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Debating the Shortage of Skilled Workers

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It seems to be widely acknowledged that Germany will face a shortage of skilled workers within no more than a few years. However, the extent of the current and future skilled worker *shortage* is still up for debate among experts. The disagreement begins with the choice of adequate scarcity indicators and model assumptions in long-run projections.

Consensus about the current absence of a general shortage of skilled workers but controversy over the presence of select scarcities

Labor market experts agree that there is not currently a general shortage of skilled workers and that scarcities are emerging only in select occupations. However, disagreements become evident when it comes to an assessment by occupation or qualification. While studies that look at numbers of job vacancies and unemployed workers or at surveys of enterprises claim scarcities in some health occupations, technical occupations or in occupations requiring medium qualifications, other studies focusing on the development of wages only acknowledge scarcities in health occupations. Also, sometimes the perspective on the labor market and the economic system is criticized as too narrow and firms as too inert.

In the view of Frank-Jürgen Weise, executive chairman of the German Federal Employment Agency (*Bundesagentur für Arbeit* – BA), the shortage of skilled workers is becoming more intense. However, according to the BA's scarcity analysis from June 2013 currently there is not a general shortage of skilled workers in Germany, rather scarcities in only a few occupations. The last conclusion corresponds to the appraisal of the Federal Ministry of Labor and Social Affairs (*Bundesministerium für Arbeit und Soziales* – BMAS) in its 2011 labor report, which is based on analyses conducted by the Institute for Employment Research (*Institut für Arbeitsmarkt- und Berufsforschung* – IAB). Karl Brenke, labor market expert at the German Institute for Economic Research (*Deutsches Institut für Wirtschaftsforschung* – DIW Berlin), and Michael Hüther, director of the Cologne Institute for Economic Research (*Institut der deutschen Wirtschaft Köln* – IW), agree that there is not currently a general shortage of skilled workers in Germany.

According to the BA's scarcity analysis from June 2013, there are scarcities in some technical occupations especially in West Germany, as well as nationally in health care and nursing professions [all occupational titles in this article are own translations by the author]. Since December 2012, the BA's biannually revised list of scarce occupations includes, for the first time, non-academic technical occupations. In order to identify scarce occupations, the BA considers the average duration of vacancies (level and change) in addition to the proportion of unemployed workers and job vacancies. The occupations preselected on the basis of this information are validated with further information. Out of the scarce occupations identified with this procedure, jobs in the fields of human medicine, mechanical and automotive engineering as well as care of the elderly exhibited the longest durations of vacancy in 2013.

The Federal Ministry of Economics and Technology (*Bundesministerium für Wirtschaft und Technologie*) also finds scarcities in the occupational fields of energy and electronics, mechanical and automotive engineering as well as metal in its 2013 study, which was conducted by the IW. In the study, the determination of scarcities is based on a comparison of the number of unemployed workers and the number of registered job vacancies. Thusnelda Tivig, Professor of Economics at the University of Rostock, and her coauthors, find similar results in their 2013 report, ordered by the BMAS. They point to scarcities of lathe operators, molding cutters, electronics engineers, nurses and midwives. Their retrospective scarcity analysis is based on the duration of vacancies, the number of unemployed workers per job vacancy and the respective deviations from the multi-annual mean.

According to a 2011 survey of enterprises conducted by the Organisation for Economic Co-operation and Development (OECD) in collaboration with the Association of German Chambers of Commerce and Industry (*Deutscher Industrie- und Handelskammertag*), many small, medium-sized and large enterprises are facing a shortage of workers in occupations requiring medium qualification levels. In particular large enterprises also note a shortage of workers with high qualifications.

Although Karl Brenke also acknowledges recruitment difficulties in the health care sector in his 2012 German Parliament statement, he does not see shortages of skilled workers in other sectors. He bases this assessment, amongst others, on the absence of wage increases, which would be expected in the case of scarcities. In Brenke's opinion, important aspects (e. g. the free movement of workers within the EU) are ignored in the debate, and the labor market's ability to adjust is underestimated (e. g. via firms' possibilities to invest in human capital or in process innovations if wages rise due to labor scarcities).

According to Herbert Brücker, Professor of Economics at the University of Bamberg and head of one of IAB's research departments, the discussion about the current existence of a shortage of skilled workers "[…] misses the actual problem" [author's translation]. From an economic point of view, a mismatch of supply and demand in the labor market due to frictions is absolutely normal. According to him, the major task is to reduce this mismatch.

Controversy over current scarcities of engineers and MINT professionals

The disagreements among experts are most evident concerning MINT occupations (Mathematics, Information technology, Natural science and Technology), the German equivalent of STEM occupations (Science, Technology, Engineering and Mathematics) in the United States. In 2009, a dispute over method for identifying worker shortages emerged. Particularly controversial is the adequacy of numbers on job vacancies and unemployed workers to measure labor demand and labor supply. While some experts assert a significant shortage of MINT professionals, this shortage is sometimes resolutely rejected by others.

