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Solving the demographic problem

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Over the next 20 years the working-age population is set to shrink even more rapidly than the German population as a whole, putting a major brake on potential growth. Unless countermeasures are applied, we estimate growth of just 0.2% for 2030, with per capita growth down to 0.7%.

However, this development is not inevitable. Germany can avoid this fate through a series of measures targeting the labour market, education, and research and development, as well as different innovations and more investment. It is important to tackle several areas at the same time and begin as soon as possible.¹

Population growth is a major source of economic growth. For per capita income to increase, value added within an economy must grow more quickly than the number of residents. This does not necessarily mean that more needs to be produced. The goods and services can also be of a higher value and, therefore, more expensive relative to others. If the population shrinks, value added must decline more slowly, otherwise per capita income will also fall.

Unfavourable demographic trend ...

The demographic outlook for Germany over the next 20 years is unfavourable. The overall population will decline, but the number of people of working age is set to drop even more sharply (figure 1):

- In 2030, the total population in Germany will be around 3.2 million or 3.9% lower than in 2012.
- The working-age population (15 to 74-year-olds) is even set to drop by nearly 4.9 million or 7.7%.

- The working-age population ratio (population aged between 15 and 74 as a proportion of the total population) will decline by 3.1 percentage points to 74.0% in 2030.
- This means that the total population will decline by an average of 176,000 and the working-age population by 271,000 per year (2013 to 2030), with this trend rising over time. By way of comparison, Volkswagen has around 250,000 employees in Germany.

In this environment, the remaining labour force will have to shoulder an increasing burden. Fewer and fewer workers will have to generate income for everyone. How will they do this?²

... hampers potential growth

The economic consequences of almost all realistic demographic scenarios for Germany are clear: potential growth is set to decline. Even in a moderately optimistic base scenario, potential growth will fall to 0.6% by 2030, compared with

1.4% in 2012 (box 1; figure 2, base scenario).

Box 1: Base scenario to 2030

A further slight improvement in the labour market (rising participation rate from 69.5% today to 72.5% in 2030, declining unemployment rate from 5.3% today to 4.5% in 2030).

A recovery in the investment rate from 17.4% of GDP today to 20% in 2030.

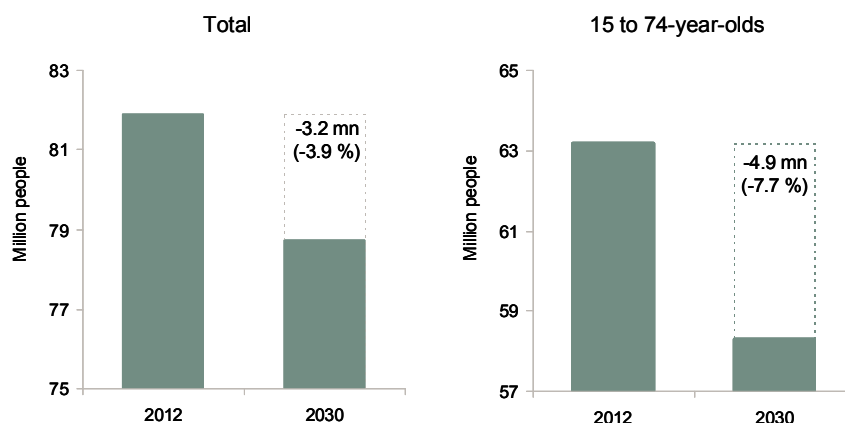
Net immigration to Germany of 100,000 people per year.

An annually recurring average contribution to growth by productivity of 0.8 percentage points.

As the baby boom generation retires, the impact of demographic change will be particularly negative in the 2020s. The contribution to growth by labour will become increasingly negative over the coming decade.

Per capita growth is also declining, but not as quickly since the population is also decreasing. Per capital growth will decline from 1.3% in 2012 to 1.0% in 2030.

Figure 1: Germany is shrinking: population projection 2012 to 2030



Source: German Federal Statistical Office, KfW Economic Research

Without the positive effects from the labour market, investment activity, net immigration of around 100,000 new residents per year and an annual improvement in productivity, the growth prospects would be gloomy (figure 2, status quo scenario). If the labour market parameters and gross investment rate remained at the current structural levels and the borders closed, potential growth would decline to 0.2% by 2030 in our scenario. Per capita growth would fall to 0.7%. The contribution to growth by labour would be negative over the next 20 years.

