Individual Paper Session VI

Thursday, April 6th, 2017, 11:30 – 13:00

Paper Session: Skills and wages

Chair
Marco Paccagnella (OECD, France)

Room: Joseph Haydn

Presentations

- Title: Wage inequality and returns to workplace training for male and female employees. A quantile regression analysis.
  Author: Rossella Icardi (National Centre for Social Research, United Kingdom)
- Title: General competencies or certificates? Wage determination for complex tasks in Germany
  Authors: Stefanie Velten (Federal Institute for Vocational Education and Training, Germany) & Christian Ebner (University of Cologne/Federal Institute for Vocational Education and Training, Germany)
- Title: The causal effect of cognitive skills on the distribution of wages
  Authors: Marco Paccagnella (OECD, France), Lorenzo Cappellari (Catholic University of Milan, Italy), Daniele Checchi & Marco Leonardi (University of Milan, Italy)
- Title: Returns to education and skills in the new economy: The role of skill use, cognitive skills and occupational sorting
  Author: Xavier St-Denis (McGill University, Canada)

Title: Wage inequality and returns to workplace training for male and female employees. A quantile regression analysis.

Author
Rossella Icardi (National Centre for Social Research, United Kingdom)

Abstract

Whilst there is evidence that participation in workplace training has a positive association with wages, it is unknown whether it differs between men and women. This investigation may provide additional explanations as to why the systematic difference in wages between men and women persists in the labour market. Using data from the Programme for International Assessment of Adult Competencies (PIAAC), this paper looks at individuals educated up to the secondary level in Germany and England and examines whether workplace training returns vary by gender. This study uses quantile regressions to establish whether the association between training and wages also varies across the wage distribution. Moreover, it takes quantile regression one step further by using unconditional quantile regression to estimate the effect of workplace training participation on the unconditional wage distribution. Findings show that the association between workplace training and wages does not differ between men and women; however, unconditional quantile results reveal that workplace training returns differ across unconditional wage quantiles thereby indicating that estimation methods that focus on the mean hide more complex patterns of results.
Title: General competencies or certificates? Wage determination for complex tasks in Germany

Authors
Stefanie Velten (Federal Institute for Vocational Education and Training, Germany) &
Christian Ebner (University of Cologne/Federal Institute for Vocational Education and Training, Germany)

Abstract
Comparative studies document that in Germany there are particular strong links between the educational system and the labour market. However, it is rather unclear which role cognitive skills play on the German labour market. According to the OECD, skills like numeracy, literacy and problem solving are key-information processing skills which “provide a foundation for effective and successful participation in the social and economic life of advanced economies” (OECD, 2013a, p. 52). A huge body of evidence demonstrates that those skills are linked to full-time-employment and earnings and to individuals’ participation in community groups (OECD & Statistics Canada, 2011). Using Mincer’s (1974) regression model the influence of human capital on wages is calculated, often by resorting to test scores on cognitive skills (Charette & Meng, 1998).

Referring to the task approach researchers demonstrated that wages are not only influenced by individuals’ skills, but also by job tasks and requirements. Autor and Handel (2013) revealed that “abstract problem solving and creative, organizational, and managerial tasks” (p.S70) are linked to higher earnings than manual or routine tasks. In our paper, we investigate if there is an additional wage premium for skills and educational certificates when performing complex tasks. Evidence for this interaction hypothesis is provided by Gottfredson (2004) who argued that “the advantages conferred by higher levels of g [general cognitive skills] are successively larger in successively more complex jobs, tasks, and settings” (p. 176). Meta-analytical findings found evidence for this idea (Salgado et al. 2003).

The analyses are conducted using the 2012 German PIAAC data set. For our analyses, we focus on numeracy as the core cognitive skill. As there is no clear conceptualization of task complexity, three scales are used to represent this construct: complex problem solving at work, autonomy and social interaction. We find a significant incremental effect of numeracy skills on employee’s earnings beyond a set of control variables and educational certificates. As expected, wages are strongly influenced by educational certificates. Complex task requirements like problem solving, autonomy and social interaction explain additional variance in wages. However, we could not find any interaction effects. Reasons for this will be discussed.

Title: The causal effect of cognitive skills on the distribution of wages

Authors
Marco Paccagnella (OECD, France), Lorenzo Cappellari (Catholic University of Milan, Italia),
Daniele Checchi & Marco Leonardi (University of Milan, Italia)

Abstract
This paper use data from the Survey of Adult Skills, a standardized cross-country assessment of the literacy and numeracy proficiency of the adult population in a number of OECD countries and economies, to estimate the causal effect of cognitive skills on wages. Our identification strategy exploits differences across countries in the timing of educational reforms. More specifically, we look at the introduction of national standardized tests. Reforms introducing these tests usually aims to increase the quality of education (and therefore literacy and numeracy proficiency, for given years of education), as tests are used
to hold schools more accountable for their performance (Checchi et al., 2013). In the spirit of Brunello et al. (2009), we argue that the introduction of standardized tests (like most educational reforms) is orthogonal to idiosyncratic characteristics of particular cohorts, and can therefore be used to instrument the literacy or numeracy proficiency of individuals that, belonging to different cohorts, were differentially exposed to the reform. Furthermore, we use econometric techniques recently developed in Powell (2016) to estimate the effect of cognitive skills at different parts of the unconditional distribution of wages. These methods overcome the limitations of traditional conditional quantile regression (that is only informative about the impact on within wage inequality, and whose result depend on the choice of the set of control variables), allowing to interpret the results as the direct effects of cognitive skills on overall wage inequality.

Title: Returns to education and skills in the new economy: The role of skill use, cognitive skills and occupational sorting

Author
Xavier St-Denis (McGill University, Canada)

Abstract
Recent research emphasizes the increasing reward to education and skills in the new economy. Existing findings show that some of the wage premium associated with post-secondary education is accounted for by the higher cognitive skills of university graduates. Nevertheless, this approach cannot account for highly rewarded skills that are not cognitive skills. This paper therefore asks whether the wage premium associated with post-secondary occupation is accounted for by the greater use of a wide variety of cognitive and non-cognitive skills used at work.

I find that although some share of the post-secondary wage premium is explained by the higher cognitive skill level of graduates (based on the PIAAC assessment-based numeracy and literacy scores), a much greater share of that wage premium is explained by skill use variables available from the background questionnaire, which capture a wide array of skills that are generally considered as highly rewarded in the new economy. The findings hold across 24 countries of the PIAAC sample, suggesting that labour markets operate in a similar way across OECD countries.

Consistent with recent research in sociology, I also find that wage returns to education are associated with occupational sorting, net of cognitive skills. Moreover, part – but not all – of the returns to education that are associated with greater skill use are driven by this occupational sorting effect. In addition, I find a large within-occupation of skill use on earnings, which denotes skill use heterogeneity beyond 2-digit occupations. In fact, most of the between-occupation effect of skill use happens at the 1-digit level. This highlights the advantage of data sources providing direct measures of skill use rather than occupational-level skill demand measures also available to researchers. The existing literature suggests that occupational composition might be behind some of that residual effect. Finally, there is a large net effect of skill use on earnings, within occupations and levels of educational, suggesting that there is a great amount of within-group skill use heterogeneity across jobs on the labour market.