

Ensayo bibliográfico

Literature Survey of the Incidence of Over-education: A Sociological Approach

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INTRODUCTION

The concept of over-education first appeared in economics in the seventies as a concern regarding the excess of schooling attained by young Americans with respect to labor market demand. The first works on over-education come from Richard Freeman's «The Over-educated American» (Freeman, 1976). It is worth stressing here that over-education is a fairly misleading term, since it suggests that a person can acquire too much education in his/her life: but with respect to what? Over-education is an excess of education with respect to the job currently performed by the worker, whereby the job does not fully utilize the worker's skills acquired through education, as opposed to the worker having mistakenly obtained too much education.

This paper firstly reviews the theories related to over-education and then goes on to discuss a very controversial concept of the measurement of over-education. This is followed by a review of the incidence of over-education in 52 studies. The major aim of this work is to bring together various studies concerning over-education and see whether its incidence has grown or decreased across countries in recent decades. The strength of this approach is the aggregation of a very large sample of studies on over-education from various disciplines (economics, sociology, psychology, demography). Other literature reviews on over-education tend to concentrate mainly on its wage effects in the labor market, which automatically narrows their scope to slightly more than 20 studies (Chevalier, 2003; Groot *et al.*, 2000; Hartog, 2000; McGuinness, 2006).

The rest of this paper is organized as follows. In Section 2 we provide a brief historical overview of the development of the concept of over-education. Section 3 describes the major theories related to over-education. Measurement of over-education is discussed in Section 4, while a review of 52 major studies on over-education is presented in Section 5. Section 6 concludes the review.

HISTORICAL OVERVIEW

Freeman was among the first to conceptualize over-education as an excess of schooling with respect to job requirements. He believed that the American educational system in the seventies was producing a large surplus of educated workers with respect to aggregate labor market demand. The first analyses of the phenomenon of over-education concentrated on aggregate observations of the American labor market. Freeman subsequently published more

specific research on particular groups in the labor market; however, all of them are characterized by a macro focus on the entire economy without concentrating on individual factors.

The imbalance between supply and demand for skilled labor pointed out by Freeman inspired various publications on the topic (for an in-depth historical description of the early over-education literature in the USA, see Buchel [2001]). The second most important researcher who undertook the study of over-education in the early eighties was Russell Rumberger (Rumberger, 1981). Rumberger's merit in studying over-education lies predominantly in bringing the discussion from the primarily macroeconomic focus of Freeman's studies to the individual level. Significantly, neither Rumberger nor Freeman found confirmation for the widely claimed declining returns to college education among young Americans in the seventies (and early eighties). Both of them, however, found a rising incidence of over-education in the U.S. labor market (Freeman, 1976; Rumberger, 1981, 1984, 1987).

In fact, in an important study in the second half of the eighties Herbert Smith re-worked Freeman's analyses and demonstrated that the alleged decline in returns to college education in the seventies (particularly between 1970 and 1974) took place largely due to a significant increase in cohort sizes and a comparably slow response of the U.S. labor market (Smith, 1986). Initially, over-education was primarily studied by labor economists and was tied to the issue of declining wage returns to college education. Smith tried to extend the term of over-education and suggested calling it underemployment, which was meant to encompass broader mismatch issues, such as the possibility of unemployment or contingent employment. Despite this attempt, over-education continued to be recognized under its original name, chiefly due to the fact that most of the literature on over-education remained focused on the wage impacts of being over-educated and seemed to neglect other non-wage issues.

There are, however, notable examples of the widening scope of over-education studies beyond the wage issue, and both of them come from sociology (Burriss, 1983; Coburn, 1975). Coburn studied the influence of over-education and under-education on mental health, while Burriss drew attention to the socio-political consequences of over-education. Coburn found that the effects of self-perceived under-/over-education on mental well-being were far more significant than those determined by objective measurements of the same phenomena. Burriss was also among the first to demonstrate that over-education has adverse effects on job satisfaction, as well as on stratification ideology. However, he found no significant influence of over-education on political leftism or political alienation.

Over-education may play an important role in the economy. It may affect economic growth through diminished productivity of the workforce employed below their real skill levels (Guironnet *et al.*, 2007). One can speak about potential loss of productivity and opportunity cost for the economy if workers do not utilize their skills properly and are less productive than they could be in a more Pareto efficient setup. Moreover, if workers who are over-educated were also to persist in this phenomenon for prolonged periods of their working life, then this may directly affect their wages in the long run and, consequently, their lifetime wealth. It should also be noted that over-education may also pull the social class of individuals downwards (Aberg, 2003). Their occupation may not adequately match their educational attainment, thus affecting their social class position, which is defined primarily by occupation and educational level. Even worse may be the situation of the less educated who, as Aberg (2003) observes, would usually remain employed in less demanding jobs. If a large pool of over-educated workers were employed in jobs below their skill levels, the crowding out effect may push

working class workers into unemployment if the over-educated workforce could act as their substitutes in the production processes.

