The effect of soft skills on French graduate pay

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Abstract
Purpose - This paper attempts to construct soft-skill indicators and then to measure their effects on graduate pay on the basis of a study of a sample of masters graduates.
Design/methodology/approach - In order to measure the effects that soft skills may have on the income, a quantile analysis will be used.
Findings - Certain soft skills explain a proportion of the remuneration of young masters graduates. They influence the highest salaries in particular, these soft skills are important for the most highly skilled jobs.
Research limitations - Most of the skills are highly declarative and may be more to do with a feeling of having skills than actually possessing the skill. Moreover, this paper looks only at graduates in employment, whereas it might be thought that a deficit in sift-skills would be far more penalizing for job seekers.
Social implications - While some young people have been able to benefit early from soft skills and take advantage of them on the labour market, it may be asked whether it is not important to try to have those less endowed with them to benefit from them before they get onto the labour market.
Originality/value - This research questions the heterogeneous character of skills that young higher-education graduates can acquire. The French diploma does not seem to homogenize all of the skills that young people may acquire in their academic and then professional experiences.
Keywords France, young graduates, soft-skills, wages, quantile regression
Paper type Research paper

1. Introduction

Although young graduates in France and particularly masters graduates enjoy an advantage on the labour market, they do not seem to be spared by rising unemployment (Ménard, 2014). Some young graduates find themselves relegated to low-paying deskilled jobs. In France as in several developed countries, upon joining the labour market these graduates may suffer from a deficit of certain skills compared with what the jobs require (Garcia and Van der Velden, 2008; Allen and Van der Velden, 2011). One can wonder about employers' expectations in terms of skills. The pioneering works of Green et al. (1998) in Britain have emphasized the weight of certain skills pertaining to relations, attitudes, and motivation in the recruitment phase, which are reportedly more important for employers than technical skills. The need to work as part of a team, autonomy, and absence of hierarchical supervision supposedly accentuate a growing call for social, relational, and emotional skills on the level of human resources policies (Green, 2000; Bennet, 2002; Borghans et al., 2006). In various economic sectors, a range of studies emphasizes the upturn in employers' demands for such skills to fill more or less skilled positions (Callaghan and Thompson, 2002; Grugulis and Vincent, 2009; Robbles, 2012; Bailly and Léné 2013), even if the term skills is open to discussion, especially for low-skilled jobs (Payne, 2000; Keep et al., 2006; Payne 2009). Several studies have also investigated employers' requirements in terms of more general skills that would allegedly make graduates more employable (Taylor, 2005; Andrews and Highson, 2008; Ito and Kawazoe, 2015). More or less specific education and training schemes have even been developed in various countries and at various levels so as to improve proficiency in such skills (Deil Amen, 2006; Mason et al., 2009; Pang and Hung, 2012).

Although some researchers prefer to see them in terms of personality traits (Semeijn et al., 2005), other more recent studies prefer the term "soft skills", that is a set of skills that relate more to "people skills" and less to theoretical knowledge. These skills supposedly depend on the ability of individuals to react with others and unlike "hard skills" are supposedly less specific to jobs or branches of study. The perimeters of such soft skills remain variable, though, depending on the studies. Heckman and Kautz (2013) select measures similar to personality traits used by psychologists to show their importance on the labour market. However, unlike personality traits, for those authors, these are skills in the sense that they require learning and can evolve over the course of individuals' school life and working life and with their social and family relations. A recent OECD report (2015) prefers the terms "social" and "emotional" skills, which are then defined as individual abilities that can be developed in various formal and informal learning contexts and which have socio-economic effects on individuals' lives. They are purportedly transversal, meaning they are skills common to various areas of activity on the labour market. They supposedly remain likely, however, to determine the acquisition of other more specific skills required by certain jobs.

This paper proposes to enquire into the impact of these soft skills on the labour market in France and to attempt to measure their influence on graduate salary levels. Several studies suggest that a deficit in such skills may impede access to employment and some soft skills may be very highly rated by employers for certain positions (Deming, 2015). However, in France, little research has been conducted into the impact of soft skills on the situation of individuals on the labour market. Based on the Céreq survey of the skills of higher-education graduates, the present paper questions the effects of certain soft skills on graduate pay levels four years after graduating. The paper is divided into four sections. Section 1 examines the results of different studies of the impact of soft skills on the labour market. Section 2 explains the survey and methodology used for measuring these skills. Section 3 presents the main findings obtained concerning the effect of soft skills on graduate pay levels. Section 4 provides points for discussion on the basis of these findings, emphasizing their value and their limitations.

