INDIVIDUAL AND INSTITUTIONAL DETERMINANTS OF SKILL UNDERUTILIZATION

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15 July 2015

1. Introduction

Since Freeman (1975) first expressed concern about the potential imbalance between a rapidly increasing supply of highly skilled workers and their demand, a large number of papers, reports and studies have enriched our knowledge on the 'overeducation problem' (for recent reviews see McGuinness, 2006; Leuven & Oosterbeek, 2011; Quintini, 2011; Sattinger, 2012). Some well-established conclusions emerge from this literature, namely that overqualified workers are more likely to endure wage penalties, lower job satisfaction, higher turnover and absenteeism, and potentially lower participation in training. For employers, costs associated with qualification and skills mismatch may take the form of higher recruitment costs, lower productivity and lower product quality[1].

Notwithstanding the advances achieved, several issues remain under-investigated. Considering the potential direct effect on the rate and consequences of skill mismatches, it is rather surprising that one of these issues is the impact of country-level institutions (labor market, educational system, market regulations etc) on the balance between skills supply and demand. In other words, we know quite a lot about the 'microeconomics' of the overeducation problem but much less about the 'macro determinants' of it. For example, we are uncertain about aspects such as: the effect of cyclical and structural labor market conditions (Di Pietro, 2002); how the different characteristics of educational systems impact on the levels of mismatch (Di Pietro and Cutillo, 2006; Verhaest and Van der Velden, 2013); or, how regulations in the labor market affect the

[1] Some of these conclusions are currently being revised. Some researchers claim that unobserved individual heterogeneity biases the estimated earnings effects (Leuven & Oosterbeek, 2011). Also, some recent research challenges the supposed negative impact on productivity (Pouliakas, 2013). Indeed, using linked employer-employee data, Kampelmann & Rycx (2012) suggest that employing overeducated workers is beneficial for productivity at the firm level.

persistence of overeducation for individual workers (Scherer, 2004)[2]. Indeed, the scarce evidence on differences in overeducation or overskilling across countries (Verhaest and Van der Velden, 2013; Allen et al., 2013) shows that they are large even when similar individuals are compared (for instance, college graduates) and countries have similar levels of development. It seems logical, therefore, to expect that country-level characteristics play a role in explaining the phenomenon.

In this paper we add to the evidence on the impact of institutions on the levels of skill underutilization. We take advantage of a new data set: the European Skills and Jobs Survey (ESJS) carried out by Cedefop in Spring 2014[3]. We match this survey data with information on countries' social, political, economic and institutional characteristics drawn from a wide range of different international databases in order to examine how these characteristics impact on skill underutilization. We also investigate the ways in institutional features can serve to exacerbate or mitigate the separate contribution of individuals; characteristics to skills underutilization.

2. Measurement of skill underutilization

The Cedefop ESJS has developed innovatory questions to capture skill overutilization and underutilization. In this paper we focus on skills underutilization. We have developed an index of skills underutilization which ranges from 0 to 5. Respondents are asked "Overall, how would you best describe your skills in relation to what is required to do your job?" (Q24). If they respond "my skills are higher than required by my job", they are then asked "to what extent would you say your skills are higher than required to do your job?" on a scale of 1 to 5 "where 1 means your skills are a little higher than required and 5 means your skills are a lot higher than required." (Q26) (There are no anchoring statements for points 2, 3 or 4 on the scale). Individuals are thus recorded on a scale from 0 (for individuals who say that their skills are matched or lower than required at Q24) up to 5 who state that their skills are a lot higher than required. Most individuals

