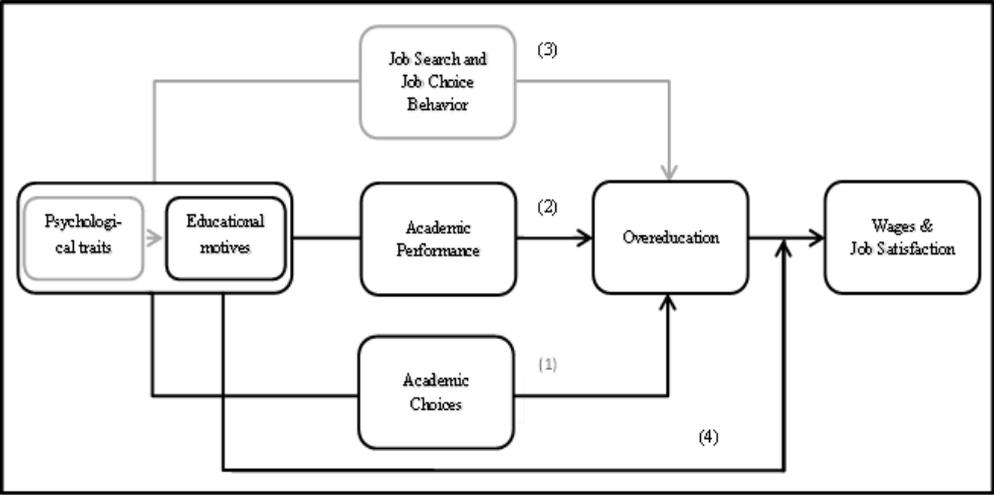


Figure 1 displays our conceptual framework, with the black boxes and arrows representing relationships that are directly tested in this paper, whereas the grey boxes and arrows represent variables and relationships being tested only indirectly. We expect the educational motives to affect the likelihood to be overeducated through three main channels. Firstly, they are likely to affect the academic choices in terms of the level of the degree and the field of study (Figure 1, Arrow 1). Secondly, we expect an impact on academic performance, for instance reflected in the marks with which the individual graduates or the degree of grade retention (Figure 1, Arrow 2). And thirdly, we expect the educational motives to be related to the job search and job choice behaviour of the graduate (Figure 1, Arrow 3). Finally, we also assume the educational motives to affect the impact of overeducation on wages and job satisfaction (Figure 1, Arrow 4). Below, we discuss each of the elements of our model in more detail and formulate our hypotheses.

Educational motives

First, we conceive of educational motives as driven by general preferences and interests. Individuals differ in their preferences and interest. Some individuals are likely to engage in activities because of materialistic desires, others rather participate because they feel pressured by their social context or because they are just interested in particular activities. These different attitudes can be sources of motivations to attend college. Given the research issue in this paper, we use an economic approach and distinguish three different educational motives: investment, consumption and social norms. Within consumption motives, we distinguish between two kinds

of motives: (i) educational consumption and (ii) student life consumption⁶. Basically, we thus expect educational motives to be driven by these general preferences and interests. Given that these factors are not measured in our dataset, we do not formulate specific hypotheses regarding this relationship.

In the economics literature, the dominant framework explaining the decision of students to participate in education is the human capital theory, initiated by economists such as Becker (1964) and Mincer (1975). According to this theory, education enhances future productivity and participation in education can be conceived of as an investment decision. If the discounted future benefits of participating in higher education outweigh discounted costs, individuals will decide to participate in higher education. Many studies support the idea that educational decisions depend upon costs and future monetary benefits. Freeman (1971) and Berger (1988) found that, to the extent that they are aware of earnings differentials, students will choose the type of education offering the greatest total expected utility. Also Montmarquette *et al* (2002) found that expected earnings are essential for the choice of a college major. Further, Duchesne and Nonneman (1998) found a positive effect of the wage differentials between college and non-college occupations in the local labour markets on the student's probability of attending higher education. Fuller *et al* (1982) showed that investment in education is likely to be higher when the costs of education are lower. A rival explanation for the choosing to participate in higher education is the screening or signalling theory (cf. Arrow, 1973; Spence, 1973). According to this theory, educational attainment is (only) a mere signal of potential productivity. The costs of participating in higher education are expected to depend upon innate ability, which in turn influences productivity. So, productivity differences already exist before education takes place, but employers use education as a filter for ability. Consequently, despite their different view of the role of education, also the signaling framework assumes that individuals participate in higher education in order to improve future labour market chances. Rather than being an investment in skills, education is an investment in a signal.

Yet, not only financial incentives affect the decision to attend higher education. Students may decide to continue education because they like the courses, they enjoy learning new things, they like to participate in student life or would like to have an enjoyable job in the future (Alstadsæter *et al*, 2008; Alstadsæter, 2011). In short, these individuals enjoy other types of returns than the pecuniary returns and may well choose fields of study with lower wage returns, such as Humanities, Arts or Linguistics. If so, attending college would be affected by consumption motives. The consumption value of education has attracted increased attention during the last few decades (see Schaafsma, 1976; Kodde & Ritzen, 1988; Gullason, 1989; Duchesne & Nonneman, 1998; Alstadsæter, 2011). Kodde and Ritzen (1988) were amongst the first to extend the human capital framework

⁶ Also in the psychological literature, numerous studies have focused on the associations between individual motivations and a broad range of behaviors and of social and economic outcomes. Central within this literature is the distinction between controlled and autonomous motivation (Ryan and Deci, 2000; Vansteenkiste *et al*, 2006). Controlled motivation refers to doing something because of pressure by an external or internal force. Autonomous motivation refers to doing something because it is inherently interesting or because it is personally important (Vansteenkiste *et al*, 2006). Within this categorization, investment motives and social norms are thus conceived as controlled motivation, while consumption motives are rather conceived of autonomous motivation.

with consumption motives. According to their model, individuals choose the optimal bundle of education, current and future consumption, given their time and budget constraints. Empirical evidence supports the conjecture that the consumption motive influences the decision to attend college. Arcidiacono (2004) found that the choice of major depends on preferences for studying particular majors in college. He also concludes that individuals choose different levels of education and types of education because of different abilities. Also Carneiro *et al* (2003) maintain that a large part of the return to college is non-pecuniary. In our analysis, we distinguish between two consumption motives: (i) educational consumption and (ii) student life consumption. Educational consumption is defined as participating in (higher) education because acquiring knowledge and learning new things delivers direct utility or because one enjoys studying. Student-life consumption refers to individuals participating in education because they dislike working, because it delivers them the opportunity to participate in student life or because it delivers them the opportunity to share their time with their friends.

From a more sociological point of view, the social context could also determine the choice of attending college. Coleman (1961; 1988) was one of the first to use the term ‘social capital’ and to consider the social context as a potential useful resource for rational actors to achieve their goals. In his approach, social capital is embedded in social relations and structures. To succeed individuals have to understand and adopt the norms and standards from the social category where they belong to. Coleman (1988) also argues that effective communication and enforcement of social norms can be promoted by network closure. For example, when parents have such a network, they are better able to communicate the common norms and values, and through sanctions and rewards correct the behavior of their children. He claims that network closure influences the academic performance and the behavior of students. Also in the economics literature, there is a growing attention for the role of the social context to explain students’ behavior. Akerlof and Kranton (2000; 2002) claim that an individual’s identity is associated with the social environment and that individuals gain utility if their behavior matches the ideal of the social category to which they belong. They claim that these norms and ideal behavior attached to each social category are socially determined. If individuals do not fit the ideal characteristics and ideal behavior of their social category, this causes a loss of utility.

Academic choices

We assume that each of the aforementioned educational motives influences the choice of degree and college major. Several studies have shown that, to the extent that students are aware of and respond to earnings differentials, they will choose the type of education that has significant monetary returns. Hilmer and Hilmer (2012), for instance, found that students citing the importance of financial well-being are relatively more likely to choose for a major in Business and Engineering and that these individuals have higher wages. Arcidiacono (2004) reports similar results. As already mentioned, overeducated individuals are found to realize a lower return to education. Hence, we can expect that individuals participating in higher education motivated by investment will be less likely to choose for programs that are associated with high risks of being overeducated.

However, as already mentioned, not all college majors may be chosen because of pecuniary returns. Alstadsæter *et al.* (2008) mention that many individuals choose educational tracks leading to jobs in sectors with relatively low wages and higher unemployment, such as major in Humanities, Arts or Theology. These college majors are also consistently found to have a higher likelihood of overeducation (see McGuinness, 2003; Frenette, 2004; Verhaest *et al.*, 2015). Apparently, these programs have, on average, a relatively high consumption value, resulting in higher participation rates and lower wages than would be the case if decisions were solely based on future labour market outcomes. This higher consumption value may be related to both educational and student life consumption. The topics of these majors may, on average, be assessed to be relatively more exiting and thus may attract students who participate in higher education because of educational consumptions. These topics may also require less effort, thus attracting students who attend college primarily because of the associated student life. To conclude, we expect students who participate in higher education because of educational or student life consumption to be more likely to choose for programs that are associated with a high risk of being overeducated.

Hypothesis 1: Individuals participating in higher education motivated by educational or student life consumption (investment) are more (less) likely to choose for programs associated with high (low) risk of overeducation.

With respect to social norms, only a few studies investigate whether identity affects educational choices. In line with the claims of Akerlof and Kranton (2000, 2002), Favara (2012) shows that boys and girls choose differently and according to their own gender stereotype. Based on this evidence, we may expect that individuals with highly educated parents try to achieve a level of education as high as possible. Regarding the choice of field of study, they may choose the field of study that matches the ideal of their social category. In a family of doctors, for instance, it may be considered obvious that the children also become doctors. However, for others, it may just as well be a social norm to become a social worker or an artist. Therefore, it is not a-priori clear whether individuals motivated by social norms will, on average, be more or less likely to choose for programs associated with more overeducation. Given that other empirical evidence is lacking, we do not consider a hypothesis regarding this educational motive.