Oliver Koppel and Axel Plünnecke, labor market experts at IW, and their colleagues point to scarcities of engineers and – more generally – of MINT professionals, reiterating this claim in their autumn 2013 study of MINT occupations. In their analyses, they usually consult data from the BA on registered job vacancies and unemployed workers by occupational category in order to identify occupation-specific scarcities of workers. In a 2009 study on engineers by IW and the Association of German Engineers (*Verein Deutscher Ingenieure* – VDI), the number of job vacancies registered at the BA is multiplied by a factor (seven) determined from a sample of enterprises in order to project the overall number of job vacancies for engineers in the economy. This approach is considered as inappropriate by Karl Brenke, who regards the numbers of job vacancies and unemployed workers as poor

measures for estimating labor demand and labor supply. According to him, not every vacancy reflects additional labor demand and not every person available to the labor market is included in the number of unemployed workers. Brenke bases his 2010 scarcity analysis for occupations related to natural sciences and technology as well as for skilled workers demanded in industry on the evolution of several indicators (gross hourly wages, employees subject to social insurance contribution, unemployed workers, job vacancies and students). He concludes that for the considered occupations a "shortage of skilled workers is not yet in sight in the short run" [author's translation]. Ronald Schettkat, Professor of Economics at the University of Wuppertal, shares Brenke's critique.

In their 2012 report, which has – just as the 2011 labor report by the BMAS – emerged within the framework of the project "Analysis of the current labor demand in Germany" [author's translation] financed by the BMAS, IAB labor market researcher Martin Dietz and his coauthors criticize the IW studies for an implicit inference from job vacancies to unfilled positions and for an ignorance of the enterprises' possibilities to compensate for a lack of skilled workers in the calculations of forgone added value. In addition, the IAB researchers consider Brenke's analysis of the evolution of engineers' wages as problematic because the available data do not include bonuses. Oliver Koppel and Axel Plünnecke, in turn, call into question the analyses as well as the criticisms of their approach put forth by Brenke. They criticize, amongst others, that Brenke exclusively considers the demand for MINT professionals in industry, that he overestimates the number of university graduates because he neglects to distinguish students graduating from bachelor programs and master programs, and that he does not capture engineers working in jobs not subject to social insurance contribution or in jobs not directly related to the classical occupation engineer. However, in his 2012 study, Karl Brenke again disagrees with the claimed shortage of engineers regularly put forth in the studies by IW and VDI and challenges the calculations of the mean age of engineers as well as the resulting replacement needs. He not only holds the view that the replacement needs in terms of engineers can be satisfied by university graduates, but he even suspects the development of an excess supply.

Skepticism about the explanatory power of projections of future labor shortages

There is also a lively discussion among experts concerning future labor shortages. While no expert calls into question the demographic change, assessments differ depending on the delimitation of the labor force and the assumptions on key characteristics of the labor market as well as its interdependencies with other markets.

In its population projection from 2009, the German Federal Statistical Office (*Statistisches Bundesamt*) presents model calculations according to which both the total population in Germany and the working-age population will significantly diminish and grow older in the next years. Karl Brenke recommends using long-run projections cautiously. He stresses that the information content of projections of the working-age population is limited because they do not contain any information about employment behavior. His calculations show that the labor force potential will diminish significantly less until the year 2030 if the employment behavior continues to evolve as it did between 2005 and 2010 or if it changes to be similar to the one in Switzerland.

In its 2011 study, the Prognos AG compares two scenarios, one in which the central characteristics of the labor market do not change and a shortage of 5.2 million workers looms by 2030 while in the second scenario no labor shortage arises at all as employment prospects, labor market participation, working hours, participation in

education and immigration adapt accordingly. Herbert Brücker, in turn, criticizes studies that assume a permanent excess demand for labor in the future. He argues that the markets will adjust to a reduced labor supply and that both the capital stock and the other macroeconomic variables will diminish in the long run.

Within the framework of the project "Qualification and Occupation in the Future" [author's translation], jointly conducted by the IAB and the Federal Institute for Vocational Education and Training (*Bundesinstitut für Berufsbildung*), in 2012 for the first time calculations based on working hours are presented. The results from these calculations point to a more relaxed situation than person-based calculations. According to the model calculations, in 2030 the aggregate labor supply will still exceed aggregate labor demand. At the same time calculations distinguishing between qualifications or occupational fields and considering occupational flexibility point to scarcities in occupations requiring medium qualifications as well as in health occupations – despite the assumed increase in labor market participation.

What do we learn from this debate?

At least one important insight arises from the ongoing debate over the shortage of skilled workers: Expert results hinge crucially on the data considered, the level of disaggregation chosen and – in the case of long-run projections – on the assumptions made. Therefore, it is critical that people engaging in the debate, whether journalists, politicians, or the general public, pay particular attention when handling information on the shortage of skilled workers.

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