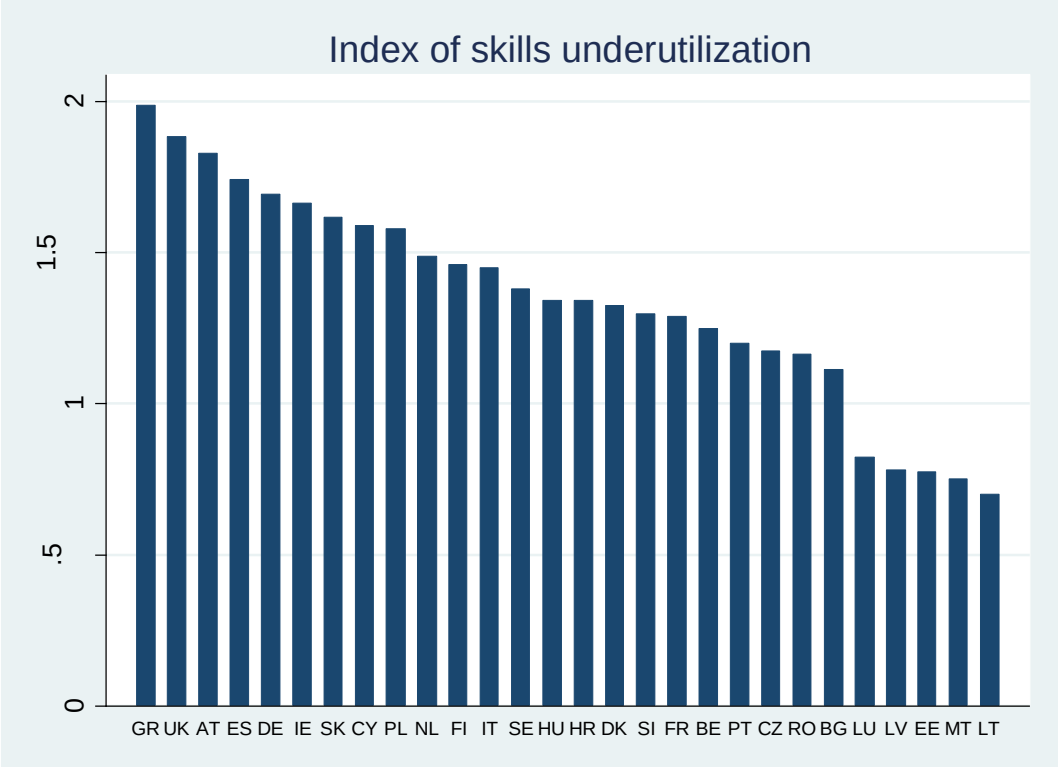
[2] There exists a larger literature of international comparisons on how the characteristics of the country's specific labor-market and social institutions (most notably the educational system) shape the returns to education (skills) in the labor market. See for instance Hanushek et al. (2013).

[3] http://www.cedefop.europa.eu/en/events-and-projects/projects/analysing-skill-mismatch

are able to respond to the two questions – 'don't knows' on the key question Q24 is below 2% in every country and the proportion of non-response is even lower in the follow up item Q26.

When we take the average of this index across individuals, we find that there is considerable cross country variation in the extent of skill underutilization as shown in Figure 1.[4]

Figure 1: Index of skills underutilization by country



As can be seen there is considerable variation across countries in Europe, from Greece and the UK at one end of the scale to Luxembourg, the Baltic countries and Malta at the other. The aim of this paper is to investigate the possible economic and institutional explanations for this cross-country variation.

[4] Country code definitions are listed in Table A.1.

3. A macro-institutional approach to skill underutilization

Verhaest and Van der Velden (2013) describe two main channels from which we can understand country-level differences in skill underutilization rates: the demand and supply context, and the institutional context.

With regard the first aspect, the argument goes along the lines of non-wage adjustments in the labor market suggesting that the response to temporary shocks occur by a change in the assignment of workers to occupations rather than by wage changes. Therefore, economic cycles should be related to changes in the rate of underutilization of skills and in a cross-section comparison of countries, different growth elasticities of skilled labor demand should also be related. Part of this counter-cyclicality of the underutilization of skills can be explained by the 'bumping-down' theory that, within the job search framework, claims that in a situation where the number of good job shrinks, individuals will have to take lower quality jobs in which they are more likely to be overskilled.

