Skills and Wages

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Introduction

Many empirical studies have recognized the importance of non-cognitive skills along with the cognitive skills and we build on this by :

- first examining whether cognitive and non-cognitive skills explain difference in hourly wages after controlling for experience and schooling
- Secondly we analyze how these skills affect the wage profiles of individuals across different occupational levels, since the requirements for these skills vary with different occupations.

People typically embody both type of skills: Cognitive skills driving their reasoning and thinking; and non-cognitive skills incorporating their personality traits.

- There are numerous studies that have established measurements for cognitive abilities, for instance AFQT scores, GAT scores test and IQ performance tests by DIW,
- Many economists have produced large body of evidence that employers in labor market have now recognized the relationship between non-cognitive skills and productivity. This recognition have led to the evolution of measures like Rosenberg Self esteem scale and Rotter Locus of control, the Big Five Factor Model.

- But to what extent is occupation useful to understand how education and skills are related with wages?
- With the rapidly changing trends in the global labor market, employers today want their employees to possess a certain degree of qualification, in terms of skills, education and experience, due to the non-pecuniary characteristics of different jobs.
- And in this highly competitive market, employees are keen to develop their qualifications to suit the market needs. Hence we see how these qualifications change in the occupational hierarchy.

Literature

- There have been numerous studies which investigated the effect of cognitive skills and personality traits on wages.
- Anger and Heineck (2010) confirms that employers highly value individuals' skills. Farkas and Kilbourne (1997) also confirm that employers assess cognitive and non-cognitive skills for hiring, promotion and wage setting policies.

On one hand, some studies suggested substantial returns to cognitive skills :

- Anger and Heineck (2010) have established a positive relationship between cognitive skills and labor market outcomes, suggesting that abilities are correlated to the wages in a significantly positive way for German workers.
- citetlevy also recognized the importance of cognitive skills in wage determination.

While on the other hand, many research works found that cognitive ability has a very little or no effect on earnings:

- Cawley, Heckman, and Vytlacil (2001) and Zax and Rees (2002) reported that the effect of cognitive skills is much smaller than what has been asserted by previous analyses and is rather a poor estimator of earnings.

- **e**xplained how some personality traits matter for employers because they facilitate the production of effort at work and affect labour productivity.
- Stixrud and Urzua (2006) suggested that non- cognitive skill is an equally strong determinant, if not more, as cognitive skill.
- Cosin, Bowles, and Gintis (1979) and Edwards (1976) in their work showed that skills such as dependability and persistence are highly valued by employers.

Expectations

- We expect cognitive skills to have either positive or no association with the earnings.
- With respect to the personality traits used, we expect no significant relation between Extraversion and wages, a positive relationship for Openness and conscientiousness and negative for Neuroticism and Agreeableness.
- For occupations, we expect cognitive skills to be either positively or not related to the occupational categories. For personality traits, we expect more heterogeneous results for each category of occupation, depending on their work task and roles.

Data

- SOEP is a wide-ranging representative micro-database providing comprehensive socio- economic information on private households in Germany.
- The panel was first started in 1984 and data for about 12,200 randomly selected respondents, in West Germany, was collected.
- We use two recent waves which include data on cognitive skills (2005), two short verbal and performance tests, and personality traits (2006), items pertaining to the Big Five Factor model.
- We retrieved the data for occupation and education from the personal questionnaire of 2005.

Measures of Cognitive Skills

- The organization conducted two short tests to evaluate cognitive skills in year 2006. These were: A Word Fluency Test and Symbol Correspondence Test.
- For the Word Fluency test, respondents were asked to name as many animals as possible in 90 seconds
- For the Symbol Recognition Test respondents had to match as many number and symbols as possible in 90 seconds using the correspondence list provided to them.

Measures of Non-Cognitive Skills

We have used the Big Five Factor model to measure the non-cognitive skills (OCEAN).

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

Determination of Hourly Wages

- SOEP provides data on monthly income from primary employment and actual weekly working hours including overtime.
- We calculate the hourly wages by dividing the monthly income with the product of weekly hours and the estimated factor of 4.3 for the number of weeks.
- For individuals reporting zero wages, a small value of 0.0001 was assigned before it was transformed to a logarithmic scale.

Analytical Sample

- To address the research question posted in the study, the analytical sample is limited to individuals between age 20 and 60 who were in full time employment, in order to include only those who most likely have completed their education and were below the retirement age.
- For categorizing the occupations, we used the Goldthorpe classification scale. We have, however, excluded the category for agricultural workers and self-employed people due to their very small sample size
- Total Sample Size : 2632

Conclusion

- To sum it all up, the numbers of years spent on education is not relevant for individuals belonging to the higher level of occupational hierarchy but for those who are still aiming for higher positions in their professional career.
- For all individuals, experience is positively associated, specially for lower managerial and professional workers. Cognitive skills are not as strongly related to wages. IT is relevant only for a minor class, i.e. Manual workers, of working individuals.
- Personality traits were, overall, significant except Extraversion which we expected. Neuroticism is significant for almost all individuals irrespective of the occupational category they belong to. Openness is negatively associated for all the individuals, surprising to our expectations.

Conclusion

- We used Mincer approach which is only one of many approaches followed by the economists.
- Also, there are some potential problems which have not been taken into account in this paper, like the possible endogeneous relationship between wages and personality which might result in reverse causality.
- The assumption made regarding the relationship between education and ability has been mathematically addressed by other studies.
  A further issue is the measurement error persistent in the measured skill variables which might have strongly affected the results.

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