Germany can do more

Germany need not be satisfied with annual per capita growth of 0.7 to 1.0%. Doubling this rate to 2% is ambitious, but achievable. Germany last reached these growth levels in the 1980s, a decade no longer impacted by the long term effects of post-war reconstruction. A peer group of 15 highly developed industrialised countries³ registered similar levels on average in the 20 years to 2008 (figure 3), even excluding the exaggerated growth of the real estate sector. The USA is already clearly back on track towards 2% per capita growth.

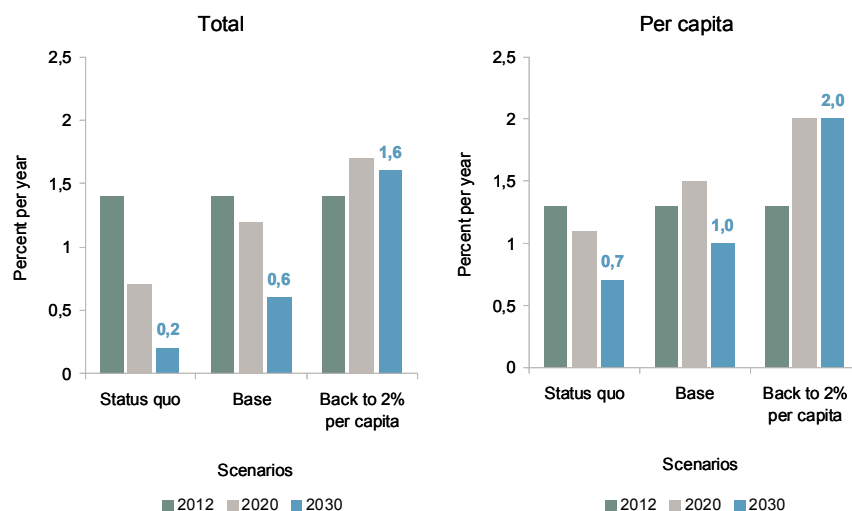
The right mix pays off

However, there is no single magic way to solve the demographic problem. Table 1 shows that ultimately, it will take a realistic mix of several measures. Individual measures either fail to achieve the desired outcome or would have to be so radical as to be unadvisable (table 1, single factor solutions). For example, to push per capita growth back up to 2% in the medium term just by increasing employment among those who do not currently work but are able to (mainly women), the participation rate would need to rise to around 90%. This is unrealistic. Even in Norway, the world leader, the participation rate is "only" just under 74%.

Labour market makes several contributions

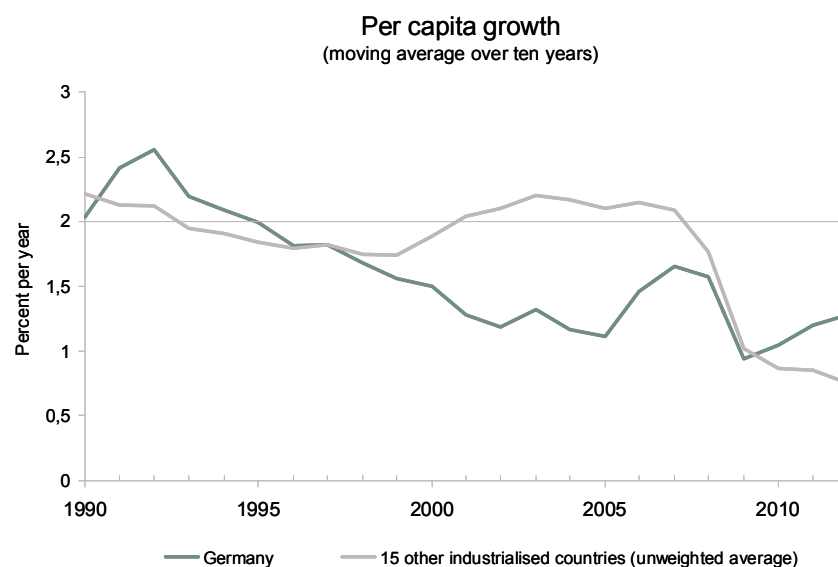
Increasing the participation rate is a key starting point to ensuring better utilisation of the potential labour force in future. The main policy levers are any measures that help reconcile family and working life