The rest of this paper is organized as follows. Section 3 describes the major theories related to over-education. Measurement of over-education is discussed in Section 4, while a review of 52 major studies on over-education is presented in Section 5. Section 6 concludes the review.

THEORETICAL BACKGROUND

Higher educational attainment leads to better employment chances and a higher probability of upward mobility on the social ladder. However, Freeman (1968) demonstrated that there is a ceiling on educational attainment that bounds its productivity in terms of social mobility. Over-education in this context becomes a counter force inhibiting upward mobility. There are several theories relevant to the analysis of over-education.

Becker's Human Capital Theory views over-education as a purely temporary state of maladjustment between a firm's technology and the human capital of its labor force (Becker, 1993). Under human capital theory, either firms adjust their technology to fully utilize the available human capital or it proves wasteful for workers to invest in excessively high levels of education. In equilibrium, the human capital model does not allow for the existence of an over-educated workforce. Workers are paid their marginal product (which means that their entire productivity is at work), which in consequence leads to a situation where workers reap wages according to their level of productivity. Earlier versions of human capital theory, particularly that of Mincer, would argue that individuals with more schooling may be compensating for a lack of work-related human capital, and that the apparent lower earnings of these overeducated workers may be attributable to an omitted variable problem, that is, a lack of controls for less formal measurements of human capital accumulation. Therefore, while some would argue that human capital is not consistent with the observed facts (Dolton and Vignoles, 2000), this would only be true if over-education proved to be a long-term phenomenon and/or persisted when controls are included for work-based human capital investments and/or worker skills heterogeneity (McGuinness, 2003).

Another theory which regards over-education as a temporary phenomenon is the Matching Theory (Pissarides, 2000). In the matching framework, workers search the labor market for job offers and firms screen the labor market for the most productive workers. For both sides the search is costly. Temporary mismatches may therefore occur, which are caused either by the inadequacy of a worker's education with respect to the job performed (horizontal mismatch between college major and job type) or by the level of human capital required for the job in question. Both types of mismatch are eventually corrected, according to matching theory, since mismatched workers change jobs in order to improve their match and obtain a higher salary.

Over-education, however, proves to be a problematic issue in the light of both human capital and matching theories. It is demonstrated to be more persistent than both models anticipate (Dolton and Vignoles, 2000; Frenette, 2004; McGuinness and Wooden, 2007; Sloane, Battu and Seaman, 1999). This makes us turn to alternative theories which either extend the existing ones, such as Job Mobility Theory (Sicherman, 1991; Sicherman *et al.*, 1990), or propose a completely alternative view of educational attainment such as that put forward by Assignment Theory (Sattinger, 1993) or the Job Competition Model (Thurow, 1974).

Job Mobility Theory assumes that workers get into over-educated positions because they lack clear signals about their productivity (Sicherman, 1991; Sicherman *et al.*, 1990). According to this theory, over-educated workers remain in an over-educated position only for a short period of time in order to acquire work experience, which in turn signals their productivity. With more experience, workers move to better jobs and step out of over-education (Hersch, 1995). They gain access to better jobs either through internal mobility within firms (Groeneveld *et al.*, 2004) or external mobility (Sicherman, 1991). Therefore, even if the existence of over-education in the labor market in the long term is observed, the human capital model in the light of job mobility theory does not lose its explanatory power. It is clear that workers who manage to successfully signal their productivity will obtain the best positions (Spence, 1973).

Thurow's Job Competition model assumes an entirely different view from Sicherman's job mobility theory. There are two queues in Thurow's model. Firstly, workers form a queue for jobs where the relative position of a worker in the queue depends on their level of educational attainment. The second queue is formed by jobs ranked from the least demanding (in terms of training) to those requiring the highest qualification (Thurow, 1974). Under this model, workers always have an incentive to invest in more education, as it shifts them forwards in the queue for the best jobs. In such a case, over-education may be part of the natural state for workers competing for the best jobs. As the best jobs are scarce, few workers will be assigned to them and all others with high levels of education will consequently be assigned to lower quality jobs requiring comparatively less education. This view emphasizes the importance of a person's relative position, and clearly explains over-investment in education and over-education. In Thurow's model, jobs are ordered with respect to training, and so the wage offered reflects not only the productivity, but also the training costs of a worker in the job.