2. The effects of soft skills on the labour market

The definition of soft skills relates to many studies that converge on the idea that a set of non-cognitive skills might prove valuable on the labour market and possibly even more valuable than cognitive skills (Gutman and Schoon, 2013). Bowles and Gintis (1976) are among the first to have investigated the effect of behaviour on access to the labour market. By introducing several scales of behaviour borrowed from work in psychology, Bowles, Gintis, and Ooosborne (2001) show the influence of different behavioural variables in wage equations in the United States, the effects being captured neither by education nor by cognitive variables or parents' socio-economic status. Heckman *et al.* (2006) report that the effect of non-cognitive skills such as motivation, self-esteem, or perseverance may sometimes prove greater than the effect of cognitive skills in terms of academic success and the labour market. Even if they acknowledge that measurements of such skills may be imperfect, especially because they are often influenced by the characteristics of the family environment, the different estimates systematically lead to positive and significant effects of such skills, especially when controls are made for ethnic membership, labour market conditions, residential region, cognitive skills, family environment, and place of residence. They influence experience on the labour market, education, employment, choice of profession, and the probability of engaging or avoiding "risky" behaviour Teenage pregnancy and marriage, marijuana consumption, imprisonment, or unlawful activities). However, their effect is not identical for all levels of diploma and all social circles. Young people from low-income backgrounds and facing academic failure in the United States seem to be more sensitive to the absence of such skills. Lindqvist and Vestman (2011) use Swedish data to show that the deficit in non-cognitive skills is far more of a handicap for people experiencing difficulties on the labour market. More than cognitive skills, the absence of a minimum of non-cognitive skills may explain a low level of remuneration or long-term unemployment. Certain skills may, however, have effects for different levels of diploma, including the highest. Kuhn and Weinberger (2005) tested more specifically the effect of leadership skills acquired in high school on adult salaries 10 years later, allowing for cognitive skills and their socio-economic characteristics. They emphasize not just the effect of this variable on salary independently of the school-leaving diploma but also the increase in it with occupational experience.

More recently, Deming (2015) has emphasized the importance of the development of jobs requiring a high level of skills in the United States since the 1980s. He also shows the effect of social skills on remuneration. Those social skills notably reduce coordination costs and enhance team work and non-routine activities. Their complementarity with cognitive skills seems to have risen over time, partly because the use of new technologies is no answer to relational skills in skilled jobs. Weiberger (2014) also emphasizes this complementarity between social skills and cognitive skills which has increased in the United States since the 1980s. When hiring, employers' demand has reportedly shifted towards young graduates with both technical and social skills, even if some of them seem more closely related to managerial positions than others.

In France, little research has been done on the impact of non-cognitive skills on the labour market. One of the difficulties is the absence of measurements for such skills in survey of the labour market. Using certain variables of opinion of the Génération survey to construct proxies for such skills, Bensidoun and Trancart (2015) sought to highlight the role of non-cognitive skills in explaining wage differentials between men and women. Ten years after leaving full-time education, women's pay is 21.2% lower than men's. Non-cognitive variables (optimism, preference for career, and taste for risk) account for 6.3% of the total wage differential, that is, twice as much as experience.

However, no research has attempted to measure soft-skills and the wage return to these skills, including depending on the level on remuneration of jobs.

3. Data and methodology

3.1. Data

The data used are extracted from the "Génération 2010" survey of the *Centre d'études et de recherches sur les qualifications* (Céreq). This nationally representative survey can be used to study retrospectively access to

employment of young people who left the educational system in the same year. It can be used to collect information about the academic background, socio-economic characteristics, and the professional career of young people. Further to the Céreq survey conducted in 2013 on those who left the education system in 2010, the *Céreq Département Entrées et Évolutions dans la Vie Active* (DEEVA), the *Institut de Recherche sur l'Education* (Iredu), and the *Centre d'études et de recherches Travail Organisation Pouvoir* (CERTOP) conducted an *ex post* survey on higher education graduates in 2010 who were surveyed in 2013 and then 2104. In total 2,719 young graduates were included in the second round of questioning by internet four years after graduating. The questionnaire provided several categories of information about:

- their job status at the time of the 2014 survey,
- both the transverse or general skills and the specific disciplinary skills acquired in education and training and required in their work (Calmand et al., 2015),
- their social and behavioural skills, which referred to here as soft skills.

The part on soft skills is directed on the one hand at questions relating to the life of graduates within their firm and on the other at more general aspects of their professional and personal lives. One of the difficulties arises from there often being a reverse causal connection between non-cognitive variables and the endogenous variable. The possession of certain soft skills may reflect the situation of individuals on the labour market and not the gains from their education and training, their past career, or even personality traits. To restrict bias it would have been necessary to question individuals before they entered the labour market, which would have required a specific methodology that Céreq surveys do not allow for. However, they are acquired, though, it can be thought that these data can be used to capture the effect that soft skills may have on the conditions of remuneration and employment of graduates on the French labour market.

