

Skill matching and outcomes

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Valorisation Addendum

Matching the right worker to the right job got increasingly difficult during the last decades. There are various reasons for that, e.g. an increased global competition, changes in the work force qualification level but also the fast and widespread implementation of innovative technologies that alter skills demands of workplaces throughout the occupational structure. Social groups are unequally equipped with the skills and knowledge needed to deal with the profound and irreversible transformation of work and employment. Against this background, the phenomenon of **SKILL-TO-JOB MISMATCH** – i.e. mismatch between the individual skills supply and skill demands of jobs – has become a matter of scientific concern. While a large body of scientific literature exists, major gaps remain in the understanding of determinants and outcomes of skill (mis-)matches. With my dissertation, I seek to contribute to the creation of knowledge concerning the following research questions: To what extent can the likelihood that workers find a job for which they have the right skills be explained by characteristics of labour market arrangements and education systems? Do skills, skill use, and mismatches have a broader impact on society in terms of non-monetary and potential social outcomes? And what about the increasing adoption of digital technologies at workplaces – to what extent do mismatches in digital problem-solving skills matter for wages? Do shortages in these skills affect all workers in the same way – or are there (new) wage inequalities?

While these desiderata of knowledge are important to fill, linking theoretical concepts of skill-to-job matches to valid empirical indicators is still work in progress. Therefore, the first part of my dissertation is dedicated to a comprehensive theoretical framework, which I outline in **CHAPTER 2**. It is followed by a series of empirical studies, providing new cross-country evidence for macro level determinants and individual outcomes of skill-to-job (mis-)matches. **CHAPTER 3** explores the macro-micro link between social policies and optimal skill matching. In **CHAPTER 4**, I investigate non-monetary and potential social outcomes that are related to skill mismatches. Exploring the importance of skill use and the individual experiences at work, I thereby make use of several distinct mismatch measures. **CHAPTER 5** examines digital problem-solving skills, particularly investigating shortages in these skills and wage inequalities. To sum up, **CHAPTER 6** provides an overall conclusion and comprehensive discussion, highlighting the most relevant findings as well as their (policy)

implications while evaluating limitations of my analyses and providing recommendations for further research. My research is cross-national, using data from OECD's Programme for the International Assessment of Adult Competencies (PIAAC). This recent survey provides internationally comparable measurements of skill proficiency in key information-processing skills and the use of these skills at work for representative samples of the workforces of more than 30 industrial countries. As there is no common conceptual approach to measure skill matches/mismatches, I make use of several different skill mismatch measures. Using skill matches and mismatches as dependent and independent variable, I provide new cross-country evidence based on advanced statistical modelling.

The findings of this dissertation are valuable to policy makers, the academic community, organisations and institutions as well as policy makers, next to individuals. However, what are the most **VALUE-ADDED AND ORIGINAL PARTS** of my research? The *first addendum* relates to the examination of the macro-micro link between social policies and skill matching at the individual level. My research provides new insights for **POLICY MAKERS** as it reveals opposite outcomes of enforcing vs. enabling activating labour market policies (ALMPs): Strict enforcement is associated with more skill *mismatch*, while enabling policies may serve as a lever to promote skill-based worker-job matches, which is important for a productive use of skills and talent. Particularly for the current episode of great changes in skill demands strict enforcement does not help to allocate the right workers to the right jobs, whereas enabling services seem to be more promising as it appears that these policies seem to promote skill matching. As employers and – in aggregate – economies can profit from a full and productive use of skills and talent, this is important knowledge for policy makers at different levels and institutions. Knowledge about heterogenous outcomes of enforcing versus enabling activating labour market policies could furthermore help to structure the political debate and inform policy makers about the optimal design of redistributive as well as activating policy measures. However, it is not advisable to directly apply the findings of this dissertation. Before this can be done, more research must be conducted. This includes, for example, studies that establish the causal effects of social policies on individual labour market outcomes. Nevertheless, academic knowledge and evidence-based decision making can help to create acceptance of these policies. The findings of the thesis at hand are a first step towards understanding the relation between social policies and the phenomenon of skill matching.

My dissertation also provides original insights for **ACADEMIA** as it shows the need for more and better composite policy indicators that help to differentiate policies in a more fine-grained way when investigating the diverse mix of activating measures are at the heart of central labour market reforms that took and still take place in many countries. This brings

me to the *second addendum*: the new insights that I provide concerning employment protection legislation and their relation with individual labour market outcomes. While it is a long standing finding that the regulation of the dismissal process also affects employers' hiring decision making, my findings add a new aspect to the discussion, namely the positive relation between EPL and skill matching. This is important knowledge for both policy makers and scientists as, at least to my knowledge, this relation has not been studied before. The *third addendum* lays in the provision of new empirical evidence based on the new van der Velden/Bijlsma (2018) 'effective skill measure', which can be of use for further research in this field. The 'effective skill'-logic is key for understanding the relation between skills, skill use, mismatches and outcomes as it pinpoints the importance of skill use at work as a crucial dimension of quality of working life. Besides, the comparison of the commonly used skill mismatch measures shows that the choice of the approach must be made carefully as the available measures are not interchangeable. The empirical findings presented in this thesis provide evidence that the dependent variable should determine the choice of a mismatch measure.

Understanding the importance of a full and productive use of the own skills and talent can inform organisational development and firm-based policies, particularly (but not exclusively) in times of great change due to digitalisation and/or the implementation of intelligent machines and process automation at workplaces. Related to this, the *fourth addendum* is also relevant for **ORGANISATIONS AND DECISION MAKERS AT THE FIRM LEVEL**. Job satisfaction is driven by skill use, not skill proficiency or mismatches. Two policy implications can be drawn from this: (1) Policies addressing job satisfaction should focus on skill utilisation rather than primarily on the issue of overskilling; and (2) policies, particularly but not exclusively at the level of firms and managerial practices, should promote the full use skills and talent, designing workplaces and also training mechanisms in a way that allows workers to do what they are best at. This knowledge could be relevant for firm level policies that seek to promote a positive employee experience.

Skill use and skill matching may have a broader impact, also outside the work environment. Here, my thesis provides interesting insights for **DEMOCRACIES AND CIVIL SOCIETIES** based on the *fifth addendum*, which lies in the empirical evidence that skills, skill use and mismatches are related to psychological orientations and values that are important even outside the work environment and that – in aggregate – are vital for societies and democracies. However, while these analyses are congruent with theoretical expectations, they cannot proof the theory to be true. Further research is necessary to give more detailed policy implications.

The *sixth addendum* is related to the importance of digital problem-solving skills. Against the background of recent labour market developments, these skills are very likely to become more important, which is why education but also enabling labour market policies should focus on a broad promotion of these key skills, including them into **EDUCATION SYSTEMS AND WORKPLACE TRAINING SCHEMES**. Particularly, women, low educated (that may also be highly affected by innovative technologies) and other social groups and individuals that find themselves in adverse labour market situations should get access to training in digital problem-solving skills. This is an important policy implication, as increasing labour market inequality (e.g. related to shortages in digital problem-solving skills) is to be expected if a further development of these skills is not broadly promoted. Designing policies to foster the development and distribution of digital problem-solving skills particularly for vulnerable groups at the labour market, such as women, migrants, and low educated and/or low skilled workers may help to effectively tackle rising inequality. The challenges of the knowledge economy and changing demands for skills in times of digitalisation and automation require new and more insights into skill matching and individual labour market outcomes, and new cross-country evidence for adult workforces. Moreover, the promotion of research in this field could help to co-create policies that effectively tackle social inequality and help foster economic development as well as social cohesion.