Labour market prognoses – trends, opportunities and limits

▶ The labour markets trends of tomorrow began yesterday. Past developments are being acted upon in order to make projections for the future. The dominant trend in terms of the supply of skilled workers is demographic development, whereas on the demand side the primary focus is on economic development. The aim of current labour market prognoses is to indicate which trends are currently most likely to loom large without necessarily being inevitable. Such prognoses constitute a concentrated point of focus for policy options. Where, however, do their opportunities and limits lie?

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Decrease in the number of persons of employable age

Germany is today undergoing a phase of ongoing decline in its population. According to the 11th Coordinated Population Forecast (2006), Germany reached its highest level of population by 2003. The prognosis for 2050 is for a population of only just under 74 million inhabitants (assuming a constant birth rate, development of life expectancy on the current basis and net immigration of 200,000 persons per year). This decline will be accompanied by a stronger degree of demographic ageing. Population forecasts are operating on the assumption that by 2030 around 28 percent of the population will be aged over 65. The corresponding figure for 2005 was approximately 19 percent of the population. In contrast to this, the proportion of those aged under 20 will have fallen from 20 percent in 2005 to 16.9 percent by the year 2030 (see Figure 1).

In the medium term, it will no longer be possible to cover the requirement to replace the workforce by the new supply of workers coming onto the labour market. In purely arithmetical terms, the year 2006 will produce a new supply of people of only around 672,000 (who are already born and will enter employment on completion of training in 2026) to replace those born in the baby-boomer years (first half of the 1960's reaching a peak of 1.3 million births in the year 1965) who will enter retirement between 2020 and 2030 (depending on pensionable age). Skilled staff trained from within the new provision of such workers will play a proportionately lower role in driving forwards innovations and the ongoing structural change from an industrial to a knowledge society. Those in employment or the unemployed will increasingly be required to make the necessary adaptation.

The further expansion of the European Common market and the ongoing worldwide economic interlinking (globalisation) of industry, trade and services are also resulting in new and changed skills requirements for employees. World financial markets are subjecting every location to comparison in terms of the profitability of an investment.

This is leading to international competition in respect of infrastructure, social systems, production structures and labour as well as with regard to goods and services. As far as the domestic labour market is concerned, relocation of production to low-wage economies (such as in the case of the clothing, textiles and toy sectors) is generating negative effects. In general terms, the branches affected are those which involve relatively work-intensive production segments featuring simple manufacturing technology (see KNOCHE 2007, p. 19). On the other hand, foreign investments often also enable markets to be opened up and may exert a stabilising effect on domestic employment. "Foresighted companies recognise that human resources are increasingly becoming the critical factor in the success of corporate activity and are realigning their personnel policy and human resources management to be able to use highly skilled and motivated staff as a vehicle for continuing to hold their own in a more fiercely competitive global environment despite alternative workforces and a diminution in the flow of up-and-coming skilled workers" (KNOCHE 2007, p. 1).

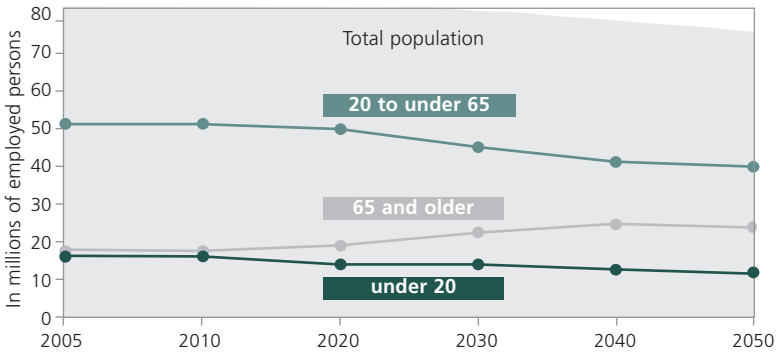
The flexibilisation of work is particularly evident in the wide-ranging forms of employment which now exist, including part-time work, fixed-term employment, agency staff, marginal employment and the pretence of self-employment and extending to encompass the decoupling of work in terms of time and space. Job descriptions are becoming more differentiated, requirements for company-specific knowledge are increasing and dependence on a stronger degree of team work is growing. All of this is happening in conjunction with greater demands for employees to act on their own initiative.