Figure 2: Demographic trap: Potential growth scenarios to 2030



Source: KfW Economic Research

Figure 3: Two percent per capita the international norm



Source: IMF, KfW Economic Research

Table 1: Ways to achieve 2 percent per capita growth: overview

| Drivers | Status quo 2012 | Base scenario | Single factor solution | KfW route |
|---------------------|-----------------|---------------|------------------------|-----------|
| Participation rate | 69.5 % | 72.5 % | 90 % | 73.5 % |
| Unemployment rate | 5.3 % | 4.5 % | Impossible | 4.0 % |
| Annual working time | 1,397 hrs | 1,380 hrs | 1,860 hrs | 1,400 hrs |
| Net immigration | 141,496* | 100,000 | Impossible | 200,000 |
| Investment rate | 17.4 % | 20 % | 30 % | 23 % |
| TFP | 0.8 Pp. | 0.8 Pp. | 1.8 Pp. | 1.0 Pp. |

*Five-year average

Source: KfW Economic Research

(implemented by the government and businesses), tax incentives to increase labour participation among married couples, and measures to raise the effective retirement age.

Obviously, a further decline in (structural) unemployment would also contribute to avoiding the demographic problem. Education and professional development are crucial, as jobseekers' qualifications need to match the requirements of the positions available as closely as possible. Only those with adequate training have a good chance of permanently integrating into the German labour market. At the same time, better education also has a considerable effect on productivity. The tax and social security systems should continue to provide incentives for taking up employment.

However, even if the unemployment rate were gradually reduced to zero by 2030, potential growth would only rise to 0.9% (per capita growth: 1.3%) because unemployment is already at a low level.

More immigration makes sense

Immigration alone will not bring about the desired outcome either. All other things being equal, more immigration would only increase potential growth overall, not per capita growth. This is due to a lack of workplace facilities, unless investment were increased accordingly at the same time. Although the additional workers would raise production levels, the amount of capital per workplace would decrease continuously. This would put pressure on labour productivity, so that each person's share of the pie could actually shrink, even though the pie is growing.

Immigration is nonetheless an important key to more growth. Immigration to vacant, existing jobs makes a lot of sense. It is easily possible that, in the next decade, there will be vacant jobs available for twice as many immigrants as today. Making the right choices, a quick and unbureaucratic immigration process, and integration into our working world and our society will be a major task for all involved.

More investment needed

Investment by both business and gov-

ernment – within in the framework of national and European debt rules – will also have to make a contribution to increasing growth. Investment rates of 30% are unrealistic for industrialised countries. However, a gradual increase in the investment rate of around 5.5 percentage points would make a significant contribution to boosting growth. Currently, the rate stands at 17.4% of GDP, 1.5 percentage points of which is contributed by the government and close to 16 percentage points by the private sector. In 2030 the rate would then reach 23% of GDP. This is an ambitious target, but achievable, provided that improved productivity generates attractive marginal gains.⁴

Greater productivity also required

The collective productivity of labour, processes, machinery and buildings (total factor productivity, TFP)⁵ has long been the biggest contributor to growth. "Technological progress" is the major driver of TFP growth.

Technological progress in production processes is an economy's ability to develop new technologies, introduce them into business, apply them (innovation) and, lastly, spread them (diffusion). The speed of technological progress is largely determined by the scope and effectiveness of investment in research and development, in companies' innovative capabilities and in education and training.

Technological progress is dependent on the scale and nature of a company's research and development capacities (for example, the quality of the scientists and engineers), the quality of management, which adapts the level of technology through its investment decisions, and the training and qualifications of specialist staff (to ensure optimal utilisation of the available technological possibilities).

TFP would have to increase from the current 0.8 percentage points to 1.8 percentage points by 2030 to raise the per capita growth rate to 2% on its own. An improvement of that magnitude is virtually impossible for a highly developed industrialised country like Germany. Since reunification, TFP's highest contribution to growth has been 1.1 percentage points; between 1992 and 2012 it aver-

aged 0.9 percentage points. In future, efficiency and effectiveness gains should contribute at least one percentage point to annual growth.