Finally, Sattinger's Assignment Theory forms an intermediate step between the human capital perspective and the job competition model (Sattinger, 1993). It claims that workers are firstly assigned the sector in which they will work, and then, within this sector, they choose the job which maximizes their utility. All assignment models specify the jobs or sectors available to workers, the relevant differences among workers, the technology relating job and worker characteristics to output, and the mechanisms that assign workers to jobs. In a similar way to human capital theory, this framework treats workers as rational market players while allowing for a job's allocative role for workers in the market, consistent with job competition theory. According to assignment theory, workers choose jobs, but only those which offer a good wage and/or other non-pecuniary characteristics. Unlike in human capital theory or job competition theory, the wage in assignment theory is not directly observable a priori, but is rather a product of a worker's optimization problem and job characteristics. It is certain in the neoclassical framework that workers look for the highest possible wages, as it is assumed that wage subsumes all other desired job characteristics. Assignment models differ significantly from the job competition interpretation in that they stress that the choice of job creates an intermediate step between individuals' characteristics and their earnings. Workers found in a particular sector or job are not randomly distributed, but are there based on the choices made to maximize their income or utility. Assignment models are the most plausible explanations for the existence of over-education in labor markets, as they claim that workers and firms may voluntarily opt to establish over-educated job matches which maximize their economic objectives.

MEASUREMENT OF OVER-EDUCATION

The study of over-education has posed significant methodological challenges to researchers. One of the major problems has been its measurement. Below we sketch the historical evolution of the measurement of over-education, which comprises three main strands. They have been extensively discussed by the sociologist Charles Halaby, who was also the first to systematically describe the measurement methodology of over-education (Halaby, 1994).

All the early over-education studies prior to the mid-eighties, (mainly) by Freeman and Rumberger, were based on the so-called DOT-GED approach. The General Educational Development (GED) scores gave rise to the creation of a Dictionary of Occupational Titles (DOT), which contained information on the educational requirements of jobs performed in the USA. Firstly, job experts visited the workplaces to observe directly what requirements each job posed in terms of the educational credentials of a worker. Secondly, the experts established the formal educational requirements for each job they observed. Aggregated information from the experts subsequently served to create the Dictionary of Occupational Titles. Early research on over-education based primarily in the USA relied almost entirely on the DOT classification. Note that such an approach limits the definition of a «good match» to a particular educational level, disregarding the possible diversity of jobs within even the narrowest occupational categories (Halaby, 1994). The DOT-based measurements belong to a class of over-education measurements called Job Assessment (JA). The name comes from the aforementioned assessment of educational requirements of jobs carried out by the work experts who created the DOT classification.

In 1981, two economists, Greg Duncan and Saul Hoffman (Duncan *et al.*, 1981), published a paper based on an entirely new measurement of over-education, abandoning the DOT classification. In their influential article «The Incidence and Wage Effects of Overeducation», they rejected the DOT-based measurement and instead relied on a subjective measurement of over-education. Today, subjective measurements constitute another class of over-education measurements called workers' self-assessment (WA). The subjective measurement is normally an outcome of workers' responses to a question about whether the job they currently perform requires less, as much, or more education than they currently have. All the responses which claim that the job requires more education than they have are coded as under-education, all those which say that the job requires less education than a worker has are coded as over-education, and the remaining responses are understood as correct matches. In their study, Duncan and Hoffman found very high levels of over-education in American society, as much as 40% for the entire workforce and roughly 50% of the black workforce.

A very important finding of theirs is the observation that over-education yields positive wage returns. Over-educated workers, according to Duncan and Hoffman, earn more than comparably matched workers in the same occupations, yet the return to an additional «over-educated» year of schooling proved to amount only to half of that for an additional year of required schooling. Therefore, they found decreasing returns to additional years of schooling in over-educated jobs. They introduced what is known as the ORU model, which allows for estimation of the relative reward for one year of over-education in terms of wage (or the likelihood of training). In contrast, the models based on dummy variables measuring over-/under-education allow only for estimation of relative opportunity loss associated with the mismatch. A similar approach to Duncan and Hoffman's was later employed in the early over-education studies by Rumberger and Shockey (Rumberger, 1987; Shockey, 1989), among others. Today,

both the ORU and dummy-based approaches are in common use depending on the research question (McGuinness, 2006).