It is also possible to consider a more structural component of the rate of underutilization of skills, related to a pure supply-demand model where the increasing supply of skilled workers over-matches the demand and, as the decision to invest in education is not strictly driven by prices in the labor market (or the information is not good enough or too expensive), the mismatch can last over time. However, this presumes that the labor demand is rather 'rigid' and does not react to the changes in the supply of skills. On the contrary, and even without drastic changes in the price of skills, it can be argued that supply of skilled workers can determine its own demand, as defended in the theory of endogenous technological change (Acemoglu, 1998).

In addition to the supply and demand factors, several institutional characteristics of the countries may also play a role in explaining skills underutilization. The most prominent of these are:

A Labor market related policies:

Employment protection legislation (EPL): The level of protection of incumbents with respect to outsiders may affect the flexibility of labor relationships and reduce the adjustment in the face of changes in either supply or demand. However, a more stringent

legislation with regard to dismissals may encourage investment in training and reduce the incidence of underskilling, at least in the medium-long run. Note that it seems important to consider differential effects of standard/non-standard workers.

Passive and active labor market policies (flexicurity): It has been shown that interventions on the functioning of the labor market have a clear impact on individuals' behavior and in general on the performance of the market. Therefore, the design of both passive (income substitution) and active (changes in the conditions of actors intervening in the labor market) labor market policies will affect the match between skills supply and demand. With respect to unemployment benefits, it has been claimed that a too generous program may discourage individuals from actively searching for (and accepting) jobs. At the same time, it can be claimed that not being pressured by income restrictions may be beneficial to job search as instead of accepting any job offer, the searcher may wait until the right offer arrives. Active labor market policies are intended to modify the characteristics of workers (training), the functioning of the market (quality and quantity of information and job search) and the characteristics of jobs (notably cost reduction). In general, and for all these different situations, we should expect an improvement in the skill supply and demand match as they are designed to either make up for missing skills or facilitate the transmission of information between firms and workers.

B. Collective bargaining and unions:

Systems of collective bargaining and the related role for unions have been argued to impact the flexibility (adaptability) of the labor market to changes in economic and social conditions. Even though the literature has mainly focused on the wage determination process, there has always been some interest in analyzing the role of unions in some transformation processes in the firm, such as organizational or technological change. There is compelling evidence that unions can be great facilitators in such processes, mainly because they can smooth individual worker resistance to changes. Unions should therefore not be seen just as an institution that introduces rigidities into labor relations, but also they can facilitate adaptation to new or emerging realities that could improve the match between the supply and demand for skills.

C. Production market related policies:

Entrepreneurship regulation: Regulation on firm creation have recently caught the attention of both academics and politicians as some research has shown that if this is too disruptive, it can be a serious hurdle for economic growth and job creation. In terms of skill mismatch, it should be tested if more loose regulations can generate firms (jobs) that better reflect (take advantage) of the skill endowments of workers. To some extent, it could be one of the mechanisms in which supply of labor may affect (create) its own demand.

Price-control regulation: In a similar vein, the more flexible are markets the larger the number of jobs available (competition reduces prices and increases output). Note, however, that even if this is true, it does not imply that the jobs created match the skills possessed by individuals. In fact, it could be argued that in more 'centralized' economies where job creation may be more controlled, there may be a better match of jobs to the skills available in the economy (although potentially at the expense of fewer jobs).

D. Education system structure:

The importance of the educational system is obvious as it has a key role in the process of skills creation. There is a large literature on the impact of different characteristics of the educational system on the performance of the system (as rate of attainment) or on broader measures of success (as employment and wages of individuals or economic growth of countries)[5]. Just a few papers have considered the effects on skill imbalances in the labor market (Allen and Van der Velden, 2001; Verhaest and Schatteman, 2011; Verhaest and Van der Velden, 2013). It is argued that several characteristics of the educational system may affect the rate of underutilization of skills. First, the overall quality and selectivity of the educational system. There is some evidence that the prestige of the educational institution affects an individual's probability of being overeducated (though mostly for college graduates and in some countries), which in aggregate terms would translate into the importance of the general quality or selectivity of the system. The mechanism basically

[5] See Hanushek et al. (2013); Van de Werfhorst (2011).

works through the better sorting that is possible with a higher quality more selective system that makes more efficient the matching process in the labor market[6].