3.2. Constructing indicators for measuring soft skills

A difficulty arises from the imprecision in defining and measuring these soft skills. Empirical research generally uses a wide variety of measurements that must be considered as more or less accurate proxies for these skills. Some measurements are from scales borrowed from studies by psychologists, others were constructed specifically for each line of research and adapted to the audience of respondents. The module developed in the Céreq survey on soft skills used both types of measurement. However, it only made it possible to identify some of the skills with a limited number of questions: perseverance, self-esteem, sociability, and communication. A risk-aversion measurement, which is sometimes assimilated to social skills especially for access to certain professions, was also included in the questionnaire.

Perseverance ("Grit")

Perseverance with respect to long-term objectives is often apprehended in the works of Heckman and Kautz (2012) as a component of soft skills. It frequently relates to people's motivation and determination and may therefore be a reason for higher remuneration (Becchetti et al., 2013) by contributing to increasing the productivity of people in the job. In order to measure perseverance, part of the supplementary survey on skills takes up the "Grit Scale" presented byDuckworth *et al.* (2007). They call this social skill "grit" and define it as perseverance and passion in setting out to achieve a long-term objective. This soft skill is considered a skill that can be made use of if individuals maintain their efforts over several years despite setbacks. This scale was adapted to the Céreq survey. Seven questions were put to respondents.[i]On average, the individuals questioned scored 3.03 on the perseverance scale.

Self-esteem

Self-esteem is often considered a central feature in both academic and professional success (Schultz (2008). For Goldsmith et al. (1997) it is part of the "psychological capital" which like human capital contributes to increased individual productivity but is far more difficult to observe and measure. This psychological capital influences earnings, especially through the bias of self-esteem which is positively correlated with level of income. Measurement of self-esteem rests for those commentators, as in much research, on the Rosenberg scale (1964). It was not possible to take up this scale in the questionnaire. A more synthetic question was suggested and applied to professional life: "Do you think you can succeed professionally or personally as well as your co-workers in the same job as you?"[1].

Communication with others

Schulz (2008) claims that a number of soft skills seem more important in that they allow individuals to develop other skills. This is particularly the case of communication skills that may affect linguistic skills, behavioural skills such as self-esteem, relational skills (discussion, listening, etc.), or more communicational skills

(organization, eloquence, etc.). This skill has been apprehended very indirectly in the survey on the basis of a question asked ofgraduates about their satisfaction with exchanges and formal or informal collaboration with their co-workers. A distinction is made between those who reply they are rather or fully satisfied and the others, assuming that dissatisfaction might come for personal difficulties in managing their communication with others. In the Céreq survey, 11% of graduates said they were dissatisfied.

Sociability
Sociability is often measured differently depending on the study. For example, Bryson and Freeman (2006) ask individuals if they participate in activities both at work and outside work. The number of activities workers participate in then forms a "sociability scale" which they include in their analysis. There again, it was only possible to ask a single question to try to capture a sociability measurement. A dichotomous variable was used. Young people were asked whether they thought convivial moments with co-workers were important both professionally and for their personal well-being. This was the case for 86.5% of respondents.

Risk aversion
Much research in economics has shown that uncertainty and risk have a non-negligible effect on people's behaviour and on the decisions they may take. Although risk aversion is often correlated with individual variables such as age or parents' educational achievements (Dohmen *et al*., 2005), it also seems to be related to cognitive skills (Borghans *et al.*, 2006, 2008). In particular, people who are thought more risk-averse are more likely to respond correctly to a cognitive test. Attitude towards risk may also orientate professional choices, with the more risk averse often being found in jobs where variation in gain is low (Bonin et al., 2007). Attitude towards risk may therefore be an important determinant for earnings, added to other traditional factors used in the Mincer earnings function. In our study, respondents are asked whether they consider themselves to be always ready to take risks or whether they prefer to avoid risks.[ii] This question is similar to the analysis by Dohmen et al. (2005) and taken up later by Bryson and Freeman (2010). Respondents score 5.95 on average.
The association between the various skills for all the graduates has been tested. Risk aversion, perseverance, and self-esteem are slightly related. Sociability and communication are also correlated, but only communication seems to be related to the other skills (risk aversion and perseverance).