Coming back to the measurement issue, the third family of measurements is called realized matches (RM) and was introduced in the literature on over-education by Clifford Clogg and James Shockey (Clogg *et al.*, 1984). The method applied by Clogg and Shockey to measure over-education relied on the principle that each occupation contains a core of matched workers whose educational credentials correspond to the requirements of their respective jobs. Starting from these premises they built a measurement (developed further in countless other studies) which assumed that over-educated workers are those whose schooling exceeds the mean years of education specific to their respective occupation by more than one standard deviation. Consequently, under-educated workers would be those who possess less than mean minus one standard deviation years of education for their occupation. As Halaby observes, this measurement aggregates summary properties of intra occupational distribution of completed schooling (Halaby 1994: 49). At present, mainly the two latter methods of over-education measurement are being employed in analyses: workers' self-assessment (WA) and realized matches (RM).

INCIDENCE OF OVER-EDUCATION IN THE LITERATURE

Table 1 presents a compilation of most studies on over-education where the incidence of over-education has been measured and reported. It is therefore clear that the list of 52 studies provided below is not a complete review of all existing works on over-education. It does, however, represent the majority of all currently known studies on over-education. All studies which reported incidence of over-education have been included. Since almost all published research on over-education reports its incidence, this should create a fairly comprehensive list. The list has been created on the basis of two other works by Groot and van den Brink (2000) and McGuinness (2006), but it also contains numerous studies which have not been listed in the previous literature reviews. The aim of this list is to compile the largest possible-number of studies on the issue of over-education. However, some empirical studies which raise methodological issues related to over-education but do not report its incidence, have not been included in the list (Buchel, 2001, 2002; Budria, 2010; Clogg *et al.*, 1984; Coburn, 1975; Evans, 1999; Gill *et al.*, 1992; Fancis Green *et al.*, 2007; 2010; Handel, 2003; Pollmann-Schult *et al.*, 2004; Shockey, 1989; Sloane, 2003; van der Meer, 2006). The studies cited above and not included in the list below discuss over-education indirectly as a labor market phenomenon but do not analyze it as an econometric variable. Neither does the list include a recent study by Charlot and Decreuse (2010) which explores over-education in theoretical terms of a matching models framework. Thus, the only criterion for a study to be included in the list was that it reported the incidence of over-education regardless of the dependent variable studied in the paper or the data set used. Articles included in the list measure over-education for entire country populations and sub-samples of tertiary level graduates only. The studies based on graduate surveys are not nationally representative; they are restricted to their specific target groups. The division between surveys of graduates and of the general population proves to be the key dimension for the measurement of the magnitude of over-education's incidence.

It is immediately clear from the above table that a large number of studies come from the United States (15 out of 52 studies). This is chiefly due to lack of adequate data outside the USA. The development of statistical measurements of over-education across occupations

TABLE 1. Review of literature on over-education

Study	Year	Measurement type	Country of study	Data and sample size	Population under analysis	Data collection	Over-education incidence (percentages)
Aberg	2003	WA	Sweden	Level of Living Survey, N=8900	General	1995	35.8*
Alba-Ramirez	1993	WA	Spain	Living and Working Conditions Survey, N=11597	General	1985	17
Allen, Velden	2001	WA	Netherlands	Higher Education and Graduate Employment in Europe, N=2460	Tertiary graduates	1998	20
Alpin	1998	JA, RM	UK	Labor Force Survey, N=150000	General	1995	27(37)
Bauer	2002	RM	Germany	German Socio-Economic Panel, N=4344	General	1984-1998	11.5
Belfield	2010	WA	UK	Workplace Employee Relations Survey, N=22451	General	2004	32
Blázquez, Malo	2005	WA	Spain	European Community Household Panel (ECHP), N=20631	General	1995-2000	57
Buchel, Mertens	2004	WA	Germany	German Socio-Economic Panel, N=19668	General	1984-1997	13.5
Budria, Moro-Egido	2008	WA	Spain	European Community Household Panel (ECHP), N=2200 approx.	General	2001	24*
Burris	1983	JA	USA	National Opinion Research Center, N=1534	General	1977	21.7
Chevalier	2003	JA, WA	UK	Graduate's Survey, N=4844	Graduates	1996	17
Chevalier, Lindley	2009	WA	UK	Graduate's Survey, N=2484	Graduates	1995	15
Cohn, Kahn	1995	RM, WA	USA	Panel Study of Income Dynamics (PSID), N=3898	General	1985	33*
Cohn, Ng	2000	RM	Hong Kong	Hong-Kong by Census, N=62000	General	1986(1991)	35(34)*
Daly, Buchel, Duncan	2000	WA	USA (Germany)	PSID, N=3000 approx. GSOEP, N=3000 approx.	General	1985(1984)	32.65(17.5)*

TABLE 1. Review of literature on over-education (Continuation)