Academic performance

In the literature on overeducation, several studies found that overeducation is lower among school leavers with better academic grades and those without grade retention (Battu *et al.*, 1999; Dolton & Silles, 2003; Büchel & Pollmann-Schult, 2004; Verhaest & Omey, 2010). Hence, to the extent that educational motives affect academic performance, they will also affect overeducation through this channel. The expected impact of investment on academic performance is ambiguous. We expect that individuals motivated by investment make a comparison between the costs and the benefits of the effort associated with achieving certain grades and avoiding grade retention. Hence, only when the benefits of academic performance in terms of improved labour market chances outweigh the cost of additional effort, they will be willing to obtain higher grades. Further, we

assume that individuals with an educational consumption motive will have better grades throughout their educational career, simply because they enjoy studying and learning things related to the topic of their major⁷. Graduates with a student life consumption motive are assumed to be more interested in being part of the student environment than in studying, resulting in lower grades and a higher likelihood on grade retention. Finally, the impact of adapting to social norms as a motive for participating in higher education on academic performance is theoretically ambiguous. For some social categories, it might be important to achieve high grades and to fulfill higher education without grade retention, whereas for other social categories this might not be a social norm at all. Therefore, we test the following hypothesis:

Hypothesis 2: Individuals participating in higher education because of educational consumption (student life consumption) are more (less) likely to achieve high levels of academic performance

Job search and job choice behaviour

We expect the likelihood of overeducation to be influenced by the educational motives even after accounting for differences in academic choices and achievements, amongst others through their impact on job search and job choice behaviour. We assume that individuals who attend college because of investment are less likely to search for and accept jobs for which they are overeducated. To secure the returns on their investment, they are likely to prefer jobs matching their educational level since these jobs pay higher wages.

Individuals motivated by educational consumption attend college because they are willing to learn new things and/or because they have a strong interest in the topic of their education. It seems likely that these motives are related to more general personal interests and motivations. Hence, we expect these individuals not only to be willing to achieve these goals through education, but also through their jobs. Evidence indicates that matching jobs are more successful in generating learning effects than jobs for which one is overeducated (e.g. Verhaest & Omey, 2013). Moreover, jobs that match with one's education are also likely to be jobs that match one's general personal interests for these individuals. Therefore, we also expect individuals motivated by educational consumption to be less likely to accept jobs for which they are overeducated. This effect may be reinforced if employers perceive these individuals to be more motivated than others. Alternatively, individuals who just attend college because of the attractions of student life are expected to be less career-oriented and to attach less importance to the match between their education and their jobs. They may also be perceived by employers to be less highly motivated.

Finally, the effect of participating in higher education to adapt to a social norm is again not a priori clear. On the one hand, it may be a social norm to get a high-status job and, hence, a job for which one is less likely to be overeducated. On the other hand, the social norm with respect to employment may be rather related to the

⁷ In line with this, several psychological studies have found that autonomous motivation is associated with better academic performance (Soenens & Vansteenkiste, 2005; Boggiano *et al.*, 1993)

content of an occupation or to a sector than to the level of the job. Hence, given that previous empirical evidence is lacking, we again do not formulate a hypothesis regarding this motive.

Hypothesis 3: For given academic choices and achievements, individuals having participated in higher education because of investment or educational consumption (student life consumption) are less (more) likely to be overeducated.

Overeducation

From the above theoretical considerations, we also derive hypotheses for the overall relationship between the four motives and overeducation. Individuals having participated in higher education because of investment are expected to be less likely to be overeducated. These individuals are expected to search for a job matching their educational level (cf. *Hypothesis 3*) and are expected to choose educational levels and fields of study with a lower likelihood of overeducation (cf. *Hypothesis 1*). Individuals having participated in higher education because of student life consumption are expected to have a higher likelihood to be overeducated, because of choosing study programs associated with higher degrees of overeducation (cf. *Hypothesis 1*), because of their lower quality of human capital (cf. *Hypothesis 2*), and because of being less career-oriented (cf. *Hypothesis 3*). For educational consumption and social norms, no hypothesis is considered, because the expected effects operate in different directions.

Hypothesis 4: Individuals having participated in higher education because of investment (student life consumption) are less (more) likely to be overeducated (overall effect).

Wages and job satisfaction

Differences in educational motives may also be expected to result in differences in wage and job satisfaction effects of overeducation. It is well known that overeducated individuals earn less than those with similar levels of education, but possessing the education required to perform their jobs (Hartog, 2000). We assume that individuals having participated in higher education because of investment face a smaller wage penalty to overeducation. We suppose that these individuals only accept a mismatch if the job offers them compensating wage advantages. It is unclear to what extent the level of wages will be taken into account by individuals participating in higher education because of the other motives. Therefore, we only test the following hypothesis:

Hypothesis 5: The wage penalty to overeducation is smaller for individuals having participated in higher education because of investment.

Several studies investigated the relationship between overeducation and job satisfaction as well. These studies conclude that overeducated individuals are less satisfied with their job than adequately educated individuals with similar levels of education (Allen & van der Velden, 2001; Verhaest & Omey, 2009). We assume that also

this job satisfaction penalty differs according to the educational motives. Individuals who attend college because of investment can be expected to face strong job dissatisfaction if they employed in jobs with low wages and low career prospects. In general, the literature does not only find overeducation to be associated with lower wages, but also with few opportunities of being promoted to adequate jobs (Baert *et al*, 2013). Hence, we expect these individuals to face a relatively strong job satisfaction penalty in the case of overeducation. Given their willingness to avoid being overeducated, we also expect that individuals having participated in higher education because of educational consumption face a relatively stronger job satisfaction penalty to overeducation. We thus test the following hypothesis:

Hypothesis 6: The job satisfaction penalty to overeducation is higher for individuals having participated in higher education because of investment and/or educational consumption.

DATA AND METHODOLOGY

Data

For our analysis we use the so-called SONAR data. This dataset contains data on the transition from education to work for three cohorts of about 3000 Flemish youngsters, born in the years 1976, 1978 and 1980 respectively. For each cohort data is available at the age of 23. Follow-up surveys were conducted at age of 26 for the 1976 and 1978 cohorts. The 1976 and 1980 cohorts were also interviewed at the age of 29. More information about the set-up of the survey can be found in SONAR (2003, 2004, 2005). We construct a panel dataset containing information for the following four time points: (i) the start of the first job, (ii) at the age of 23, (iii) at the age of 26 and (iii) at the age of 29⁸. Essential information such as net wages, job satisfaction and the mismatch status is in general available for each of these four time points. An exception is the situation at age 23 for the 1976 cohort, for which information on wages and job satisfaction is not available for those who were still in their first job at that time. Another exception is the information on these two variables at age 23, 26 and 29 in the specific case when individuals were, at that time, for less than one year employed in their first job. Apart from observations with missing information, we also excluded from the analysis observations on self-employed jobs, observations with extreme values for wages (cf. *infra*), respondents with only one observation, and respondents with a change in their level of education or field of study between two observation points. Further restriction of the dataset to those with a higher education degree leaves a sample of 2612 individuals and 6583 observations.

⁸ For individuals without jobs at the time of the interview (i.e. at age 23, 26, or 29), information was gathered with respect to the end of their last job.

Educational motives

To measure the different educational motives, we use a battery of items in the survey at age 23 regarding the reasons to attend higher education. More specifically, respondents got the following question: ‘Why did you attend higher education?’ The interviewer provided a list of ten possible reasons. Using a four-point scale, respondents could indicate the degree of applicability of each of these reasons in their case. To identify the educational motives, we used principal component analysis (with varimax rotation) and measured the alternative motives on the basis of factor scores. In table 1 the factor loadings of the different items⁹ are shown. The first factor loads on the following three items: ‘Because the subject of the program interested me’, ‘Because I wanted to work further on my self-development’ and ‘Because I enjoy studying’. The percentages of the individuals that rather or completely agreed on these items were 80.0%, 78.3% and 59.4% respectively (see Appendix, Table A). The factor on these three items is used as a proxy for ‘educational consumption’. The second factor is rather a proxy for ‘investment’ and is based on the items ‘In order to earn a higher wage’ (on which 60.3 % of the respondents agreed) and ‘To have a higher chance on having a good job later’ (78.5% agreed). The third factor measures ‘social norms’ and consists of two items: ‘Because my parents/family expected that’ (46.4%) and ‘It was obvious that I would continue my education’ (66.2%). Finally, a last factor loads on items such as ‘Because most of my classmates/friends also attended higher education’ (30.0%) and ‘Because I did not yet want to go working’ (50%), and is used as proxy for student life consumption. It is clear that most of the individuals thus combine two or more motives to participate in higher education.

TABLE 1 PRINCIPAL COMPONENT ANALYSIS OF THE EDUCATIONAL MOTIVES – FACTOR LOADINGS

	Component			
	1	2	3	4
To earn a higher wage	-0.083	0.812	0.102	0.111
To have a higher chance on a good job later	0.180	0.812	0.040	0.079
Because most of my classmates/friends also attended higher education	-0.100	0.046	0.231	0.718
Because I did not yet want to go working	0.073	0.151	0.030	0.791
Because my parents/family expected that	-0.117	0.158	0.787	0.199
It was obvious that I would continue my education	0.178	0.000	0.844	0.061
Because the subject of the studies interested me	0.699	0.038	-0.014	-0.234
Because I wanted to work further on my self-development	0.767	0.161	0.021	-0.020
Because I enjoy studying	0.711	-0.111	0.065	0.255

Data source: SONAR, own calculations; number of individuals = 2612

⁹ Along with the nine items listed in the table, a tenth item was ‘to practice the occupation of my own choice’. In a first factor analysis, this item had more than one factor loading. Since the item both refers to future labour market perspectives and to the individuals’ specific interests, this item seems to be related to both investment and consumption motives. Therefore, the item was excluded from the analysis.