Tertiarisation of branches of trade and industry and of skills requirements and provision

Employment within the primary sector (agriculture, mining) has fallen drastically since 1995, accompanied by a strong attendant decrease in the secondary sector (manufacturing industry, energy, construction). At the same time, the tertiary sector (finance, company services, private and public services) has seen a significant growth in employment in some areas. Although this trend is most discernable in West Germany, it applies to the whole of the country in overall terms (cf. BONIN et al. 2007, p. 63).

This development is accompanied by a trend towards higher qualification (cf. DOSTAL/REINBERG/SCHNUR 2002; BOTT 2003; SCHADE 2007 inter alia), something which the example of the former federal states of West Germany clearly shows. A strong growth in university and University of Applied Sciences graduates of 33.8 percent and 39.6

Figure 1 **Population development in Germany 2005-2050**



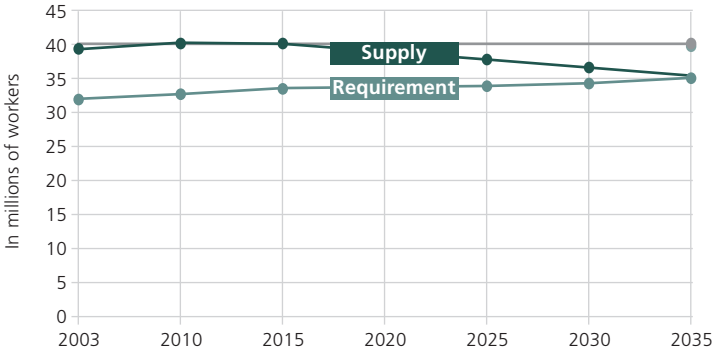
11th Coordinated Population Forecast 2006, "medium variation" of population development: constant birth rate, development of life expectancy on the current basis and net immigration of 200,000 persons per year
Source: DESTATIS (2006), own calculations

percent respectively was recorded between 1991 and 1993, whereas the supply of persons with a master craftsman or technician qualification or with qualifications from trade and technical schools remained at approximately the same level as 1991. During the same period, the number of those who had concluded vocational education and training fell by 9.3 percent and the number who had not completed VET decreased by 28.7 percent (cf. BONIN et al. 2007, p. 70). The trend towards tertiarisation of branches of trade and industry and the attendant additional employee requirements are leading to a greater need for more highly qualified staff. There is significantly lower growth in manufacturing industry, trade in and maintenance of motor vehicles, the hotel and restaurant industry and transport/telecommunications, all of which sectors employ only low proportions of people with a higher education qualification (cf. BONIN et al. 2007, p. 70).

In contrast to this on the supply side, the proportion of people in the population with a higher education qualification has only risen slightly and from a comparatively low base (the 2005 figure for Germany being 19.9 percent compared to an EU 19 average of 34.9 percent; cf. OECD 2007, p. 71).[1] No dominant trend towards tertiarisation in terms of the labour supply is currently discernable in Germany. At the same time, the proportion of persons employed who do not have any formal qualifications has remained virtually constant. The number of employed persons who have completed vocational education and training (including

1 *It should, however, be noted within this context that the high degree of significance accorded to its dual system of vocational education means that Germany displays a high level of education in overall international comparative terms. A proportion of around 83 percent of those aged between 25 and 64 have completed at least an upper secondary school qualification (OECD 2007, p. 41).*

Figure 2 **Labour market balance of the BLK (IZA 2007) for Germany from 2003 to 2035**



Source: IZA (Bonin et al. 2007) (BLK prognosis 2006), own calculations

those who have completed training at a trade and technical school or a master craftsman qualification) underwent a below-average rise. This varying development is reflected in the shift taking place within the overall labour supply. Higher education qualifications are rising in relative terms, whereas the proportions of other levels of qualification are falling. If we take only those in employment, or skilled worker requirements which have been realised, into account, the proportion of those with a higher education qualification in West Germany has risen since the 1980's, by about a half in the case of universities and by around a third for Universities of Applied Sciences.