Dekker, Grip, Heijke	2002	WA	Netherlands	Labour Supply Survey 1992, N=1343	General	1990-1992	30.6
Dolton, Siles	2002	WA	UK	Newcastle Alumni Survey, N=1389	Graduates	1998	22
Dolton, Siles	2008	WA	UK	Newcastle Alumni Survey, N=758	Graduates	1998	25
Dolton, Vignoles	2000	WA	UK	National Survey of Graduates and Diplomates, N=4551	Graduates	1986	30
Duncan, Hoffman	1981	WA	USA	Panel Study of Income Dynamics, N=5000 approx.	General	1976	42
Fabel, Pascalau	2007	JA	USA	US Public Employer (Name not reported), N=33780	General	2003-2006	58
Frenette	2004	RM	Canada	National Graduates Surveys (NGS), N=12378	Graduates	1984-1995	30
Green, Kler, Leeves	2007	JA	Australia	Longitudinal Survey of Immigrants to Australia, N=8486	General/Graduates	1996-2001	20-48 (depending on race of immigrants)
Green, McIntosh	2007	WA	UK	2001 Skills Survey, N=4470	General	2001	37
Groeneveld, Hartog	2004	RM	Netherlands	Energy & Telecom Company (Name not reported), N=2704	General (limited to the company employees)	1995(1998)	18(19)
Groot	1993	RM	Netherlands	Brabant Province Survey, N=1057	General (limited to the province of Brabant)	1983	16
Groot	1996	RM	UK	British Household Panel Survey, N=4126	General	1991	11
Groot, van den Brink	1997	RM	UK	British Household Panel Survey, N=4606	General	1991	11.5*
Halaby	1994	JA, RM, WA	USA	Quality of Employment Surveys, N=2746-2851	General	1973(1977)	18(30)*
Hartog, Osterbeek	1988	WA, RM	Netherlands	Various surveys from the Netherlands and the USA, N=1500 approx.	General	1982(1960-1977)	16(7-25)
Heijke, Meng Ris	2003	WA	Netherlands	Postal Survey of 1994/1995 Dutch Graduates	Graduates	1994-1995	18 ^a

Hersch	1995	WA	USA	Hersch's own survey of a private firm's employees in Wyoming	Firm's employees	1991	21
Lindley	2009	RM	UK	Quarterly Labor Force Survey, N=264636	General	1993-2003	22 (natives), 27 (immigrants)
McGoldrick, Robst	1996	WA	USA	Panel Study of Income Dynamics, N=3192	General	1985	50*
McGuinness		WA	Northern Ireland	Northern Ireland Graduates Survey, N=837	Graduates	2000	20
McGuinness		WA	Northern Ireland	Premiere Applicants Programme Telephone Survey, N= 166	Graduates	1999	24
McGuinness, Bennett	2007	WA	Northern Ireland	Higher Education Entrants Survey, N=1255	Graduates	1999	27*
McGuinness, Wooden	2007	WA	Australia	Household, Income and Labor Dynamics in Australia (HILDA), N=16556	General	2001-2004	(severely) 14*; (moderately) 29*
McGuinness, Sloane	2010	WA	UK	REFLEX, N=1000 approx.	Graduates	2005	14
Kiker, Santos, Oliveira	1997	RM, JA	Portugal	Personnel Records of Portuguese Ministry of Labor, N=30336	General	1991	(9.4-33.1) 25.5*
Oliveira, Santos, Kiker	2000	RM	Portugal	Personnel Records of Portuguese Ministry of Labor, N=23036	General	1991	9*
Patrinos	1997	RM	Greece	Special Wages & Salaries Survey (National Statistical Service of Greece), N=2928	Graduates	1977	16
Robst	1995	WA	USA	Panel Study of Income Dynamics, N=559	General	1976, 1978, 1985	44.68
Robst	2007	WA	USA	National Survey of College Graduates, N=123085	Graduates	1993	20.1a*
Rumberger	1981	JA, WA	USA	Current Population Survey, N=30000 approx.	General	1977	16*
Rumberger	1987	WA, JA	USA	Survey of Working Conditions & Quality of Employment Surveys, N= 1500 approx.	General	1969, 1973 (1973JA), 1977	35; 27, (32), 57

TABLE 1. Review of literature on over-education (Continuation)