Overeducation

For the measurement of overeducation, we rely on two different measures. The first one is based on job analysis and derived from the Standard Occupation Classification of Statistics Netherlands (CBS, 2001). The classifications of each occupation is based on a five-digit code and contains five functional levels: less than lower secondary (<LS), lower secondary (LS), higher secondary (HS), lower tertiary (LT) and higher tertiary education (HT). An individual is defined as overeducated ($OVER=1$) if the educational level exceeds the functional level. To account for differences in the degree of overeducation, we rely on years of overeducation ($YOVER$). These years are computed by years of attained education minus years of required education for overeducated individuals and set to zero for other workers. Years of required education are defined by the minimal years of education that are usually needed to achieve the corresponding educational level: < LS = 6 years, LS = 10 years, HS = 12 years, LT = 15 years and HT = 16 years.

Using job analysis to measure overeducation has both advantages and disadvantages. A major advantage is that this measurement method reflects the concept of overeducation used in the literature, i.e. a situation in which the attained level of education exceeds the level of education required to do the job (cf. Hartog, 2000). Second, they are not prone to social desirability bias and are based on uniform coding instructions. Third, spurious correlation between overeducation and subjective variables such as educational motives and job satisfaction, resulting from common-method bias, is avoided. A major critique on this method is that it may overestimate overeducation if the underlying classification is not regularly updated to account for increases in job requirements over time. Given this critique, we also rely on a second measure of overeducation. Regarding their first job, respondents from the 1978 and 1980 cohorts were asked the question: “What is (was), according to your own opinion, the most appropriate educational level to execute your job?” A question like this is typically used in the literature to construct a so-called worker-assessed (WA) measure of overeducation. However, in the SONAR survey, this question is not available for all jobs. Therefore, we use a modified approach (see Baert *et al.*, 2013). First, relying on the information regarding first jobs, we computed the median worker-assessed required level of education within each occupation. Second, this median level was used to define the worker-assessed level of required education for an occupation. Third, relying on this definition, we assessed for every job whether an individual was overeducated or not.

According to the JA method, 52% of the sample is vertically mismatched at the start of the career (cf. Appendix, Table A). This incidence is larger than measured at the age of 23 (44%), 26 (42%) and 29 (45%). Based on the modified subjective measure we note lower incidences of vertical mismatches. At the start of the career about 36% was overeducated according to this measure. At a later age, this incidence decreases to 27% at age 23, 29% at age 26 and 32% at age 29. These incidences are in line with other studies finding a relatively higher incidence of overeducation at the start of the career (see van der Velden & van Smoorenburg, 1999).

To assess the impact of the educational motives on years of overeducation, we estimate random-effects models. To account for the truncated nature of years of overeducation, a tobit specification is applied. To differentiate between the direct effects of the educational motives on overeducation because of differences in job search and job acceptance behavior (cf. *Hypothesis 3*) and their overall effects on overeducation (cf. *Hypothesis 4*), both models with and without controls for academic choices and performance are estimated. We also account for unobserved heterogeneity by applying a Mundlak correction (cf. Mundlak, 1978). Within this approach, we include individual means of all the time-varying variables as additional control variables. The introduction of these mean values captures the eventual correlation between the unobserved heterogeneity and the time-varying explanatory variables. As opposed to a fixed-effects model, a Mundlak correction model allows to keep time-invariant variables, such as the educational motives, as regressors in the equation.

Academic choices and performance

The program choice with respect to higher education in Flanders basically comes down to a double choice: the level of the program and the field of study. Regarding the level of the program, individuals in our sample could, at the time they entered higher education, choose between a short-term lower tertiary education at a college and a long-term higher tertiary education program at a college or university. These programs are equivalent to contemporary bachelor and master programs respectively. While many students nowadays use a college degree as stepping stone to a university degree, this was far less the case at the time our sample entered higher education. In general, those opting to get a higher tertiary degree immediately started in a long-term program. Similarly, while individuals got a short-term degree after two years of university, few students did not proceed with their program to get their long-term degree. In our sample, 37.2% of the individuals have attained a higher tertiary education (i.e. master) degree (cf. Appendix, Table A). Students also have to choose their field of study. We distinguish between the following seven fields: (1) Linguistics, history and philosophy (5.6%), (2) Economics, business, and law (30.3%), (3) Behavioral and social sciences (11.8%), (4) Health and (para)medicine (12.7%), (5) Natural sciences and engineering (20.9%), (6) Arts (2.2%), and (7) Education (16.5%).

To assess the impact of the different study motives on academic choices (cf. Figure 1, black line and *Hypothesis 1*), we use a binary logit model for the effect on the choice of educational level and a multinomial logit model for the choice of the field of study. In order to define programs that are associated with low or high levels of overeducation, we rely on previous research regarding overeducation among Flemish young workers (Verhaest *et al.* 2011). Regarding the level of the program, lower tertiary degrees are found to be associated with considerably lower overeducation incidences. With respect to the field of study, programs within the domains of ‘Education’ and ‘Health and Welfare’ and, to a lesser extent, ‘Natural sciences and engineering’, are found to be associated with low degrees of overeducation in Flanders. Alternatively, students within the domains of ‘Linguistics, history and philosophy’ and ‘Arts’ and, to a lesser extent, within the domains ‘Economics, business and law’ and ‘Behavioral Sciences’, have a relatively higher probability to be overeducated.

For the measurement of academic performance (cf. Figure 1, black line and *Hypothesis 2*) we use two variables, namely grades in the final year and grade retention in higher education. Both variables are found to be associated with overeducation in Flanders, with those having lower grades and those with more grade retention being more likely to be overeducated in first jobs (Verhaest and Omey, 2010). With respect to grades in the final year, we distinguish three categories: (1) graduating with a passing grade, (2) graduating with a distinction grade, and (3) graduating with high or highest distinction grade. Grade retention is measured in terms of the number of repeated years during tertiary education. To assess the effect of the educational motives on repeated years, we estimate a poisson regression; in the case of study results, we estimate an ordered probit model.

Wages and Job Satisfaction

As already mentioned, we also investigate the impact of overeducation and each of the study motives on two labour outcomes: wages and job satisfaction (cf. *Hypothesis 5* and *Hypothesis 6*). For wages, we use data on net hourly wages. The survey question on wages differs across waves and cohorts. For the initial interview (at the age of 23), of the 1976 cohort official net monthly wages were reported in intervals of 124 euro (BEF5000) for lower wages and intervals of 248 euro (BEF10000) for higher wages. In the other surveys, respondents were asked to report their exact net monthly wage. When refusing to provide an answer to this question, they got the interval question. We used the midpoint of the interval for these observations, converted all answers to hourly wages and deflated them on the basis of the consumer price index used for wage indexation¹⁰. Observations with two standard deviations above or below the average natural logarithm wage in the sample are excluded. Job satisfaction is measured on the basis of the following survey question: ‘During the early phase of your first job, how satisfied were you with your job?’ For the job at the age of 23, 26 and 29 a similar question was posed. Respondents had to answer on a five-point Likert scale. The Appendix (Table A) reports average wages by type of observation. As shown, average wage and job satisfaction levels increase with age.

For both labour market outcomes, random-effects linear regression models are estimated, with the natural log of hourly wages and job satisfaction being regressed on the educational motives, overeducation and a number of control variables. To test *Hypothesis 5* and *Hypothesis 6*, also interaction effects between overeducation and the different study motives are included. Previous research on the effects of overeducation on other outcome variables has shown that estimates may be biased because of unobserved worker heterogeneity and because of errors in the measurement of overeducation (Dolton & Vignoles, 2009; Verhaest & Omey, 2012). To tackle the first type of bias, we estimate random-effects with additional Mundlak correction terms being included. The second type of bias is accounted for by applying instrumental variable methods, using our second measure of overeducation as instrument for the first one (and the other way around).

¹⁰ Conversion into hourly wages is based on the percentage of employment (full-time=100%), and equalizing full-time jobs to 40 hours/week.

Control variables

In each specification, we included a number of control variables: dummies for gender (1 dummy), non-European descent (1), having a child (1), cohabiting (1), and the educational attainment of both parents (8). The educational attainment of the parents is often used as a proxy for the household income and because of its influence on individuals' decisions to attend higher education. As proxies for ability, we include the study track and study results of an individual in secondary education. Further, to account for differences in the average job quality of further jobs in comparison to the first jobs, we also included three dummies for whether the observation is made in the second (1), the third (1) or the fourth (1) job observed in our panel. Moreover, we included years of work experience and its square. To account for differences in preferences and labour market conditions, several other control variables are included in wage and job satisfaction analysis: firm size (4), sector of employment (12), public sector (1), shift work (2) and night work (2). Finally, in all models, the year of observation is included to account for eventual time trends.

RESULTS

In this section, we will first discuss the results on academic choices (educational level and fields of study (cf. *Hypothesis 1*). Thereafter, we will give an overview of the impact of the four student motives on academic performance (cf. *Hypothesis 2*). Further, we will comment on the effects the study motives have on the likelihood of overeducation (cf. *Hypotheses 3 and 4*). Finally, we will discuss the results on the two labour market outcomes: wages and job satisfaction (cf. *Hypothesis 5 and Hypothesis 6*).

Academic choices

Table 2 reports the impact of the different student motives on academic choices. We find that individuals participating in higher education for investment reasons are less likely to choose for a study program in higher tertiary education, while those participating because of educational consumption, student life-style consumption or social norms are more likely to have chosen for such a degree. This is completely in line with *Hypothesis 1*.