3.3. Quite strong homogeneity of soft skills among graduates in different branches
Table 1 gives a glimpse of the differences in soft-skill measurements by branches and disciplines. Those differences remain moderate overall among graduates all from long-duration higher education.
The level of perseverance is thus similar among graduates from different university courses: only the law-political science speciality stands apart in that students score less than 3 on the perseverance scale. However, students from engineering schools and business schools consider themselves more persevering than other young people (3.11 and 3.15 respectively). The same goes for risk aversion. Engineering and business school students declare themselves to be more risk-loving than others do. On a scale from 1 to 10 for willingness to take risks, they rate themselves on average at 6.08 and 6.21 respectively. However, young people in economics and management also seem risk-loving (score 6.07). The overall comparison on risk-aversion scores is nonetheless to be moderated given the Kruskal Wallis test results. No significant difference is found for sociability and communication indicators by branch of study. This could be explained by the low number of individuals having replied negatively to these items.

Table I: Non-academic skills by branch of study

	Law	*Economics-Management*	*Human sciences*	Life and Earth Sciences	*Fundamental science*	*Engineering school*	*Business school*	*Overall*	*Statistical tests*
Grit Scale: 1 – 4.86	2.96	3.02	2.99	3.03	3.02	3.11	3.15	3.03	KW test[iii] p-value: 0.02
Risk aversion Scale: 1 – 10	5.88	6.07	5.91	5.81	5.82	6.08	6.21	5.95	KW test p-value: 0.27
Self-esteem (%) Dummy variable	34.7	46.1	27.8	24.8	42.2	46.2	50	38.2	Chi2 test p-value: <.0001
Sociability (%) Dummy variable	85.7	86.3	85.9	86.6	84.8	86.4	91.8	86.3	Chi2 Test p-value: 0.8010
Communication (%) Dummy variable	92.6	87.5	86.8	89.2	90.8	87.8	94.3	89	Chi2 Test p-value: 0.3290

Source: "Génération 2010" survey of the Céreq

4. The effects of soft skills on remuneration: an analysis by quantiles

4.1. Methodology

The objective is to measure the effects that soft skills may have on the income of young graduates. A quantile analysis will be used because it seems more suitable than a Mincer earnings function. However, an OLS regression is include (Mincer model) by way of comparison for each estimate. Quantile regression has two points of interest in the context of our study. First, quantile regressions are sometimes more suitable for some variables such as graduate earnings collected from declarative surveys. Quantiles prove more robust to aberrant values than the average because they are less sensitive to them. Second, it is important to go beyond the average effects that non-academic skills may have on revenues. There is no reason to suppose that the impact of such skills (among other things) should be the same in the different quantiles for the conditional distribution of income. It can be assumed that some soft skills have greater influence for better paid jobs that involve, for example, more responsibilities.

The method gives insight into how conditional quantiles change when the determinants of the variable of interest (here earnings) vary. The aim is to make an estimate applied to the entire sample for several quantiles. It is important to specify that it is not a matter of dividing up the sample depending on the quantiles of the variable of interest and then making linear regressions on the subsamples thus obtained. More specifically, our study uses the median, and the first and last quantiles.

The endogenous variable corresponds therefore to the logarithm of the salary earned by an individual. The explanatory variables are the observable characteristics of the employee, namely, sex, social environment of father, vocational experience, school capital, working hours, branch of study, and finally non-academic skills. It is posited for each quantile j:

$$Quantile_j\,(lnW_i) = \alpha + \beta_1 Sex_i + \beta_2 CSfather_i + \beta_3 Exp_i + \beta_4 Dip_i + \beta_5 Tps.L_i + \beta_6 filiere_i + \beta_7 C_i + \varepsilon$$

where

lnW_i = logarithm of the wages earned by individual i.

$CSfather_i$ =social category of the father. A distinction is made between fathers in managerial positions and others.

Exp_i = professional investment. Experience often makes it possible to increase the level of earnings throughout the career. Here it corresponds to the number of months spent in employment.

Dip_i = level of diploma achieved. It is used to identify graduates with a vocational degree (three years after the baccalaureate), a master 2 or a non-university diploma equivalent to a master 2 (five years' theoretical studies after the baccalaureate). This qualitative variable is retained inasmuch as certain years of study provide a higher educational yield than others (sheepskin effect).

C_i = vector of non-academic skills: perseverance (Grit), self-esteem, risk aversion, sociability, and communication. These skills are introduced in separate estimates.

4.2 Results

Table 2and table 3 (in the Annex) set out the results of different estimates of graduate earnings. Table 3 corresponds to a wage estimates is repeated, introducing the soft skills one at a time. The first column corresponds to the OLS regression. Then, a quantile analysis was made (first and last quartile and median, columns 2–4).

In Table 2,the first three soft skills, which are significant in the quantile equations, were introduced simultaneously.