Second, the general or specific orientation of the system. This usually focuses on the emphasis of the secondary education, and whether it is either more academically orientated or more vocationally (professional) orientated. Conceptually, more specific education may help to reduce underutilization of skills as it markets individuals more clearly, but at the same time it reduces the scope of occupations (sectors) that the individual will be productive in, which may increase the likelihood of underutilization. Academic orientated systems provide less clear occupational signals but supposedly generate more adaptive workers that may shift occupations (sectors) more easily and which thereby may have a positive impact on the reduction of underskilling. Note that there is a clear possibility that the effects of the system vary over the span life of a worker. Initially the 'sorting' effect may be more powerful because information about the productivity of the worker is scarce, but later it may be better to have more general skills to increase your mobility possibilities.

E. Human resource practices:

Starting during the 1980's, and now consolidated, there is increasing recognition of the importance of the management of the workforce for firms' success. To a large extent, the growing importance of how workers are recruited, developed and organized is related to their human capital. In the new workplace, workers are no longer a simple appendix of machines or bureaucracies but autonomous, responsible and active agents with a major impact on the innovation capacity and productivity level of firms. To be able to play such a role, workers have to constantly update their skills and utilize them fully. The impact of the new forms of human resource management on firm and individual level outcomes is extremely large. However, the impact on the level of underutilization of skills has been completely neglected. It is very likely that there is a strong relationship, for two reasons: firstly, these new forms of organization must be developed by a more skilled (educated) workforce, which by itself should reduce the level of underutilization; secondly, some of

[6] This is actually related to the heterogeneous skills hypothesis that claim that overeducated people are in fact underskilled and, therefore, not actually overeducated.

these practices of HR management imply the need to use a much broader range of skills which should reduce the sense of being overeducated. So either because skills are used more intensively, or because there is a greater need for more skills (even if individually there is no increase in intensity of use), countries with firms more adapted to these new forms of HR practice or with policies that encourage their expansion across firms, should have lower incidence of skills underutilization.

4. Data and modelling

4.1 Cedefop ESJS Survey

4.2 Institutional data and variables

The development of comparable data on social, political and economic systems at the country-level has progressed quite rapidly in recent years as interest on learning from differences in institutions and policies has grown dramatically. Consolidation of concepts and data gathering methodologies across countries has helped to develop large datasets with basic macro level information and some institutions have taken on the responsibility of designing and calculating more complex indicators of institutions and social/cultural country characteristics. In this paper we have combined the Cedefop ESJS data with information generated by the OCDE (labor market related variables, collective bargaining and unions and product market policies), Eurostat (basic macroeconomic variables and educational system) and also the IMD World Competitiveness Database.

4.3 Methodology

We use a multilevel modeling approach which takes into account the latent variable index of skills underutilization.

5. Findings

[to follow]

6. Conclusions

[to follow]

REFERENCES

Allen and Van der Velden, 2001

Allen et al., 2013

Di Pietro, 2002

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Freeman, 1975

Hanushek et al. 2013

Kampelmann & Rycx 2012

Leuven & Oosterbeek, 2011

McGuinness, 2006

Pouliakas, 2013

Quintini, 2011

Sattinger, 2012

Van de Werfhorst (2011).

Verhaest and Schatteman, 2011

Verhaest and Van der Velden, 2013

Table A1: Country code definitions

Country	Code
Greece	GR
United Kingdom	UK
Austria	AT
Germany	DE
Ireland	IE
Spain	ES
Slovakia	SK
Finland	FI
Poland	PL
Cyprus	CY
Netherlands	NL
Sweden	SE
Denmark	DK
Italy	IT
Hungary	HU
Slovenia	SI
France	FR
Belgium	BE
Croatia	HR
Czech Republic	CZ
Portugal	PT
Bulgaria	BG
Romania	RO
Luxembourg	LU
Latvia	LV
Malta	MT
Estonia	EE
Lithuania	LT