The results regarding the field of study are less clear. In line with our hypothesis, we find that those participating in higher education because of investment are less likely to participate in domains such as 'Arts', 'Linguistics, History and Philosophy', and 'Behavioral and Social Sciences', which are domains that are typically associated with a relatively high likelihood to become overeducated. On the other hand, these individuals are somehow more likely to choose for domains that are associated with a relatively low likelihood to become overeducated, such as 'Natural Sciences and Engineering' and 'Health and (Para)Medicine'. However, these individuals are also more likely to choose the field of study 'Economics, Business and Law', which is in Flanders a college major with a relatively high likelihood of overeducation. Also the results with respect to the educational

and student life consumption motives are, when abstracting each time from one domain, in line with *Hypothesis 1*, with individuals participating because of these motives to be relatively more (less) likely to choose for domains with a relatively high (low) likelihood to become overeducated. Also regarding the educational consumption motive, the domain of 'Economics, Business and Law' seems to be an exception since individuals participating because of educational consumption are less likely to choose for this domain despite being associated with a relatively high likelihood to become overeducated. Regarding the student life consumption motive, the domain of 'Arts' is an exception with a low likelihood to be chosen among individuals

TABLE 2 THE EFFECT OF THE STUDY MOTIVES ON ACADEMIC CHOICES – LOGIT COEFFICIENTS

	Level of Education		Fields of study (ref= Economics, Business and Law)				
	Binary logit		Multinomial logit				
	<i>Higher tertiary education</i>	<i>Linguistic, history and philosophy</i>	<i>Behavioral and social sciences</i>	<i>Health and (para)-medicine</i>	<i>Natural sciences & engineering</i>	<i>Arts</i>	<i>Education</i>
Investment	-0.152*** (0.048)	-0.400*** (0.069)	-0.381*** (0.050)	-0.266*** (0.050)	-0.203*** (0.049)	-0.409*** (0.076)	-0.383*** (0.051)
Educational consumption	0.286*** (0.051)	0.421*** (0.076)	0.233*** (0.051)	0.207*** (0.050)	0.181*** (0.047)	0.278*** (0.092)	0.286*** (0.051)
Student life consumption	0.266*** (0.046)	-0.153 (0.071)	-0.064 (0.047)	-0.142*** (0.047)	-0.114** (0.045)	-0.320*** (0.089)	-0.189*** (0.049)
Social norms	0.087*** (0.048)	-0.053 (0.076)	0.021 (0.048)	0.004 (0.048)	0.060 (0.047)	-0.120** (0.087)	0.137** (0.049)

Standard errors are in parentheses.

The following control variables are included in every model: gender, non-European descent, educational level of the mother, educational level of the father, study track secondary education, study results secondary education, year of birth.

In the model of the effects on fields of study the following control variables are included: educational level.

Number of individuals = 2612; *: p<0.10; **: p<0.05; ***: p<0.01.

participating because of this motive, despite this domain being associated with a relatively high degree of overeducation. Finally, individuals who have participated in higher education because of social norms are also less likely to choose for Arts as field of study.

Academic performance

Table 3 reports the results for academic performance. Individuals having participated in higher education because of educational consumption are more likely to achieve higher levels of academic performance; they are less likely to repeat years in higher education and are more likely to have better grades. However, we do not find any significant evidence for the impact of student life consumption on academic performance. These results are thus only partially in line with *Hypothesis 2*. We also find that individuals who have participated in higher education because of investment are less likely to have high grades.

TABLE 3 THE IMPACT OF THE STUDENT MOTIVES ON ACADEMIC PERFORMANCE – POISSON OR ORDERED PROBIT REGRESSION COEFFICIENTS

	Repeated years Poisson regression	Students' grades Ordered probit
Investment	0.030 (0.036)	-0.054** (0.024)
Educational consumption	-0.141*** (0.034)	0.161*** (0.026)
Student life consumption	0.014 (0.034)	-0.003 (0.023)
Social norms	0.017 (0.035)	-0.026 (0.024)

Standard errors are in parentheses.

The following control variables are included in every model: gender, non-European descent, educational level of the mother, educational level of the father, study track secondary education, study results secondary education, year of birth, educational level, fields of study.

Repeated years is included as control variable in the grades model.

Number of individuals = 2612

*: $p < 0.10$; **: $p < 0.05$; ***: $p < 0.01$.

Overeducation

For the measurement of overeducation, we rely on two indicators. In this section, we only report detailed estimation results relying on the job analysis measure (cf. Table 4). The estimates relying on the worker assessment measure can be found in the Appendix (Table B).

To assess the impact of the four student motives on overeducation (cf. *Hypothesis 3* and *Hypothesis 4*), we first estimated a standard random-effects model. First, we expected that individuals participating in higher education because of investment are less likely to be overeducated (cf. *Hypothesis 4*). However, this hypothesis is not supported (cf. Table 4, Model I, column 1). We even find a positive significant effect (0.078), implying that these individuals have a higher likelihood to be overeducated. If we account for unobserved heterogeneity by means of introducing Mundlak correction terms (cf. Table 4, Model I, column 2), we find a similar effect for individuals with an investment motive. Also after accounting for academic choices and academic performance, we do not find that individuals participating in higher education for investment reasons are less

TABLE 4 THE IMPACT OF THE STUDENT MOTIVES ON YEARS OF OVEREDUCATION- TOBIT REGRESSION COEFFICIENTS

Standard panel data random estimates						
	Model I		Model II		Model III	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)	Random effects (5)	Random effects with Mundlak correction (6)
Investment	0.078** (0.034)	0.086** (0.034)	0.017 (0.033)	0.024 (0.033)	0.009 (0.033)	0.016 (0.033)
Educational consumption	-0.203*** (0.035)	-0.209*** (0.035)	-0.161*** (0.033)	-0.160*** (0.033)	-0.134*** (0.033)	-0.134*** (0.033)
Student life consumption	0.131*** (0.033)	0.120*** (0.033)	0.085*** (0.032)	0.082** (0.032)	0.086*** (0.031)	0.085*** (0.031)
Social norms	-0.015 (0.035)	-0.000 (0.034)	0.026 (0.032)	0.026 (0.032)	0.022 (0.032)	0.022 (0.032)
Control for Academic Choices	No	No	Yes	Yes	Yes	Yes
Control for Academic Performance	No	No	No	No	Yes	Yes

Standard errors are in parentheses.

The following control variables are included in every model: gender, non-European descent, educational level of the mother, educational level of the father, study track secondary education, study results secondary education, year of birth, experience, experience squared, cohabiting, having a child, years of observation, job type.

The following control variables are included in model II (column 2): educational level, fields of study.

The following control variables are included in model III (column 3): educational level, fields of study, repeated years, grades.

Number of individuals = 2612 number of observations= 6583

*: p<0.10; **: p<0.05; ***: p<0.01

likely to be overeducated (cf. *Hypothesis 3*). We again find them to be more likely to be overeducated, although the effect is no longer statistically significant (Table 4, Model III). We also find that individuals who participated in higher education because of student life consumption have a higher probability to be overeducated. After accounting for academic choices and academic performance, we find a slightly smaller coefficient (0.085) than in the model that estimates the overall effect (0.131). So, the choice for a college major with a higher probability of overeducation and bad grades increases the overall probability of overeducation. Interestingly, our results also indicate a significantly negative overall effect on overeducation for those motivated by educational consumption. Controlling for academic choice and performance delivers the same conclusions. These results regarding the consumption motives are in line with both *Hypothesis 3* and *Hypothesis 4*. Regarding social norms, for which no hypothesis was formulated, we do not find statistically significant effects. The results relying on the worker assessment measure for overeducation are largely similar, although this measure does not deliver a significantly overall positive effect of the investment motive (see Appendix, Table B).

Wages and job satisfaction

Table 5 and Table 6 report the results with respect to wages and job satisfaction, relying on job analysis for the measurement of overeducation. For results based on the worker-assessment method, we refer to the Appendix (Table C and Table D).

Based on the standard random-effects panel data estimates (cf. Table 5, column 1), we find that overeducation has a negative impact on wages. This is in line with what is usually found in the literature. Interestingly, we also find that adequately educated workers who participate in higher education because of educational consumption realize a small wage bonus.

To assess whether the impact of overeducation depends on the educational motives, we added interaction terms between these two variables. We do not find any statistically significant evidence for *Hypothesis 5*, indicating that the wage penalty to overeducation is smaller for individuals having participated in higher education because of investment (cf. Table 5, column 1). Since these results may be biased by unobserved heterogeneity and measurement error, we also execute a Mundlak correction and instrumental-variable analyses (cf. Table 5, column 2, 3 and 4). However, also these model specifications do not deliver evidence in favour of *Hypothesis 5*. On the contrary, on the basis of the instrumental-variable model, we even find that overeducated individuals earn less if they have attended higher education because of investment (cf. Table 5, column 4). Also on the basis of our robustness analysis that relies on the worker-assessment instead of the job analysis as benchmark measure (cf. Appendix, Table C, column 4), we find no evidence for *Hypothesis 5*, although the interaction effect is never statistically negative in this case.

Regarding the other educational motives, we did not formulate hypotheses for an interaction effect with overeducation on wages. Interestingly, we find that overeducated individuals participating in higher education because of educational consumption face a stronger wage penalty to overeducation (cf. Table 5, column 4).

However, for these individuals the additional penalty per year of overeducation is lower than the wage bonus that they realize irrespective of their match. Hence, moderately overeducated individuals having participated in higher education because of educational consumption still earn at least as much as other moderately overeducated workers. Another unanticipated finding is the stronger wage penalty to overeducation for individuals having attended higher education because of social norms (cf. Table 5, column 4). On the basis of the alternative overeducation measure, we reach similar results for individuals who have attained higher education because of social norms. However, this measure does not deliver a significantly negative effect for overeducated individuals having participated in higher education because of educational consumption (cf. Appendix, Table C, column 4).

TABLE 5 THE IMPACT OF THE STUDENT MOTIVES AND OVEREDUCATION (JOB ANALYSIS) ON THE NATURAL LOG OF WAGES – LINEAR REGRESSION COEFFICIENTS

	Standard panel data estimates		IV-panel data estimates	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)
Investment	0.001 (0.003)	-0.001 (0.003)	0.002 (0.003)	-0.003 (0.003)
Educational consumption	0.006** (0.003)	0.006* (0.003)	0.010*** (0.003)	0.008** (0.004)
Student life consumption	-0.002 (0.003)	-0.002 (0.002)	-0.002 (0.003)	-0.002 (0.003)
Social norms	0.002 (0.003)	0.001 (0.003)	0.002 (0.003)	-0.002 (0.004)
YOVER	-0.018*** (0.001)	-0.013*** (0.001)	-0.018*** (0.002)	-0.011*** (0.003)
YOVER * Investment	0.001 (0.001)	-0.000 (0.002)	0.001 (0.001)	-0.004* (0.002)
YOVER * educational consumption	-0.002** (0.001)	-0.002 (0.002)	-0.005*** (0.001)	-0.005** (0.002)
YOVER * student life consumption	-0.002** (0.001)	-0.003* (0.002)	-0.002 (0.001)	-0.004 (0.002)
YOVER * social norms	-0.002 (0.001)	-0.004** (0.002)	-0.002 (0.001)	-0.005** (0.002)

Standard errors are in parentheses.