All the results are quite consistent with traditional wage equation findings. The various estimates show that earnings increase quite markedly with young people's human capital, that is, their diploma level and professional experience. They also emphasize certain unequal characters, with young men and the children of executives generally enjoying higher pay. Lastly, wage differentials are also marked depending on disciplines, notably to the detriment of graduates in the arts and human sciences.

Columns 2–4 of table 2, however, show differences by quartile, that is, different levels of wage distribution. Having a master's degree rather than a bachelor's degree has a greater effect for the first quartile and declines thereafter. The opposite is observed for graduates of non-university schools, which are more

heterogeneous since the category includes elite business and engineering schools (*grandes écoles*) and other less selective ones. These differences may account for the higher yield over the last quartile. It may be thought the same goes for branches of study: only management studies, in which selection is very much hierarchized among the various institutes and different diplomas, have higher yields for the last quartile. Obtaining a pass or credit grade for the high-school leaving diploma, as a possible signal of greater academic skills, also acts on the last quantile of the distribution. Conversely, experience has a slightly greater effect on the lower end of the distribution. Quantile estimates also show that sources of inequality increase with high income. Women are thus more heavily penalized for the highest quantile, which might suggest a glass ceiling phenomenon. Children of executives, on the other hand, are more advantaged for this same quantile, which underscores the relevance of social capital for access to the most highly skilled jobs. Lastly the coefficient corresponding to the constant can be considered the quantile of employees having the reference modalities: here, being a female with a bachelor of arts degree, with an executive father, with a pass or credit for the high-school leaving examination.It increases with the quantile, which seems intuitive. The coefficient of the constant of OLS estimation is close to the median, which indicates a degree of symmetry in the distribution of the wage logarithm.

The quantile estimate can be used to make the hypothesis that these skills do not influence individuals in the same way at the different levels of the wage distribution.

Perseverance
The "grit" variable seems to play a role in determining wages: an individual who declares him or herself to be persevering at work overall, in other words who has a high score on the perseverance scale set out earlier, is more likely to enjoy a higher income (5%) than others (table 3, column 1 OLS). This result is consistent with the findings of Duckworth *et al.* (2007), who indicate that the most persevering persons attain a far higher level of studies than others. It can be assumed that this skill continues to be an asset over the longer term on the labour market. Conversely, this result is not significant for the first quantile, that is, for the lowest revenues. However, OLS estimates for the return to "grit" fail to be statistically significant when it is integrated with others soft-skills (table 2). Yet, returns to grit are positive and significant at second quantile.

Self-esteem
Compared with an individual who declares he succeeds less than others, a graduate who claims to have high self-esteem receives an 8% higher wage according to the OLS estimate (column 1 table 3). Someone who thinks they succeed better than their colleagues will have 8% higher earnings.Conversely, quantile regression of self-esteem does not impact the first quantile of the wage distribution (column 2), but does influence above all the last quantile (column 4). Self-esteem still have a very significant influence on the top end of the distributionwhen others skills are integrated, but only at the last quantile (table 2). These findings suggest the relying on OLS estimates may be misleading.

Risk taking
The introduction of a variable on risk aversion shows that this too is closely related to the remuneration of young graduates. Risk-taking individuals are more likely to earn higher wages. The difference between quantiles remain moderate and the return is statistically significant in all segments of the distribution.

Given the low dispersion of responses to questions about "sociability" and "communication", these two variables are not significant in the quantile regressions. The OLS results indicate, though, a positive effect of the communication variable on wages but a non-significant effect for the sociability variable.