Information and knowledge work

Information and knowledge work is increasing in the wake of the trend towards technologisation of production and economic processes and the transition to a service and knowledge society and is also bringing about change both in job profiles and skills requirements. Contents of job descriptions are turning away from materials related work to focus on data, information and knowledge oriented work. Alongside the physical added value which converts raw materials into products and services, intellectual added value emerging from knowledge as a raw material is also generated. The productive contact with this raw material is one of the core elements of the knowledge society. Work is becoming increasingly more demanding and more knowledge-based both for the group of highly qualified employees and the self-employed engaged in research, development, construction, marketing and consultancy and at skilled worker level. There is a shift in job requirements profiles from motormanual activities to cognitively abstract work. The requirements for this are broadly based specialist knowledge, correlative thinking, the assumption of process responsibility, autonomy, willingness to work flexibly in groups and readiness to undergo continuing training.

The labour supply and requirements prognoses[2]

Assuming a modest rise in economic output (+ 1.74 % per year), labour requirements will increase during the course of the next 30 years or so. By the year 2020, Germany will see its core labour force requirement climb by 1.7 million to a total of 33.6 million people. Between 2020 and 2035, these labour requirements will undergo a further increase of around one million to 34.6 million. For demographic reasons already indicated, the labour supply will decrease during the same period. In overall arithmetical terms, a balance between supply and demand will be achieved in the years around 2035 (see Figure 2).

A sharply declining labour supply nationwide is expected to occur as early as 2015 onwards. The new labour supply will be increasingly unable to cover the need to replace workers, let alone satisfy new demand. This development is relatively stable and valid. The further important prognosis conducted by the Institute for Employment Research (IAB) in 2007, for example, arrives at virtually the same developments, despite adopting a completely different projection procedure and operating with a different delineation of the groups of persons forming the object of the projection.

The striking feature of the course of the IAB prognosis is the obviously market related progression of requirements. For the first time, a requirements analysis simulates the reaction to a shortage of skilled workers expressed in terms of rising wages and an attendant fall in demand. This regability is make possible via the structure of the INFORGE model (cf. Schnur/Zika 2007), which forms the basis of the IAB prognosis. It has, however, only been possible to project the demand side in this way. A relevant time-coordinated simulation of supply and demand corresponding to an endogenous model has not hitherto taken place.

Change in demand within the branches of trade and industry according to occupations and qualifications

The trend towards tertiarisation mentioned above is also perpetuating itself within the projections. Agriculture and fishery, mining, manufacturing industry, construction and

2 *The following representations are based on analyses of the German Federal Government – Federal States Commission for Educational Planning and Research Promotion (BLK), conducted in 2007 by the Institute for the Study of Labour (IZA, cf. BONIN et al. 2007).*

the public administration sector will all experience declines in demand, whereas the requirement for staff in trade, the hotel and restaurant industry, transport, financial and corporate services and public and private services will increase. The structural change associated with this development will be accompanied by increasing qualifications requirements. Innovative service activities for highly qualified staff will emerge from within the information technology and communication sector in particular and will also be in evidence in the science branch, such as in the field of bio and nano technology.

The development of the various branches of trade and industry will exert an effect on the demand for occupations. Within this context, however, consideration needs to be accorded to the fact that some occupations are extremely heavily concentrated within a particular sector of the economy and display only a very low level of flexibility, whereas other occupations are in evidence in several trade and industry branches meaning that they react in only a very limited manner to changes within a specific sector. These projections have been prepared on the assumption that the distribution of occupations across the areas of the economy will remain relatively constant. In other words, the ratio between commercial administrative staff and bricklayers in the construction industry will, for example, stay the same. If demand for labour within the construction industry falls, both occupational groups will be equally affected and exhibit decreases in line with their respective proportions. Whereas commercial administrative staff, however, are able to display greater flexibility towards their sector and thus able also to gain a foothold in other areas of trade and industry, opportunities for bricklayers are restricted to a very few areas of the economy and retraining offers the only successful way of returning them to employment.