YOVER = years of overeducation

The following control variables are included: gender, non-European descent, educational level of the mother, educational level of the father, track in secondary education, study results secondary education, year of birth, educational level, fields- of study, grades, repeated years, experience, experience squared, cohabiting, having a child, years of observation, job type, percentage of full employment, sector, firm size, night work, shift work, public sector
Number of individuals = 2612 Number of observations = 6583

*: $p < 0.10$; **: $p < 0.05$; ***: $p < 0.01$

For job satisfaction, we find that individuals motivated by educational consumption are more satisfied with their job (cf. Table 6). Based on our benchmark analysis, we also find that individuals participating in higher education because of student life consumption are less satisfied with their job. For the two other educational motives we do not find any significant evidence. In line with other studies, we find that overeducated workers are less satisfied with their job.

Regarding the interaction effects between overeducation and the motives, we find that overeducated individuals who have participated in higher education because of educational consumption face a stronger job satisfaction penalty than other overeducated workers. This is in line with our expectations (cf. *Hypothesis 6*). This result is robust across all model specifications (cf. Table 6, column 2, 3 and 4) and across all measures of overeducation (cf. Appendix, Table D). However, as with wages, the additional job satisfaction penalty for one year of overeducation is smaller than the autonomous positive effect of educational consumption on job satisfaction. Hence, moderately overeducated workers who participated in higher education because of educational consumption also remain at least as satisfied with their jobs as other moderately overeducated workers. We also expected a more negative job satisfaction penalty for overeducated individuals who have attended higher education because of investment (cf. *Hypothesis 6*). However, none of our estimates are in line with this expectation. Also for the student-life consumption and social norms motives, for which no hypotheses were formulated, we do not find any evidence on a significant interaction effect with overeducation.

TABLE 6 THE IMPACT OF THE STUDENT MOTIVES AND OVEREDUCATION (JOB ANALYSIS) ON JOB SATISFACTION – LINEAR REGRESSION COEFFICIENTS

	Standard panel data estimates		IV-panel data estimates	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)
Investment	0.003 (0.015)	0.006 (0.016)	-0.002 (0.016)	0.011 (0.017)
Educational consumption	0.056*** (0.016)	0.048*** (0.017)	0.062*** (0.018)	0.056*** (0.020)
Student life consumption	-0.022 (0.014)	-0.022 (0.016)	-0.028 (0.016)	-0.036** (0.018)
Social norms	-0.002 (0.015)	0.009 (0.016)	-0.010 (0.016)	0.002 (0.019)
YOVER	-0.071*** (0.007)	-0.092*** (0.010)	-0.091*** (0.009)	-0.115*** (0.014)
YOVER*investment	-0.004 (0.005)	-0.002 (0.009)	-0.003 (0.007)	0.007 (0.011)
YOVER*educational consumption	-0.011** (0.007)	-0.024** (0.010)	-0.016** (0.008)	-0.025** (0.012)
YOVER* student life consumption	0.000 (0.006)	0.005 (0.010)	0.005 (0.008)	-0.005 (0.013)
YOVER*social norms	-0.007 (0.006)	0.005 (0.009)	-0.001 (0.007)	0.014 (0.011)

Standard errors are in parentheses.

YOVER = years of overeducation

The following time-invariant variables are included: gender, non-European descent, educational level of the mother, educational level of the father, track in secondary education, study results secondary education, year of birth, educational level, fields-of study, grades, : repeated years, experience, experience squared, cohabiting, having a child, years of observation, job type, percentage of full employment, sector, firm size, night work, shift work, public sector
Number of individuals = 2612; Number of observations= 6583.

*: p<0.10; **: p<0.05; ***: p<0.01

DISCUSSION

We investigated whether different study motives (investment, educational consumption, student life consumption and social norms) influence the likelihood to be overeducated among higher education graduates. Starting

from the established fact that overeducated workers earn less and experience lower job satisfaction than adequately educated workers with a similar educational background, we also looked at whether study motives in combination with overeducation influence wages and job satisfaction. To correct for ability and measurement error bias in this analysis, we conducted a panel-data instrumental variable analysis. For the measurement of overeducation, we relied both on job analysis and worker assessments.

Regarding academic choices, we found that individuals participating in higher education because of investment are less likely to choose for a study program leading to a Master degree in comparison to study programs that only lead to a Bachelor degree. This result is in line with our expectations since earlier studies found Flemish Bachelor graduates to be less likely to be overeducated and to experience shorter (initial) unemployment spells. However, we also found them to be more likely to choose for a program within the domain of ‘Economics, Business and Law’. Within Flanders, this field of study is characterized by a relatively high degree of overeducation. Also other studies already found that individuals motivated by investment more often choose for this domain, most likely because it is associated with relatively high earnings irrespective of the match quality. Our detailed estimation results regarding the determinants of wages (cf. Appendix E) indeed indicate that those who choose for the domain ‘Economics, Business and Law’ have relatively high wages. A potential explanation for the higher likelihood to be overeducated in combination with relatively high wages within this domain is provided by Van der Meer and Wielers (1996). They claim that employers in the financial or professional service sector prefer to hire overeducated workers because the educational credentials serve as a legitimation to their clients of the quality of the provided service.

As expected, we also found that students attending higher education because of educational and student life consumption are more likely to opt for Master programs. Individuals having participated in higher education because of student life consumption are also less likely to participate in fields of study that are associated with a low incidence of overeducation, such as ‘Health and (Para-)Medicine’ or ‘Natural sciences & Engineering’. These programs are generally perceived to be more difficult and, hence, it supports the idea that these individuals are less likely to choose for fields of study with high effort costs. In the case of individuals joining higher education because of adapting to social norms, we also found them to be more likely to choose for a program resulting in a Master degree. This result may be explained by the fact that Master programs are perceived to have a higher social status.

The results also show that individuals who participated in higher education because of educational consumption motives are more likely to perform better academically (better grades, less repeated years). This result is consistent with our assumptions and suggests that these individuals put more effort in their education. However, we did not find any significant evidence for the assumption that individuals motivated to participate in higher education by the prospect of student life consumption are less likely to achieve high levels of performance. Interestingly, individuals having participated in higher education because of investment are less likely to have good grades. A possible explanation is that these individuals only invest a certain amount of effort to

get their degree. Although good grades may increase labour market chances, these graduates may feel the game is not worth the candle.

Another finding is that, among individuals with a similar educational background and similar academic achievements, those motivated by educational consumption are less likely to end up in a job for which they are overeducated. This finding was expected since, for these individuals, a job that matches with their education is also likely to be a job that matches with their preferences. Moreover, adequate jobs are also likely to be more successful in terms of self-development, which individuals who participate in higher education because of educational consumption are also likely to find important. A last explanation may be that employers are more likely to select these individuals because they appear to be highly motivated. We also found that individuals having participated in higher education being attracted by student life are more likely to be overeducated in comparison to graduates with a similar degree in terms of level and field of study and with similar academic achievements. This finding was expected and suggests that these individuals are less career-oriented and therefore less concerned about their future jobs.

Regarding the overall effect on overeducation, we found some limited evidence that individuals participating in higher education motivated by investment reasons are more likely to be overeducated. This result was not expected and seems to be explained by the aforementioned fact that these individuals choose, above all, for a program within the domain of 'Economics, Business and Law'. On the other hand, our study confirms the overall positive effect on the likelihood to be overeducated for having participated in higher education because of student life consumption. Apart from their higher likelihood to end up in jobs for which they are overeducated in comparison to otherwise similar graduates, this is explained by a higher likelihood to choose for educational levels and fields of study with a higher probability of overeducation. Interestingly, we found that individuals participating in higher education because of educational consumption are less likely to be overeducated (overall effect). Several, sometimes counteracting effects explain this relationship. While these students are more likely to choose educational levels with a higher probability of overeducation, these individuals perform better academically which may matter in the selection process. In addition, given their academic choices and performance, these individuals are more likely to find jobs that match their level of education (cf. *supra*).

Finally, we investigated to what extent the wage and job satisfaction penalty to overeducation depends on the motive to participate in higher education. We expected that individuals taking on higher education for investment reasons, would only be willing to accept jobs not matching their education if these jobs offered them a sufficient wage compensation. However, our results did not support this expectation. Based on the job analysis measure, we even found that the wage penalty to overeducation is higher for individuals who have attended higher education because of investment reasons, although the effect was only statistically significant at the 10% level. A possible explanation may be that wage inequality is more pronounced in the high wage segments on the labour market. Surprisingly, we also found that individuals who have participated in higher education because of social norms have a higher wage penalty to overeducation. A possible explanation might be that their failure to find a job matching their educational level incites them to accept a job requiring less education than

the attained level but matching their field of study. In this manner, they may avoid or at least reduce a loss in self-image in their social category. Finally, individuals who participated in tertiary education because of educational consumption were found to face stronger job satisfaction and wage penalties to overeducation than other individuals. The job satisfaction finding provides further support to the idea that these individuals have a strong aversion towards jobs that not match with their education. Nevertheless, for moderately overeducated workers, these penalties on wages and job satisfaction are compensated by positive autonomous effects of being motivated by educational consumption. This suggests that, in the case of matching jobs, those being motivated by educational consumption are more productive than other graduates. Given that it can be expected that these graduates are likely to be more intrinsically motivated for these jobs than other graduates, this may not sound surprising.

