Mismatch among the graduated from the dual system of vocational training: a task-based approach

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Abstract

This paper aims at studying the mismatch phenomenon among graduates from the dual apprenticeship vocational training in Germany and at presenting a new task-based indicator of mismatch. We contribute to the literature in mainly three ways. First, we develop a new measure of mismatch, based on the tasks performed at each occupation, and its comparison to the usual objective overqualification measure. Second, we provide an in-depth analysis of the determinants of cognitive mismatch, not only at the individual level but also at the occupational level. Finally, we analyse the consequences of cognitive mismatch in the future development of the graduates’ careers. We use rich administrative data from the German Sample of Integrated Labour Market Biographies (SIAB) and our sample comprises around 15,000 individuals that have graduated from an apprenticeship in Germany in the years between 2011 and 2013. Our first results point to the importance of the way in which mismatch is measured and support the use of the task-based indicator. Given this, we focus on the cognitive mismatch measure and use it in a multivariate regression model to analyse its determinants and in an event history analysis to examine the development of the graduates’ careers.

Keywords: overqualification, tasks, occupational skills, vocational training
**Extended Abstract**

The phenomenon of mismatch, defined as a discrepancy between the skills and competences of an employee and the ones required to perform that person’s job, is widespread (McGuinness, 2006 and Cedefop, 2010) and has relevant negative effects at the individual and societal levels.

A priori, one would expect that the phenomenon of occupational mismatch (or overqualification) should be a minor topic for graduates from the dual system of vocational training given the two main characteristics associated to it. At first, by combining schooling (in vocational schools) and practical training (in firms), this system is halfway between theoretical learning and on-the-job learning (Blossfeld, 1992) and provides occupation-specific skills that are of immediate need in the labour market. Accordingly, it is associated with a quicker and smoother transition into the labour market (Müller, 2001). Secondly, it is characterized by a high level of standardization, whereby graduates are awarded a recognized certificate that is required to enter the labour market and to ensure the access to certain occupations (Allmendiger, 1989). While indeed it is well known in the literature that the graduates from the dual system of vocational training have a lower risk of being overqualified compared to university graduates (e.g. Rohrbach-Schmidt & Tiemann, 2011; Rukwid, 2012), they are still affected by the phenomenon.

In this paper, apart from developing a new task-based measure of mismatch, we aim at studying in-depth the mismatch phenomenon among recent graduates from the dual apprenticeship vocational training and investigate the consequences for the career transitions in their first few years in the labour market. This is a relevant issue because this educational track has been appointed as one of the main reasons for a better performance of youth labour markets witnessed in some European countries (Biavaschi et al., 2012).

We contribute to the literature in mainly three ways. The first is the development of a new measure of mismatch, based on the tasks performed at each occupation, and its comparison to the usual objective overqualification measure. In fact, there has always been a debate about the best way to measure the mismatch phenomenon – subjective versus objective measures and education versus skills mismatch (Flisi et al., 2016) – but none of them takes into account the real and specific tasks performed at work. Tasks, which are defined as activities that individuals have to perform in a specific occupation (Dengler, Matthes and Paulus, 2014), have been appointed in the recent years as a useful unit of analysis in labour market issues (Acemoglu and Autor, 2011, p. 1045). We share this view and argue that comparing the tasks performed during the apprenticeship and the tasks performed in future jobs is a more detailed and accurate way of measuring mismatch. The common measure of overqualification simply compares the level of education/training of the person and the one that the job requires. Some improvements have been made by measuring skills mismatch, using test-based literacy and numeracy, which clearly do not satisfactorily represent the complexity of tasks performed at work. We operationalize the new task-based measurement of mismatch by reducing the five tasks dimensions

The second contribution is content-wise, whereby we provide an in-depth analysis of the determinants of cognitive mismatch, not only at the individual level but also at the occupational level. Here the interest is to verify whether certain individual characteristics and/or certain occupational segments are more vulnerable to mismatch than others. This is implemented by estimating multivariate regression models.

Finally, taking advantage of the fact that we have longitudinal data we analyse the consequences of cognitive mismatch in the future development of the graduates' careers. Using event history techniques, we answer to the following questions: i) Do cognitive mismatched graduates change to a second job faster than cognitive matched ones?; ii) How long does it take until cognitive mismatched graduates find an adequate job?

For the analysis, we use rich administrative data from the German Sample of Integrated Labour Market Biographies (SIAB). The data is a two percent random sample of all German employees in jobs that are subject to social insurance contributions, which includes individuals going through apprenticeship training. This dataset is particularly suited to investigate the mismatch phenomenon in apprenticeship graduates, since we observe the occupation of the apprenticeship they graduated from and all their job trajectories over the working life. Our sample comprises around 15,000 individuals that have graduated from an apprenticeship in Germany in the years between 2011 and 2013. To operationalize the different mismatch concepts used in the paper, the occupation of the apprenticeship is compared with the occupation of the first and following jobs. For the usual objective overqualification measure, we use the 5th digit of the occupations' classification (KldB) to compare the level of training received to the training required for the current job. To measure cognitive mismatch we compare the main task of the apprenticeship occupation and that of the current job. These are provided by Dengler et al. (2014).

Our results point indeed to the importance of the way in which mismatch is measured. According to the objective measure, 9% of the apprenticeship graduates are overqualified to the job they are performing, a value that is line with previous literature. However, the task-based approach indicates that only 6% of the same graduates are cognitive mismatched. This difference confirms that the two measurements are capturing different phenomena, as expected. The following table tabulates both measurements, showing that only 2,6% of the graduates are mismatched in both indicators. Pointing in the direction of our argument that overqualification is not an accurate measure of mismatch, 6,5% of the total graduates are considered overqualified but cognitive matched – these correspond to 71% of the overqualified graduates. This means that even though they are working in jobs that require a lower level of training that the one they own, the type of tasks they are actually performing is line to the ones they performed during the apprenticeship. In the opposite situation, we see that 3,4% of the total graduates
are cognitive mismatched but not overqualified, meaning that, even though the training requirements are the same, they could be performing a higher share of cognitive tasks because they were trained to do so.

<table>
<thead>
<tr>
<th>OVERQUALIFIED</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13,109</td>
<td>506</td>
</tr>
<tr>
<td></td>
<td>(87.5%)</td>
<td>(3.4%)</td>
</tr>
<tr>
<td>Yes</td>
<td>967</td>
<td>386</td>
</tr>
<tr>
<td></td>
<td>(6.5%)</td>
<td>(2.6%)</td>
</tr>
<tr>
<td></td>
<td>14,076</td>
<td>892</td>
</tr>
<tr>
<td></td>
<td>(94%)</td>
<td>(6%)</td>
</tr>
</tbody>
</table>

Given this interesting pattern, we focus on the cognitive mismatch measure and use it in the rest of our paper: in the multivariate regression model to analyse its determinants and in the event history analysis to examine the development of the graduates' careers.

References


Dengler, Katharina; Matthes, Britta; Paulus, Wiebke (2014), Occupational Tasks in the German Labour Market. An alternative measurement on the basis of an expert database. (FDZ-Methodenreport, 12/2014 (en)), Nürnberg, 36 S.