Table II: The effect of all soft skills on wage distribution

VARIABLES	OLS	(1) q25	(2) q50	(3) q75
Experience	0.00912***	0.0100***	0.0116***	0.00821***
	(0.00180)	(0.00109)	(0.00127)	(0.00186)
Sex: female (ref.)				
Male	0.0715**	0.0420***	0.0696***	0.0485***
	(0.0285)	(0.0161)	(0.0207)	(0.0183)
Working time : part time (ref.)				
Full time	0.462***	0.489***	0.349***	0.318***
	(0.0542)	(0.0300)	(0.0521)	(0.0484)
Academic capital: bachelor's degree (ref.)				
Masters degree	0.193***	0.188***	0.202***	0.233***
	(0.0345)	(0.0169)	(0.0175)	(0.0219)
Master-level schools	0.524***	0.472***	0.454***	0.453***
	(0.0502)	(0.0254)	(0.0264)	(0.0360)
Branch of study: human sciences (ref.)				
Law	0.148***	0.120***	0.112***	0.117***
	(0.0548)	(0.0351)	(0.0409)	(0.0409)
Economics, management	0.0736*	0.0662**	0.0980***	0.0964***
	(0.0411)	(0.0281)	(0.0255)	(0.0265)
Earth and life sciences	0.105**	0.0548**	0.0374	0.0603
	(0.0536)	(0.0253)	(0.0294)	(0.0555)
Fundamental sciences	0.159***	0.140***	0.130***	0.0981***
	(0.0431)	(0.0237)	(0.0230)	(0.0299)
Father's social background: other than executive (ref.)				
Executive father	0.0467*	0.0371**	0.0564***	0.0684***
	(0.0271)	(0.0154)	(0.0175)	(0.0182)
Grade for baccalaureate: pass or credit (ref.)				
Distinction or Honours	0.0479	0.0355	0.0478**	0.0420*
	(0.0320)	(0.0219)	(0.0192)	(0.0217)
Grit	0.0316	-0.00199	0.0252*	0.0295
	(0.0279)	(0.0169)	(0.0145)	(0.0206)
Self-esteem	0.0637**	0.0191	0.0246	0.0714***
	(0.0283)	(0.0169)	(0.0189)	(0.0238)
Risk taking	0.0129*	0.0131**	0.0105**	0.0107***
	(0.00722)	(0.00555)	(0.00412)	(0.00384)
Constant	6.310***	6.221***	6.356***	6.607***
	(0.113)	(0.0683)	(0.0694)	(0.104)
N	1,291	1,291	1,291	1,291
R-squared	0.218			

Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: "Génération 2010" survey of the Céreq

5. Discussion and conclusion

All of the results obtained in this work indicate first that soft skills, such as it has been possible to measure them in the survey, contribute to explaining pay differentials among young higher-education graduates in France. Even if level of diploma or branch of study still have an influence on young people's wages, perseverance, self-esteem, risk taking, and communication do affect wages, by controlling for many academic and social variables. Second, the quantile analysis indicates that the effect is generally higher for the top end of the wage distribution, which suggests the importance of these skills for attaining the highest skilled jobs. Notice that it is rather the opposite for other variables that may indicate individuals' levels of human capital. Obtaining a masters degree or experience have greater effects rather on the lower end of the wage distribution. However, the effect of these

skills fits in rather with the effect of other academic (high grades for high-school leaving diploma) or social (father's occupation) selection variables at the top end of the distribution. It is as if there were two labour markets for higher education graduates. The first gives access to the most highly skilled and best paid jobs but requires, in addition to the diploma, different academic and non-academic skills as well as networks for getting the job, whereas the second seems to offer less well paid jobs but for which the objective components of human capital, diploma, and experience seem to be far more protective.

This research does have several limitations, though. First, the construction of indicators to try to address soft skills has its limits. Most of the skills are highly declarative and may be more to do with a feeling of having skills than actually possessing the skill. Measurement of such skills is indirect and decontextualized from professional situations, which opens up the way to individual subjectivity. Moreover, as already indicated, the absence of longitudinal data means. A causal connection between the soft skills deficit and the academic and professional careers of graduates cannot be asserted. The type of job held by graduates may allow them to produce different levels of soft skills, which are also correlated with earnings. This raises the question of an endogeneity bias of soft skills supposedly related to omitted variables. The absence of information about the academic level of young people, except perhaps for a high grade on the high-school leaving diploma, does not allow any precise measurement of cognitive skills, which much research shows to be related to non-cognitive skills. Lastly, the research looks only at graduates in employment, whereas it might be thought that a deficit in soft skills would be far more penalizing for job seekers.

Even if allowance must be made for these limitations in future work, this research is valuable in that it questions the heterogeneous character of skills that young higher-education graduates can acquire. The diploma does not seem to homogenize all of the skills that young people may acquire in their academic and then professional experiences. While some young people have been able to benefit early from soft skills and take advantage of them on the labour market, it may be asked whether it is not important to try to have those less endowed with them to benefit from them before they get onto the labour market.

Notes

1. Each question comprises five items ranging from "That is not a bit like me" to "That is very much like me". It was not possible to include the eighth question on the scale of Duckworth et al. (2007) in the analysis. Then a scoring method is used whereby each item is associated with a number of points. The points total is divided by seven, that is, the number of questions on perseverance. The maximum score is therefore 5, "very persevering" and the lowest 1 ("not at all persevering").

2. This question comprises four items: "No, I do not think so", "Yes, I think I will do as well as others", "Yes, I think I will do a little better than others", and "I think I will do much better than others". The final two items are grouped together and set against the first two. All told, 38.8% of respondents think they will do better than others.

3. The question was: "Do you think of yourself as someone who is always willing to take risks or do you try rather to avoid risks?" Respondents were to rate themselves from 1 to 10, 1 if they never want to take risks and 10 if they are always ready to take risks.