From an overall point of view, our results regarding the consumption motives were in general in line with expectations. Regarding the investment motive, however, this was clearly not the case. As already suggested, this may be largely explained by the relatively higher participation of these individuals in programs related to Business and Law, which may combine a relatively high incidence of overeducation with relatively high wages. To check whether this claim is correct, we performed a number of additional checks. First, we estimated a reduced form wage equation that excludes overeducation and firm characteristics as independent variables (cf. Appendix F, column 2). In this model, the coefficients on the fields of study resemble a more overall effect, also taking into account their indirect impact on wages through their influence on overeducation and because they may determine access to firms paying higher wages. Also these estimates corroborate that, despite resulting in a higher likelihood to be overeducated, the domain 'Economics, Business and Law' is associated with relatively high wages (only those within the Health domain seem to earn more). Second, to test whether the field of study choice by those who participate in higher education because of investment effectively translates in higher wages despite being associated with higher incidences of overeducation, we estimated a model that also excluded field of study dummies as independent variables. On the basis of this specification, we indeed find that individuals who participate in higher education because of investment earn a positive albeit small wage bonus (cf. Appendix, Table F, column 1).

Several directions for further research can be advanced. First of all, we only accounted for average effects of the different motives. However, their impact may differ across different types of individuals. The impact of social norms, for instance, may differ depending on the social background of individuals. Individuals from a family of doctors may rather choose to become a doctor while individuals that grew up in an artistic environment may be more likely to choose for an artistic job. Moreover, social background may also influence the impact of the investment motive. As Rochat and Demeulemeester (2001) argue, individuals from a poorer social economic background may be more risk averse and, hence, choose less riskier and therefore on-average also less remunerative fields of study. Further research with a more in-depth focus on the role of social background in explaining educational motives and their impact on labour market mismatches is therefore suggested. Secondly, for the measurement of the educational motives, we relied on retrospective surveys at age

23. Hence, more longitudinal research that surveys individuals already at the start of their higher education career would be welcome. Further, these motives might be correlated with some other unobservable variables, such as expectations, attitudes or abilities. Given the time-invariant nature of the motives, panel-data techniques cannot account for this problem. A potential solution for this problem may be to use instrumental variables. However, finding reliable and valid exclusion restrictions is not straightforward. At least, the dataset that was used in this study does not contain such instruments. Finally, we only indirectly tested the impact of the educational motives on overeducation through their impact on job search and acceptance behaviour. An interesting path for further research would be to test this in a more direct way, for instance by including direct measures of job search in the model.

CONCLUSION

Overall, our results clearly sustain the claim that overeducation is not the result of educational consumption. Young people having engaged in tertiary education because of education consumption are less likely to be overeducated. We also found that these individuals face a stronger job satisfaction penalty to overeducation than other workers. Nevertheless, even if moderately overeducated, they are still as satisfied with their jobs as other workers. Hence, the best advice for young people when entering tertiary education seems to be to choose a field of study which they find exiting, even if the overall labour market prospects for this field are less favorable. Our results also suggest to avoid that students continue in education solely because of student-life consumption. This will increase the likelihood to be overeducated. Nevertheless, several issues remain open for discussion and more research relying on data for psychological characteristics, job search behavior and social norms would be useful.

REFERENCES

- Arrow, K. (1973), 'Higher education as a filter', *Journal of Public Economics*, 2(3), 193–216.
- Akerlof, G.A. & Kranton, R.E. (2000), 'Economics And Identity', *Quarterly Journal of Economics*, 115(3), 715–753.
- Akerlof, G.A. & Kranton, R.E. (2002), 'Identity and Schooling: Some Lessons for the Economics of Education', *Journal of Economic Literature*, 40(4), 1167–1201.
- Allen, J. & van der Velden, R. (2001), 'Educational mismatches versus skill mismatches: effects on wages, job satisfaction, and on-the-job search', *Oxford Economic Papers*, 5, 434–452.

- Almlund, M., Duckworth, A.L., Heckman, J. & Kautz, T.D. (2011), 'Personality psychology and economics', in: Hanushek, E., Machin, S. & Woessmann, L (ed), *Handbook of the economics of education*, Amsterdam: Elsevier Science, 1–182.
- Alstadsæter, A. (2011), 'Measuring the Consumption Value of Higher Education', *CESifo Economic Studies*, 57(3), 458–479.
- Alstadsæter, A., Kolm, A.S. & Larsen, B. (2008), 'Money or joy: The choice of educational type', *European Journal of Political Economy*, 24(1), 107–122.
- Arcidiacono, P. (2004), 'Ability sorting and the returns to college major', *Journal of Econometrics*, 121(1–2), 343–375.
- Baert, S., Cockx, B. & Verhaest, D. (2013), 'Overeducation at the start of the career: Stepping stone or trap?', *Labour Economics*, 25, 123–140.
- Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950–2010. *Journal of development economics*, 104, 184–198..
- Battu, H., Belfield, C. & Sloane, P. (1999), 'Overeducation among graduates: a cohort view', *Education Economics*, 7, 21–39.
- Becker, G. (1964), *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, New York: Columbia University Press.
- Berger, M., (1988), 'Predicted future earnings and choice of college major', *Industrial and Labor Relations Review*, 41, 418–429.
- Boggiano, A. K., Flink, C., Shields, A., Seelbach, A. & Barrett, M. (1993), 'Use of techniques promoting students' self-determination: Effects on students' analytic problem-solving skills', *Motivation and Emotion*, 17(4), 319–336.
- Büchel, F. & Pollmann-Schult, M. (2004), 'Overeducation and human capital endowments', *International Journal of Manpower*, 25, 150–166.
- Carneiro, P., Hansen, K. & Heckman, J. (2003), 'Estimating Distributions of Treatment Effects with an Application to the Returns to Schooling and Measurement of the Effects of Uncertainty on Schooling Choice', *International Economic Review*, 44(2), 361–442.
- Coleman, J.S. (1961), *The adolescent society: The social life of the teenager and its impact on education*, New York: Free Press.

- Coleman, J.S. (1988), 'Social Capital in the Creation of Human Capital', *The American Journal of Sociology*, 94, 95–120.
- Dolton, P. & Silles, M. (2003), 'The Determination and Consequences of Graduate Overeducation'. In F. Buchel, A. de Grip & A. Mertens (red.), *Overeducation in Europe. Current Issues in Theory and Policy*, Cheltenham: Edward Elgar, 189–216.
- Dolton, P. & Silles, M. (2008), 'The effects of over-education on earnings in the graduate labour market', *Economics of Education Review*, 27, 125–139
- Duchesne, I. & Nonneman, W. (1998), 'The demand for higher education in Belgium', *Economics of Education Review*, 17(2), 211–218.
- Ehrenberg, R.G. & Smith, R.S. (2000), *Modern Labor Economics: Theory and Public Policy*, 7th edition, Reading, MA: Addison-Wesley.
- Falck, O., Heblich, S. & Luedemann, E. (2012), 'Identity and entrepreneurship: Do school peers shape entrepreneurial intentions?', *Small Business Economics*, 39, 39–59.
- Favara, M. (2012), 'The Cost of Acting "Girly": Gender Stereotypes and Educational Choices', *IZA Discussion Paper*, No. 7037.
- Freeman, R. (1971), *The market for college-trained manpower*. Cambridge: Harvard University Press.
- Frenette, M. (2004), 'The overqualified Canadian graduate: the role of the academic program in the incidence, persistence, and economic returns to overqualification', *Economics of Education Review*, 23, 29–45.
- Fuller, W.C., Manski, C.F. & Wise, D.A. (1982), 'New evidence on the economic determinants of postsecondary schooling choices', *Journal of Human Resources*, 17(4), 477–498.
- Groot, W. & Maassen van den Brink, H. (2000), 'Overeducation in the labor market: a meta-analysis', *Economics of Education Review*, 19(2), 149–158.
- Gullason, E.T. (1989), 'The Consumption Value of Schooling. An Empirical Estimate of One Aspect', *Journal of Human Resources*, 24, 287–298.
- Hartog, J. (2000), 'Overeducation and earnings: where are we, where should we go?', *Economics of Education Review*, 19, 131–147.
- Hilmer, M.J. & Hilmer, C.E. (2012), 'On the relationship between student tastes and motivations, higher education decisions, and annual earnings', *Economics of Education Review*, 31, 66–75.

- Kodde, D.A. & Ritzen, J.M.M. (1984), 'Integrating Investment and Consumption Motives in a Neoclassical Model of Demand for Education', *Kyklos*, 37, 598–608.
- Lundberg, S. (2013), 'The College Type: Personality and Educational Inequality', *Journal of Labor Economics*, 31(3), 421–441.
- McGuinness, S. (2003), 'Graduate Overeducation as a Sheepskin Effect: Evidence from Northern Ireland', *Applied Economics*, 35, 597–608.
- McGuinness, S. (2006), 'Overeducation in the labour market', *Journal of Economic Surveys*, 20, 387–418.
- Mincer, J. (1974), *Schooling, Experience and Earnings*, New York: NBER.
- Montmarquette, C., Cannings, K. & Mahseredjian, S. (2002), 'How do young people choose college majors?', *Economics of Education Review*, 21(6), 543–556.
- Rochat, D., & Demeulemeester, J. L. (2001), 'Rational choice under unequal constraints: the example of Belgian higher education', *Economics of Education Review*, 20(1), 15-26.
- Ryan, R.M. & Deci, E. L. (2000), 'Intrinsic and extrinsic motivations: Classic definitions and new Directions', *Contemporary Educational Psychology*, 25, 54–67.
- Rubb, S. (2003), 'Overeducation in the labor market: a comment and re-analysis of a meta-analysis', *Economics of Education Review*, 22, 621–629.
- Schaafsma, J. (1976), 'The Consumption and Investment Aspects of the Demand for Education', *Journal of Human Resources*, 11, 233–242.
- Soenens, B. & Vansteenkiste, M. (2005), 'Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support', *Journal of Youth and Adolescence*, 34(6), 589–604.
- Spence, M. (1973), 'Job Market Signaling', *Quarterly Journal of Economics*, 87, 355–374.
- Tsang, M. (1987), 'The impact of underutilization of education on productivity: a case study of the U.S. Bell Companies', *Economics of Education Review*, 4, 93–104.
- Van der Meer, P., & Wielers, R. (1996), 'Educational credentials and trust in the labor market', *Kyklos*, 49(1), 29-6.
- Vansteenkiste, M. & Lens, W. (2006), 'Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation', *Educational Psychologist*, 41, 19–31.