Sicherman	1991	WA	USA	Panel Study of Income Dynamics, N=5000 approx.	General	1976, 1978	40.8*
Sloane, Battu, Seaman	1999	WA, JA, RM	UK	Social Change and Economic Life Initiative Survey (SCELI), N=3333	General	1996	40*; 22*; 33.65*
Smooorenburg, Velden	2000	WA	Netherlands	STOA Survey, N=11901	General (secondary and tertiary graduates)	1994	39*
Tsang, Rumberger, Levin	1991	WA, (JA)	USA	Survey of Working Conditions & Quality of Employment Surveys, N=1500 approx.	General	1969 - 1977 (1973)	35-32, (57)
Verdugo, Verdugo	1989	RM	USA			1980	10.9
Vahey	2000	WA	Canada	National Survey of Class Structure (NSCS), N=993	General	1982	31*
Verhaerst, Orney	2004	JA, WA, RM	Belgium	SONAR Survey for Flanders, N=3015	General	1999	54.3*; 44.5*; 12.7*

* Depicts mean value of over-education (usually computed for both male and female genders).

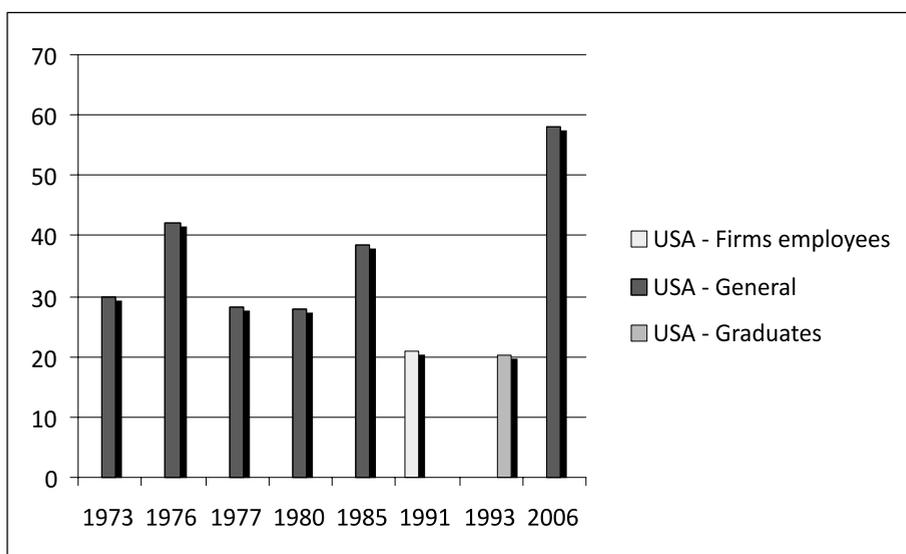
^a Refers to field mismatch (field of education does not match the field of work).

Based on Groot & van den Brink (2000) and McGuinness (2006) with updates.

52 studies reported. JA, WA, RM indicate respectively the Job Analysis, Workers' Self-Assessment and Realized Matches method (statistical method) of measuring over-education.

opened a wide avenue of new research using standard datasets also available in Europe. Another reason for the fact that so many studies concentrated on the American labor market is the historical legacy of the works of Freeman, Rumberger, and Duncan and Hoffman (1981), incentivized by a great debate in the USA about declining returns to college education between 1970 and 1990. Studies during these two decades were primarily based on data from the Panel Study of Income Dynamics and therefore referred to the general population. Figure 1 below depicts the mean over-education levels in the USA in the studies listed in Table 1. It shows the prevalence of the general sample studies in the seventies and eighties. Only in the nineties did certain studies analyze firm data and some graduate surveys. The striking observation drawn from Figure 1 is that levels of over-education in the USA are very high, fluctuating between roughly 30 and 40% and with a sharp increase in 2006, as reported by Fabel and Pascalau (2007).

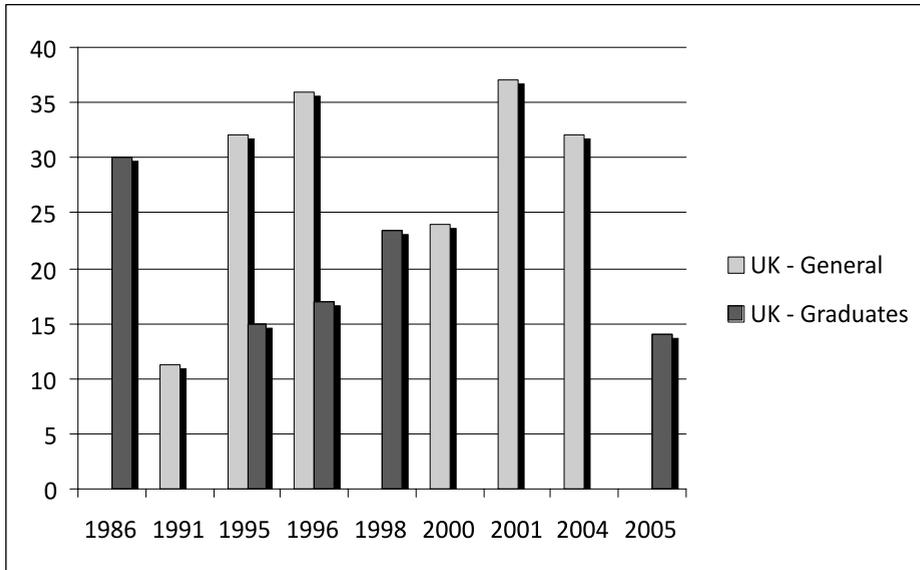
FIGURE 1. Incidence of over-education in the USA by sample types