4. The Kruskal-Wallis test is a non-parametric test for comparing means. Here the mean of social skills for each branch of study is compared. The p-value is given. If it is lower than the 0.05 limit the null hypothesis is dismiss, that is, that at least one of the distribution functions is different from the others. The differences in terms of social skills by branch of study are significant.

References

Allen, J. and van der Velden, R. K. (Eds.) (2011), "The Flexible Professional in the Knowledge Society: New Challenges for Higher Education", S*pringer Science &Business Media,* Vol. 35.

Andrews, J. and Higson, H. (2008), "Graduate Employability, "Soft Skills" versus "Hard" Business Knowledge: A European Study", *Higher Education in Europe*, Vol. 33, pp. 411-422.

Bailly, F. and Léné, A. (2012), "The personification of the service labour process and the rise of soft skills: a French case study", *Employee Relations*, Vol. 35, pp. 79-97.

Becchetti, L., Castriota, S. andTortia, E. C. (2013), "Productivity, wages and intrinsic motivations", *Small Business Economics*, Vol. 41, pp. 379-399.

Bennett, R. (2002), "Employers' demands for personal transferable skills in graduates: a content analysis of 1000 job advertisements and an associated empirical study", *Journal of Vocational Education and Training*, Vol. 54, pp. 457-475.

Bensidoun, I. and Trancart, D. (2015), "Écarts de salaires hommes-femmes : quels rôles des caractéristiques non cognitives ?", *Documents de Travail du CEE*, No. 177, 53 pp.

Bonin, H., Dohmen, T., Falk, A., Huffman, D. and Sunde, U. (2007), "Cross-sectional earnings risk and occupational sorting: The role of risk attitudes", *Labour Economics*, Vol. 14, pp. 926-937.

Borghans, L., Meijers, H. and Ter Weel, B. (2008), "The role of noncognitive skills in explaining cognitive test scores", *Economic Inquiry*, Vol. 46, pp. 2-12.

Borghans, L., Ter Weel, B. and Weinberg, B. A. (2006), "People People: Social Capital and The Labor-Market Outcomes of Underrepresented Groups", *National Bureau of Economic Researc*h, No. 11985.

Bowles, S. and Herbert G (1976), *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life*, Basic Books, New-York, NY.

Bowles, S., Gintis, H. and Osborne, M. (2001), "The determinants of earnings: A behavioral approach", *Journal of Economic Literature*, pp. 1137-1176

Callaghan, G. and Thompson, P. (2002), ""We recruit attitude": the selection and shaping of routine call centre labour", *Journal of Management Studies*, Vol. 39, No. 2, pp. 233-54.

Calmand, J., Giret, J-F., Lemistre P. and Menard, B., (2015), "Les jeunes diplômés de bac+5 s'estiment-ils compétents pour occuper leurs emplois ?", *Bref*, No. 340, Céreq, Marseille.

Deil-Amen, R. (2006), "To teach or not to teach "social" skills: Comparing community colleges and private occupational colleges", *The Teachers College Record*, Vol. 108, pp. 397-421.

Duckworth, A. L., Peterson, C., Matthews, M. D. and Kelly, D. R. (2007), "Grit: perseverance and passion for long-term goals", *Journal of Personality and Social Psychology*, Vol. 92, No. 1087.

García-Aracil, A. and Van der Velden, R. (2008), "Competencies for young European higher education graduates: labor market mismatches and their payoffs", *Higher Education*, Vol. 55, pp. 219-239.

Goldsmith, A. H., Veum, J. R. and Darity, W. (1997), "The impact of psychological and human capital on wages", *Economic Inquiry*, Vol. 35, pp. 815-829.

Green, F., McIntosh, S. and Vignoles, A. (1999), *Overeducation and Skills – Clarifying the Concepts*, Centre for Economic Performance, LSE London School of Economics and Political Science, London, UK.

Gutman, L. M. and Schoon, I. (2013), "The impact of non-cognitive skills on outcomes for young people", E*ducation Endowment Foundation*, 59 pp.

Heckman, J. J. and Kautz, T. (2013), "Fostering and Measuring Skills: Interventions That Improve Character and Cognition", *National Bureau of Economic Research*, No. 19656.

Heckman, J. J., Stixrud, J. and Urzua, S. (2006), "The effects of cognitive and noncognitive abilities on the labor market", *Journal of Labor Economics*, Vol. 24, pp. 411–482.

Ito, H. and Kawazoe, N. (2015), "Active learning for creating innovators: employability skills beyond industrial needs", *International Journal of Higher Education*, Vol. 4, No. 2,pp. 81-91.