- Verhaest, D. & Omey, E. (2009), 'Objective over-education and worker well-being: a shadow price approach', *Journal of Economic Psychology*, 30, 469–481.
- Verhaest, D. & Omey, E. (2010), 'The determinants of overeducation: different measures, different outcomes?', *International Journal of Manpower*, 31, 608–625.
- Verhaest, D. & Omey, E. (2013), 'The relationship between formal education and skill acquisition in young workers' first jobs', *The Manchester School*, 81(4), 638–659.
- Verhaest, D. & Omey, E. (2012), 'Overeducation, undereducation and earnings: further evidence on the importance measurement error and ability bias', *Journal of Labor Research*, 31(1), 76–90.
- Verhaest, D., Sellami, S. & van der Velden, R. (2015), 'Differences in horizontal and vertical mismatches across countries and fields of study', *International Labour Review*, forthcoming.
- Verhaest, D., Van Trier, W. & Sellami, S. (2011), 'Welke factoren bepalen de aansluiting van onderwijs en beroep? Een onderzoek bij Vlaamse afgestudeerden uit het hoger onderwijs', *Tijdschrift voor Arbeidsvraagstukken*, 27, 416–436.
- Zhang, L. (2003), 'Does the Big Five predict learning approaches?', *Personality and Individual Differences*, 34, 1431–1446.

APPENDIX

TABLE A DESCRIPTIVE STATISTICS

	Time- in-variant variables	Time- variant variables			
		Start first job (N=2612)	At age 23 (N=1175)	At age 26 (N=1499)	At age 29 (N=1302)
Items of educational motives					
To earn a higher wage	0.603				
To have a higher chance on a good job later	0.785				
Because most of my classmates/friends also attended higher education	0.300				
Because I did not yet want to go working	0.537				
Because my parents/family expected that	0.464				
It was obvious that I would continue studying	0.662				
Because the subject of the studies interested me	0.800				
Because I wanted to work further on my self-development	0.783				
Because I enjoy studying	0.593				
Academic Choices					
<i>Educational level</i>					
Higher tertiary education	0.372				
<i>Fields- of study</i>					
Linguistics, History & Philosophy	0.056				
Economics, Business & Law	0.303				
Behavioral & Social sciences	0.118				
Health & (para)Medicine	0.127				
Natural sciences & Engineering	0.209				
Arts	0.022				
Education	0.165				
Academic Performance					
<i>Grades</i>					
Graduating with distinction	0.405				
Graduating with high or highest distinction	0.096				
<i>Repeated years</i>					
Overeducation					
YOVER (JA)		1.700	1.449	1.137	1.219
OVER (JA)		0.521	0.444	0.421	0.452
YOVER (MSA)		0.913	0.684	0.580	0.627
OVER (MSA)		0.363	0.267	0.290	0.315
Labour Market Outcomes					
LN(Wages) (average net hourly wages)		2.017	2.027	2.114	2.175
Job satisfaction		3.922	4.309	4.126	4.129

TABLE B THE IMPACT OF THE STUDENT MOTIVES ON OVEREDUCATION (BASED ON THE WA MEASURE)

Standard panel data random estimates						
	Model I		Model II		Model III	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)	Random effects (5)	Random effects with Mundlak correction (6)
Investment	0.008 (0.025)	0.019 (0.025)	0.007 (0.024)	0.012 (0.024)	0.001 (0.024)	0.006 (0.024)
Educational consumption	-0.091*** (0.025)	-0.096*** (0.025)	-0.103*** (0.024)	-0.103*** (0.024)	-0.084*** (0.033)	-0.085*** (0.025)
Student life consumption	0.075*** (0.033)	0.065*** (0.024)	0.047** (0.023)	0.044* (0.023)	0.047** (0.023)	0.047*** (0.023)
Social norms	0.024 (0.025)	0.023 (0.026)	0.026 (0.024)	0.026 (0.024)	0.024 (0.023)	0.025 (0.023)
Control for Academic Choices	No	No	Yes	Yes	Yes	Yes
Control for Academic Performance	No	No	No	No	Yes	Yes

Standard errors are in parentheses.

The following control variables are included in every model: gender, non-European descent, educational level of the mother, educational level of the father, study track secondary education, study results secondary education, year of birth, experience, experience squared, cohabiting, having a child, years of observation, job type

The following control variables are included in model II (column 2): educational level, fields of study.

The following control variables are included in model III (column 3): educational level, fields of study, repeated years, grades.

Number of individuals = 2612; Number of observations = 6583.

*: $p < 0.10$; **: $p < 0.05$; ***: $p < 0.01$.

TABLE C THE IMPACT OF THE STUDENT MOTIVES AND OVEREDUCATION ON WAGES (BASED ON THE WA MEASURE).

	Standard panel data estimates		IV-panel data estimates	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)
Investment	0.001 (0.003)	-0.001 (0.003)	0.002 (0.003)	-0.000 (0.003)
Educational consumption	0.006** (0.003)	0.006* (0.003)	0.006** (0.003)	0.006* (0.003)
Student life consumption	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)
Social norms	0.001 (0.003)	-0.001 (0.003)	0.002 (0.003)	-0.001 (0.003)
YOVER	-0.017*** (0.002)	-0.008*** (0.002)	-0.031*** (0.002)	-0.022*** (0.003)
YOVER* investment	0.001 (0.001)	-0.001 (0.002)	0.003 (0.002)	-0.002 (0.003)
YOVER* educational consumption	-0.002* (0.001)	-0.002 (0.002)	-0.004** (0.002)	-0.003 (0.003)
YOVER* student life consumption	-0.003** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.007** (0.003)
YOVER*social norms	-0.001 (0.001)	-0.004** (0.002)	-0.002 (0.002)	-0.006** (0.003)

Standard errors are in parentheses.

YOVER = years of overeducation

The following control variables are included: gender, non-European descent, educational level of the mother, educational level of the father, track in secondary education, study results secondary education, year of birth, educational level, fields- of study, grades, repeated years, experience, experience squared, cohabiting, having a child, years of observation, job type, percentage of full employment, sector, firm size, night work, shift work, public sector

Number of individuals = 2612; Number of observations= 6583.

*: p<0.10; **: p<0.05; ***: p<0.01.

TABLE D THE IMPACT OF THE STUDENT MOTIVES AND OVEREDUCATION ON JOB SATISFACTION (BASED ON THE WA MEASURE).

	Standard panel data estimates		IV-panel data estimates	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction
Investment	0.005 (0.015)	0.007 (0.016)	0.006 (0.014)	0.007 (0.015)
Educational consumption	0.056*** (0.016)	0.048*** (0.017)	0.056*** (0.015)	0.049*** (0.017)
Student life consumption	-0.021 (0.015)	-0.022 (0.016)	-0.021 (0.014)	-0.022 (0.015)
Social norms	-0.000 (0.015)	0.011 (0.016)	0.000 (0.014)	0.011 (0.016)
YOVER	-0.086*** (0.009)	-0.075*** (0.009)	-0.130*** (0.012)	-0.155*** (0.018)
YOVER* investment	-0.006 (0.006)	-0.005 (0.009)	-0.013 (0.009)	-0.014 (0.015)
YOVER* educational consumption	-0.011* (0.006)	-0.022** (0.010)	-0.022** (0.010)	-0.044** (0.017)
YOVER* student life consumption	0.002 (0.006)	0.002 (0.010)	-0.003 (0.011)	0.002 (0.017)
YOVER*social norms	-0.006 (0.006)	0.005 (0.009)	-0.009 (0.010)	0.011 (0.015)

Standard errors are in parentheses.

YOVER = years of overeducation

The following control variables are included: gender, non-European descent, educational level of the mother, educational level of the father, track in secondary education, study results secondary education, year of birth, educational level, fields- of study, grades ,repeated years, experience, experience squared, cohabiting, having a child, years of observation, job type, percentage of full employment, sector, firm size , night work, shift work , public sector
Number of individuals = 2612; Number of observations= 6583.

*: p<0.10; **: p<0.05; ***: p<0.01.

TABLE E THE IMPACT OF THE STUDENT MOTIVES AND OVEREDUCATION (JOB ANALYSIS) ON THE NATURAL LOG OF WAGES – LINEAR REGRESSION COEFFICIENTS (FULL ESTIMATION RESULTS)

	Standard panel data estimates			IV-panel data estimates		
	Random effects (1)	Random effects Mundlak correction (2)	with correction	Random effects (3)	Random effects Mundlak correction (4)	with correction
Investment	0.001 (0.003)	-0.001 (0.003)		0.002 (0.003)	-0.003 (0.003)	
Educational consumption	0.006** (0.003)	0.006* (0.003)		0.010*** (0.003)	0.008** (0.004)	
Student life consumption	-0.002 (0.003)	-0.002 (0.002)		-0.002 (0.003)	-0.002 (0.003)	
Social norms	0.002 (0.003)	0.001 (0.003)		0.002 (0.003)	-0.002 (0.004)	
YOVER	-0.018*** (0.001)	-0.013*** (0.002)		-0.018*** (0.002)	-0.011*** (0.003)	
YOVER * investment	0.001 (0.001)	-0.000 (0.002)		0.001 (0.001)	-0.004* (0.002)	
YOVER * educational consumption	-0.002** (0.001)	-0.002 (0.002)		-0.005*** (0.001)	-0.005** (0.002)	
YOVER * student life consumption	-0.002** (0.001)	-0.003* (0.002)		-0.002 (0.001)	-0.004 (0.002)	
YOVER * social norms	-0.002 (0.001)	-0.004** (0.002)		-0.002 (0.001)	-0.005** (0.002)	
YEXP	0.014*** (0.004)	0.009* (0.005)		0.014*** (0.005)	0.009* (0.005)	
YEXP²	-0.001* (0.001)	-0.001 (0.001)		-0.001* (0.001)	-0.001 (0.001)	
Years of observation	0.004** (0.002)	0.007*** (0.003)		0.004* (0.002)	0.007*** (0.003)	
Man	0.031*** (0.005)	0.028*** (0.006)		0.030*** (0.005)	0.027*** (0.006)	
Non – European descent	-0.031 (0.026)	-0.031 (0.026)		-0.032 (0.026)	-0.031 (0.006)	
Year of birth -1976 (ref.)						
Year of birth - 1978	-0.023 (0.020)	-0.033 (0.023)		-0.023 (0.020)	-0.033 (0.023)	
Year of birth - 1980	-0.014 (0.021)	-0.032 (0.030)		-0.013 (0.021)	-0.034 (0.029)	
Cohabiting	-0.006 (0.005)	-0.004 (0.006)		-0.007 (0.005)	-0.004 (0.006)	
Having a child	-0.004 (0.011)	-0.007 (0.012)		-0.003 (0.011)	-0.007 (0.012)	
Diploma father – < lower secondary education (ref)						
Diploma father-Lower secondary education	-0.010 (0.012)	-0.013 (0.012)		-0.010 (0.012)	-0.014 (0.011)	
Diploma father-Higher secondary education	0.001 (0.011)	-0.003 (0.011)		-0.000 (0.011)	-0.005 (0.011)	
Diploma father-Tertiary education	0.001 (0.011)	-0.002 (0.011)		0.001 (0.014)	-0.004 (0.011)	
Diploma father- unknown	-0.016 (0.014)	-0.017 (0.014)		-0.017 (0.014)	-0.019 (0.014)	
Diploma mother – < lower secondary education (ref)						