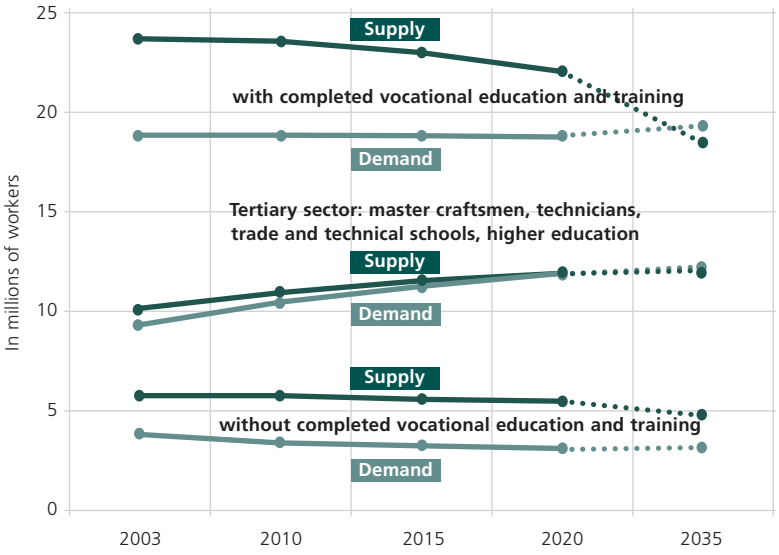
The occupational fields for which growth is predicted are social and educational occupations, organisation, administration, other scientific occupations, technical and scientific occupations, service, bank and accountancy clerks, information technology and data processing. In contrast to this, auxiliary and other work, office occupations, commercial employees, agricultural occupations and manufacturing occupations are areas where the tendency would be to expect a fall in employment.
The development of the branches of trade and industry and demand for labour according to occupations and qualifications enables economic demand for qualifications to be determined. This is illustrated in the requirement for various levels of qualification and, at a detailed level, is also revealed in changes in demand for occupational qualifications characteristics. Figure 3 is based on the BLK prognoses and shows demand and supply projections to 2035 according to three levels of qualification.

The demand for workers who have *not completed a course of vocational education and training* will continue to fall gradually. The fact that supply is only declining slowly means that the existing oversupply will only reduce slightly. This group of persons will not find that the labour market affords them any better employment opportunities in future. Ways need to be found to enable such people to be brought into closer contact with initial and continuing training programmes. They will otherwise be losers on the labour market and will have very little chance of escaping the alternation of periods of unemployment and barely adequate minimum wages. They will continue to place an immense burden on the social security system, even given the fact that it is, at the same time, impossible to fulfil the demand for qualified workers.

Although the supply of persons who have completed *a course of vocational education and training* will fall until 2020, it will continue to remain above the level of demand until 2030. The number of employed persons who have completed a course of vocational education and training will decrease significantly both in absolute and relative terms after 2020 occasioned by the dominant effect of the fall in population. From this point onwards, we will be faced with a rapidly increasing shortage of skilled workers at this level of qualification. From 2035, supply will also no longer be able to cover demand in purely arithmetical terms.

Both supply and demands will continue to rise in the *tertiary* sector, an area where there is already not much of a gap between them. In the case of higher education graduates, expected demand will be approximately equally based on replacement requirements and the new demand caused by structural economic change. From the end of the second decade (from 2020), replacement demand will grow extremely significantly as a result of the retirement of those born in years of high birth rates (baby boomer generation). The shortage of skilled staff in the academic and highly qualified sectors already discernable today, in evidence in such areas as the science sector and a number of technological occupations, will then extend to include virtually all occupational groups and branches. The prognosis already operates on the optimistic assumption that all those looking to undertake higher education study, for example, will be able to do so and that this will happen to the same extent as was the case in the past. This means that the capacity of institutes of higher education to accept students will need to be increased by about 30 percent simply to accommodate the double cohorts in the years between 2012 and 2014 occasioned by the shortening of the period of schooling. The situation will become particularly explosive in the case of non-academically qualified skilled workers such as master craftsmen, technicians and graduates from trade and technical schools. Supply and

Figure 3 **Worker supply and demand according to levels of qualification 2003 to 2035**



Source: (Bonin et al. 2007) (BLK prognosis 2006) own calculations

demand are even now virtually identical in the case of these workers, something which is considered to be an indicator of a massive shortage of skilled workers in some branches.