Keep, E., Mayhew K. and Payne J., (2006), "From skills revolution to productivity miracle – not as easy as it sounds?", *Oxford Review of Economic Policy*, 22(4), pp. 539-559.

Koenker, R. and Bassett Jr, G. (1978), "Regression quantiles", *Econometrica: Journal of the Econometric Society*, pp. 33-50.

Kuhn, P. and Weinberger, C. (2005), "Leadership skills and wages", *Journal of Labor Economics*, Vol. 23, pp. 395-436.

Lindqvist, E. and Vestman, R. (2011), "The labor market returns to cognitive and noncognitive ability: Evidence from the Swedish enlistment", *American Economic Journal: Applied Economics*, Vol. 3, pp. 101-28.

Mason, G., Williams, G. and Cranmer, S. (2009), "Employability skills initiatives in higher education: what effects do they have on graduate labour market outcomes?", *Education Economics*, Vol. 17, pp. 1-30.

Ménard, B. (2014), "La hausse du niveau de formation n'empêche pas celle du chômage",*Bref*,No. 322, Céreq, Marseille.

Pang, E. and Hung, H. (2012), "Designing and evaluating a personal skills development program for management education", *Journal of College Teaching & Learning (TLC)*, Vol. 9, pp. 159-170

Payne, J. (2000), "The unbearable lightness of skill: the changing meaning of skill in UK policy discourses and some implications for education and training", *Journal of Education Policy*, *15*(3), pp. 353-369.

Payne, J. (2009), "Emotional labour and skill: a reappraisal", *Gender, Work & Organization*, Vol. 16, pp. 348-367

Rosenberg, M. (1965), "Society and the adolescent self-image", *Scienc*, Vol. 148, No. 3671, pp. 804

Rothmann, S. and Coetzer, E. P. (2003), "The big five personality dimensions and job performance", *SA Journal of Industrial Psychology*, Vol. 29, 68 pp.

Schulz, B. (2008), "The importance of soft skills: Education beyond academic knowledge", *Journal of Language & Communication*,Vol. 2, 146 pp.

Semeijn, J., Boone, C., Van der Velden, R. and van Witteloostuijn, A. (2005), "Graduates' personality characteristics and labor market entry: an empirical study among Dutch economics graduates", *Economics of Education Review*, Vol. 24, pp. 67-83.

Taylor, A. (2005), "What employers look for: The skills debate and the fit with youth perceptions", *Journal of Education and Work*, Vol. 18, pp. 201-218.

Trapnell, P. D. and Wiggins, J. S. (1990), "Extension of the interpersonal adjective scales to I include the Big Five dimensions of personality", *Journal of Personality and Social Psychology*, Vol. 59, pp. 781.

Weinberger, C. J. (2014), "The increasing complementarity between cognitive and social skills", *Review of Economics and Statistics*, Vol. 96, pp. 849-861.

Appendix 1. Descriptive statistics

	Definition	Mean	Std dev.
Wage	Wage after graduation	2, 502	4,825
Experience	Months of work experience	29	7.5
Social Background	=1 if executive father	0.41	0.49
Gender	=1 if man	0.44	0.50
Soft-skills:			
Grit	Scale from 1 to 7	3.03	0.48
Risk taking	Scale from 1 to 10	5.94	1.87
Self-esteem	=1 if "self-confidence"	0.39	0.49
Sociability	=1 if "highly sociable"	0.87	0.33
Communication	=1 if "good communication"	0.11	0.31
Academic capital:			
Bachelor's degree	=1 if "a baccalaureatedegree"	0.21	
Master's degree	=1 if "amaster degree"	0.59	
Master-level schools	=1 if "master-level school"	0.20	
Branch of study:			
Human sciences	=1 if human science discipline	0.25	
Law	=1 if law discipline	0.07	
Economics, management	=1 if Economics, management disciplines	0.18	
Earth and life sciences	=1 if Earth and life sciences discipline	0.08	
Fundamental sciences	=1 if Fundamental sciences discipline	0.19	

Source: "Génération 2010" survey of the Céreq

Appendix2. Summary – the effect of social skills on wages

Table III

	OLS Regression	Quantile Regression		
		0.25	0.50	0.75
Grit	0.0469*	NS	0.0359**	0.0522**
Self-esteem	0.0753***	NS	0.0310*	0.0807***
Risk taking	0.0172**	0.0131***	0.0121***	0.0143***
Sociability	NS	NS	NS	NS
Communication	0.104**	NS	NS	NS

Note: *** p<0.01, ** p<0.05, * p<0.1
NS: Not statistically significant

Source: "Génération 2010" survey of the Céreq

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