Diploma mother-Lower secondary education	0.003 (0.014)	0.006 (0.014)	0.002 (0.014)	0.006 (0.014)
Diploma mother-Higher secondary education	-0.005 (0.013)	-0.003 (0.013)	-0.005 (0.013)	-0.003 (0.013)
Diploma mother-Tertiary education	0.004 (0.014)	0.008 (0.014)	0.005 (0.014)	0.008 (0.013)
Diploma mother- unknown	-0.016 (0.023)	-0.015 (0.023)	-0.016 (0.023)	-0.016 (0.023)
Track in secondary education – ASO (ref)				
Track in secondary education - TSO	0.006 (0.006)	0.004 (0.006)	0.006 (0.006)	0.005 (0.006)
Track in secondary education - BSO	-0.038* (0.020)	-0.027 (0.020)	-0.037* (0.020)	-0.026 (0.006)
Track in secondary education - KSO	0.021 (0.021)	0.025 (0.022)	0.022 (0.021)	0.027 (0.021)
Study results in SO – 1e quarter (ref)				
Study results in SO – 2e quarter	-0.009* (0.005)	-0.009 (0.006)	-0.009* (0.005)	-0.008 (0.005)
Study results in SO – 3e quarter	-0.008 (0.009)	-0.006 (0.020)	-0.008 (0.009)	-0.005 (0.009)
Study results in SO – 4e quarter	0.004 (0.015)	0.011 (0.022)	0.004 (0.015)	0.013 (0.015)
Higher tertiary education	0.109*** (0.007)	0.112*** (0.007)	0.109*** (0.007)	0.112*** (0.007)
Field of study: Economics, Business & Law (ref)				
Field of study: Linguistics, History & Philosophy	-0.045*** (0.012)	-0.036*** (0.012)	-0.045*** (0.012)	-0.035*** (0.012)
Field of study: Behavioral & Social Sciences	-0.020** (0.009)	-0.010 (0.009)	-0.020** (0.009)	-0.009 (0.009)
Field of study: Health & (para)Medicine	0.011 (0.010)	0.016 (0.011)	0.011 (0.010)	0.015 (0.011)
Field of study: Natural Sciences & Engineering	-0.003 (0.008)	-0.002 (0.008)	-0.003 (0.008)	-0.003 (0.008)
Field of study: Arts	-0.096*** (0.018)	-0.081*** (0.018)	-0.095*** (0.018)	-0.077*** (0.018)
Field of study: Education	-0.023** (0.009)	-0.015 (0.010)	-0.023** (0.009)	-0.016 (0.010)
Repeated years	-0.007* (0.004)	-0.004 (0.004)	-0.007* (0.004)	-0.004 (0.004)
Graduating with a passing grade (ref)				
Graduating with a distinction grade	0.022** (0.009)	0.022** (0.009)	0.022** (0.009)	0.021** (0.009)
Graduating with a high or highest distinction grade	0.010* (0.005)	0.009* (0.005)	0.010* (0.005)	0.008 (0.005)
Observation in job at age of 23	-0.006 (0.012)	0.005 (0.014)	-0.007 (0.012)	0.004 (0.014)
Observation in job at age of 26	0.046*** (0.012)	0.051*** (0.013)	0.046*** (0.012)	0.053*** (0.013)
Observation in job at age of 29	0.021*** (0.004)	0.022*** (0.004)	0.084*** (0.015)	0.022*** (0.004)
Percentage of employment (100% full time)	-0.004*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)	-0.005*** (0.000)
Size of the firm – less than 10 employees (ref)				
Size of the firm – between 10 and 49 employees	0.021*** (0.007)	0.021** (0.010)	0.020*** (0.007)	0.020* (0.010)

Size of the firm – between 50 and 249 employees	0.044*** (0.007)	0.035*** (0.011)	0.044*** (0.007)	0.034*** (0.011)
Size of the firm – more than 250 employees	0.064*** (0.007)	0.063*** (0.012)	0.063*** (0.007)	0.063*** (0.012)
Size of the firm - Unknown	0.040** (0.016)	0.028 (0.023)	0.039** (0.016)	0.025 (0.023)
Sector: Agriculture (ref)				
Sector: Mining and Quarrying	0.089** (0.039)	0.060 (0.065)	0.091** (0.040)	0.059 (0.066)
Sector: Craft related industry	0.114*** (0.038)	0.060 (0.063)	0.117*** (0.038)	0.062 (0.064)
Sector: Manufacturing industry	0.063 (0.039)	0.030 (0.065)	0.065 (0.040)	0.034 (0.066)
Sector: Electricity	0.095** (0.037)	0.083 (0.065)	0.096** (0.039)	0.085 (0.064)
Sector: Wholesaling,	0.059 (0.038)	0.016 (0.031)	0.061 (0.038)	0.015 (0.063)
Sector: Food	0.053 (0.042)	0.015 (0.067)	0.056 (0.042)	0.015 (0.068)
Sector: Transport and Communication	0.065* (0.039)	0.0024 (0.063)	0.067* (0.039)	0.027 (0.064)
Sector: Finances	0.091** (0.039)	0.049 (0.065)	0.094** (0.039)	0.051 (0.065)
Sector: Rental Services	0.066 (0.038)	0.019 (0.062)	0.068* (0.038)	0.022 (0.063)
Sector: Public sector	0.051 (0.039)	0.031 (0.064)	0.052 (0.039)	0.034 (0.065)
Sector: Education	0.046 (0.038)	0.021 (0.062)	0.047 (0.038)	0.026 (0.063)
Sector: Health	0.054 (0.038)	0.037 (0.062)	0.056 (0.048)	0.042 (0.063)
Sector: other services	0.053 (0.040)	0.047 (0.064)	0.055 (0.040)	0.050 (0.065)
Unknown sector	0.074* (0.040)	0.060* (0.031)	0.075* (0.040)	0.075 (0.065)
Private sector	-0.011* (0.007)	-0.026** (0.010)	-0.011* (0.007)	-0.027*** (0.010)
Day work (ref)				
Night work	0.011 (0.016)	0.003 (0.018)	0.011 (0.016)	0.001 (0.018)
Day –night work	0.015 (0.015)	0.006 (0.017)	0.017 (0.015)	0.005 (0.017)
Shift work (ref)				
No shift work	-0.008 (0.013)	-0.009 (0.016)	-0.008 (0.013)	-0.010 (0.016)
Unknown shift work	0.003 (0.017)	-0.007 (0.019)	0.004 (0.017)	-0.006 (0.019)

Standard errors are in parentheses.

YOVER = years of overeducation; YEXP : years of experience ; YEXP² = years of experience squared

Number of individuals = 2612; Number of observations= 6583

*: p<0.10; **: p<0.05; ***: p<0.01

TABLE F THE IMPACT OF THE STUDENT MOTIVES ON THE NATURAL LOG OF WAGES: REDUCED FORM ESTIMATES
(EMPLOYER CHARACTERISTICS EXCLUDED) – LINEAR REGRESSION COEFFICIENTS

	Model I		Model II	
	Random effects (1)	Random effects with Mundlak correction (2)	Random effects (3)	Random effects with Mundlak correction (4)
Investment	0.006** (0.003)	0.004* (0.003)	0.003 (0.003)	0.003 (0.003)
Educational consumption	0.002 (0.003)	0.002 (0.003)	0.003 (0.003)	0.003 (0.003)
Student life consumption	-0.005** (0.003)	-0.005* (0.002)	-0.006** (0.003)	-0.006** (0.002)
Social norms	-0.001 (0.003)	-0.001 (0.003)	0.001 (0.003)	-0.002 (0.003)
Field of study: Economics, Business & Law (ref)				
Field of study: Linguistics, History & Philosophy			-0.048*** (0.012)	-0.041*** (0.012)
Field of study: Behavioral & Social Sciences			-0.024*** (0.009)	-0.016* (0.009)
Field of study: Health & (para)Medicine			0.024*** (0.009)	0.028*** (0.009)
Field of study: Natural Sciences & Engineering			0.005 (0.008)	0.006 (0.008)
Field of study: Arts			-0.118*** (0.018)	-0.105*** (0.019)
Field of study: Education			-0.011 (0.008)	-0.004 (0.008)

Standard errors are in parentheses.

YOVER and firm characteristics are not included in the above estimations

The following variable(s) are included in model II: fields of study

The following control variables are included in every model: gender, non-European descent, educational level of the mother, educational level of the father, track in secondary education, study results secondary education, year of birth, educational level, grades, repeated years, experience, experience squared, cohabiting, having a child, years of observation, job type, night work, shift work

Number of individuals = 2612; Number of observations= 6583.

*: p<0.10; **: p<0.05; ***: p<0.01