The second most frequently studied country, due to data availability, is the UK. Studies for the UK demonstrate quite a clear pattern. Over-education incidence has increased over time from 11% in 1991 to over 30% in the period 2001-2004 when studied on the general population (Belfield, 2010; Chevalier *et al.*, 2009; Green *et al.*, 2007; Groot *et al.*, 1997; Groot, 1996). However, the respective figures for graduate surveys do not demonstrate such a growth pattern, with the over-education level fluctuating between 15% and some +20% (see Figure 2). The question as to which results are more reliable remains open. What becomes evident, however, is that the general trend in over-education incidence is positive, whereas graduate over-education remains largely stable. Slight differences observable between successive studies should not be directly interpreted, as they are rooted in differences in measurements of over-education applied across studies. In a recent study on the UK general population sample, Green and Zhu (2010) report an upward trend in over-education between

1992 and 2006. It is the only study so far which coherently analyzes over-education macro trends across time.

FIGURE 2. Incidence of over-education in the UK by sample types

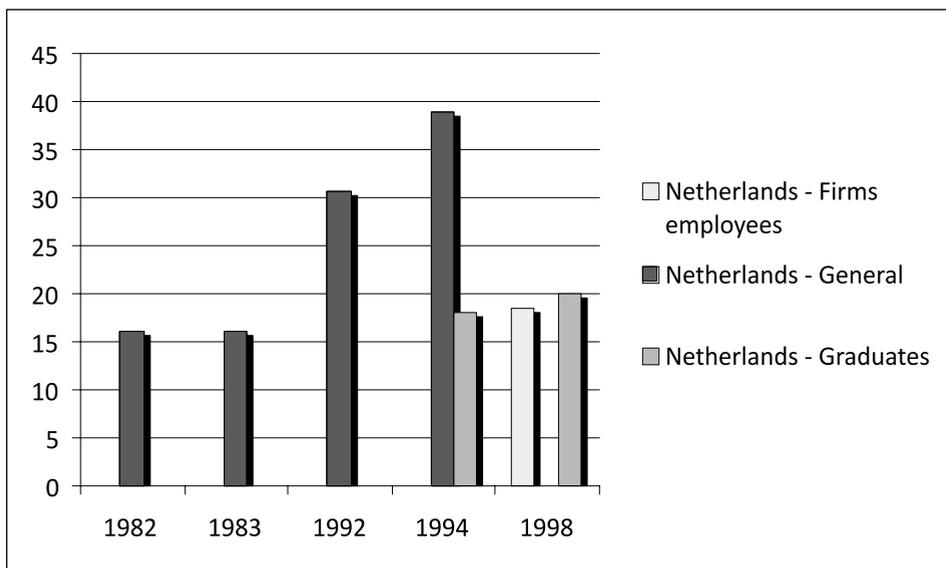


For the same reason of data availability as in the USA or the UK, we find seven studies on the Netherlands. Figure 3 demonstrates the over-education incidence in the Netherlands. It is easily observable that over-education measured on the general population more than doubled between 1982 and 1994. At the same time, graduate over-education or over-education of a particular firm's employees exhibits a significantly lower incidence of over-education at 20%.

What is clear in Table 1 and Figures 1-3 is that estimates of the average incidence of over-education in a given country vary considerably from study to study as a function of data and the methods of measurement used. Even the same authors often report two or three different estimates for the same time span and same country.