Opportunities and limitations of labour market projections

Prognoses are a concentrated point of focus for the most probable developments at any given time rather than constituting actual objectives or expressing inevitability. If a prognosis which has a strong academic research basis and which has been conscientiously prepared turns out not to be true, this does not mean that the prognosis is bad. It may still have been able to offer areas of guidance and/or provoke changes in behaviour. And, if it has succeeded in achieving the latter, then it has, of course, also altered its own basic projection principles as well as fulfilling its purpose. For these reasons, it is generally scarcely possible to validate the results of prognoses.

The key element of all prognoses, or to be more exact projections, is that they continue developments of the past into the future via the present. They focus on what will presumably happen if the future develops in a way in which the longer term past has developed down to the present day and include all the well-founded information we believe to possess on the future. Prognoses are nothing further than a description of what would occur if there were no changes to previous trends. The process takes place on the basis of a whole series of assumptions on such factors as economic growth, population development and the proportion of those in employment. If one of these parameters changes, the inevitable consequence is that the result is different.

One particular risk attached to labour market prognoses is considered to be the possible creation of "self-fulfilling prophecies" in such forms as the emergence of so-called "pig cycles". Examples of such labour markets in Germany were the profession of engineer and the teaching profession.

One reason for such developments is delayed action on the part of labour providers, who concentrate on the opportunities of the past and the present when planning their provision. Why not, however, look to the immediate future? Because such information is not available in Germany. Differentiated information on labour market developments is generally one year old (the current statistics being "Occupations as reflected by statistics 2007; www.pallas.iab.de). The lack of transparency on the markets is, therefore, causing this development. Notwithstanding this, it is possible to counter this effect by more timely and regular provision of up-to-date information both in respect of current developments but particularly with regard to future development. Regular updating in particular is the most effective means of combating the pig cycle which may have been presumed to have occurred in the past even in the absence of prognoses. ■

Literature

BLK: Zukunft von Bildung und Arbeit – Perspektiven von Arbeitskräftebedarf und -angebot bis 2015. Bonn 2002

Bonin, H. et al.: Zukunft von Bildung und Arbeit – Perspektiven von Arbeitskräftebedarf und -angebot bis 2020. IZA Research Report No. 9. Bonn 2007

Bott, P.: E-Commerce/E-Business – ein Tätigkeitsfeld im Aufwind. In: Bullinger, H. J.; Gidion, G.; Schnalzer, K.; (Eds.): Transport in die Zukunft – Berufliche Entwicklungen in Logistik und E-Commerce; Bielefeld 2003, pp. 34

destatis: 11. Bevölkerungsvorausberechnung – Annahmen und Ergebnisse. Wiesbaden 2006

Dostal, W.; Reinberg, A.; Schnur, P.: Tätigkeits- und Qualifikationsprojektionen – der IAB/Prognos-Ansatz. In: Kleinhenz, G. (Ed.): IAB-Kompendium Arbeitsmarkt und Berufsforschung. Beiträge zur Arbeitsmarkt- und Berufsforschung, Volume AB 250/2002, pp. 547–556

Knoche, M.: Die deutschen Unternehmen im Globalisierungsprozess – Erfolgsfaktor Personal. ifo-schnelldienst, Weekly reports, Volume 60 (2007) 6, pp. 17–28

OECD: Education at a glance. 2007: – www.oecd.org/dataoecd/4/55/39313286.pdf

Schade, H.-J.: Früherkennung von Qualifikationsentwicklungen in der beruflichen Weiterbildung – Untersuchungsansätze im Bundesinstitut für Berufsbildung. In: Abicht, L. et al.: Auf der Suche nach neuen Qualifikationen – Methoden der Früherkennung von Qualifikationsentwicklungen, Bielefeld 2007, p. 101

Schnur, P.; Zika, G.: Arbeitskräftebedarf bis 2025: Die Grenzen der Expansion (IAB Brief Report 26/2007), Nürnberg 2007

Tiemann, M. et al.: Berufsfeld-Definitionen des BIBB auf Basis der KldB 1992. Bonn 2008