There is no single good universal measurement of over-education accepted in the literature. Instead there are three different families of measurements, each leading to different results (as discussed in Section 4 above). Which one is the best remains an open question. However, if the studies reported in Table 1 are correct, then the incidence of over-education such as the one in Belgium, amounting to 50% of the labor force, should cause a considerable debate on both labor market functioning and its attunement to the educational system (Verhaers *et al.*, 2004). Belgium is not an outlier here, since similar figures have been reported for the USA (Duncan *et al.*, 1981; Fabel *et al.*, 2007; McGoldrick *et al.*, 1996; Robst, 1995; Tsang *et al.*, 1991). The average Dutch figure for incidence of over-education is about 16-18%, with notable exceptions for two studies which reported an incidence of about 30-39% (Heijke *et al.*, 2003; Smoorenburg *et al.*, 2000). The two studies reporting over-education in Spain show an increase in the incidence of over-education between 1985 and 2001 of 7 percentage points (from 14% to 24%) (Alba Ramirez, 1993; Budria *et al.*, 2008).

FIGURE 3. Incidence of over-education in the Netherlands by sample type



Blázquez and Malo (2005) report an excessively high level of over-education for Spain for the year 2000: over 57%. This, however, is an exceptional figure, and it therefore remains to be confirmed with other studies on that period of time. A recent study on Spanish university graduates indicates a more moderate, yet still considerable, level of over-education — over 30% of the sample (Kucel *et al.*, 2010).

As for other countries listed in Table 1, a fairly low incidence is reported for Portugal, where only 9% of workers are thought to be over-educated (again, this depends on which measurement is being used) (Kiker *et al.*, 1997; Oliveira *et al.*, 2000). German studies report over-education incidence at a markedly lower level than the USA, the UK or Spain: approximately 11-14% (Bauer, 2002; Buchel *et al.*, 2004).

CONCLUSION

The major conclusion stemming from the above analysis is that over-education is not a negligible problem affecting only a minority of the labor force, and that its incidence has increased considerably across time for various countries. It affects between a quarter and almost one third of the labor market in advanced economies such as the UK, the USA, or the Dutch labor market. Thus, it deserves attention as a potential threat to workers' careers and possibly, as a result, to their offspring's well-being. The vast majority of the studies presented in this analysis have focused their attention on the wage effects of over-education. Our aim was to gather from them information on the incidence of over-education across various countries. The main limitation for our work is that most of the studies, chiefly due to data availability, have concentrated only on a small sample of countries. Most of the research has been conducted for the USA, the UK and the Netherlands, while only a few studies have looked at Spain, Germany, Belgium or Portugal. This clear pattern has existed in the literature until very recently due to political debate on returns to college education, which was driving the

data collection and, consequently, studies on over-education. That is why we mainly have studies on the USA, the UK and, subsequently, the Netherlands. Since there was no political demand for studies on returns to tertiary education (employment, wages, training, job satisfaction, etc.) in Europe, there were no adequate data either. Notable exceptions are the UK and the Netherlands, where even respective dictionaries of occupational titles have been created. Other EU countries followed their example much later and hence we have far fewer studies on them. The proliferation of adequate surveys in recent decades (national labor force or household surveys of all kinds, ECHP data, special labor market survey of the EU Labor Force Survey in 1990, REFLEX survey, to mention only a few) has led to a spate of studies on various European countries.

Notwithstanding, we have observed a clear difference between two types of studies: studies on the general working population and research based on graduate surveys.

Over-education studied for the whole working population appears to be much more prevalent than for graduates alone. This difference could be attributed directly to differences in measurement. Over-education among the general working population is usually measured with statistical methods for each occupation, whereas for graduates it is detected through workers' self-assessment. As it turns out, the difference is, far from negligible. The incidence of over-education measured statistically within each occupation of the employed population is usually much higher (sometimes double) than the measurement based on workers' self assessment. This could be considered a bad method, as pointed out by Halaby (1994), who argued that over-education measured within occupations does not take into account the real complexity of some jobs, and treats them all as equal. This may bias the incidence of over-education upwards, since jobs are highly non-homogeneous within occupations. The least that could be done to alleviate this flaw is to possibly use the most detailed occupation categorization for such measurement.

Finally, one must observe that over-education incidence has increased across recent decades in most countries where analyses have been conducted. One of the reasons for this increase is stated as being a rapid educational expansion which occurred throughout the industrialized world. However, we lack macro studies which would investigate the reasons for such an increase. Instead, what has been studied in these terms from the field of sociology is the impact of larger pools of over-educated workers' on the employment chances of their less educated peers (Aberg, 2003; Handel, 2003). The real reasons for the increase in over-education incidence can only be speculated upon. However, one thing which remains clear is that this observed increase in over-education incidence raises an important political issue regarding the functioning of labor markets in advanced economies. Regardless of whether this is due to educational expansion or the low level of skills requirements in the economy (Perotti, 2007), policy makers throughout the industrialized world must search for a solution to this burning issue, as was stated by the CEDEFOP Commission (CEDEFOP, 2009; Descy *et al.*, 2005).

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