Fine-tuning in all areas

A one-dimensional strategy to increase German per capita growth is doomed to fail. However, an integrated approach, involving fine-tuning several areas at the same time could be successful (figure 2, scenario "Back to 2% per capita"). Table 1 presents the improvements required of the key growth drivers to achieve the 2% target via an integrated approach by 2030 (KfW route) and provides a comparison with the status quo, the base scenario and the single factor solutions for isolated individual measures.

The greatest possible mobilisation of the shrinking working-age population makes a key contribution here, with labour at least able to make a slight positive impact on potential growth (rather than detracting more and more, as in the base scenario).

The success of this approach is dependent on the following:

- a gradual increase in the participation rate from 69.5% in 2012 to 73.5% in 2030, bringing it to the level of Scandinavian countries;
- a gradual reduction in the unemployment rate to 4% by 2030;
- the annual working time per worker remaining stable at the current 1,400 hours; and
- annual net immigration of 200,000 in the 2020s.

At the same time, the contribution of capital stock to growth must be raised through a significant increase in the gross fixed capital investment rate. In our "Back to 2% per capita" scenario, the investment rate climbs from 17.4% (2012) to an average of 22.5% in the 2020s.

An investment rate of between 22 and 23% seems rather ambitious from the current standpoint, but this was the norm in the early 1990s. The energy turnaround, maintaining and expanding internationally competitive value chains in the corporate sector, improving infra-

structure, developing childcare and education facilities, and converting housing to meet the needs of the changing demography present ample reasons for business and state investment, which are comparable with the challenges faced during reunification. The government should provide around 3 percentage points of the investment rate of 23 % (a magnitude that has been the rule in the Netherlands, France, Australia, Canada and the Scandinavian countries for a long time), the rest must be provided by the private sector.

In addition, the “Back to 2 % per capita” scenario assumes that the increased investment activity will push up labour productivity. This requires an uplift in TFP to a full percentage point in the medium term (2012: 0.8 %). Significant efforts will have to be made in key areas to accelerate technological progress, i. e. with regard to research and development, companies’ innovative capabilities and training.

Research and innovation: expand and diversify

To accelerate technological progress by acquiring new knowledge, research and development activities need to be stepped up. Efforts made in recent years have not been sufficient either to achieve the 3 % target or to make up the ground lost against many OECD countries in the 1990s.

Diversification of R&D capabilities also appears to be desirable. In Germany, R&D is focused on high-tech industries (automotive industry: 33%) to the detriment of the particularly high-growth cutting-edge technology sector.

To bring more innovations to the market, technology transfer from universities and non-university research institutions must be improved. The specific barriers to innovation faced by SMEs also need to be addressed by economic policy. Companies with demanding innovation strategies are particularly affected by financing issues, bureaucracy and skills shortages.

Education: quality is key

Given the German economy’s high level of knowledge intensity, the main focus needs to be on improving the cognitive

Table 2: Priority indicator for policy areas relevant to growth

| Driver Unit | Status quo 2012 | KfW route 2030 | Improvement ... | | | Priority |
|----------------------------------|-----------------|----------------|-----------------------|------------------------|------------|----------|
| | | | ... necessary by 2030 | ... reached since 2000 | Difference | |
| Labour | | | | | | |
| Participation rate | 69.5 % | 73.5 % | 0.3 % p. a. | 0.3 % p. a. | 0.0 Pp. | Medium |
| Unemployment rate | 5.3 % | 4.0 % | 1.5 % p. a. | 2.8 % p. a. | -1.2 Pp. | Low |
| Annual working time | 1,397 hrs | 1,400 hrs | 0.0 % p. a. | -0.4 % p. a. | 0.4 Pp. | Medium |
| Net immigration | 141,496* | 200,000 | 1.9 % p. a. | -0.9 % p. a. | 2.9 Pp. | High |
| Capital stock | | | | | | |
| Investment rate | 17.4 % | 23.0 % | 1.6 % p. a. | -1.1 % p. a. | 2.6 Pp. | High |
| Total factor productivity | | | | | | |
| TFP | 0.8 Pp. | 1.0 Pp. | 1.2 % p. a. | -2.2 % p. a. | 3.5 Pp. | High |

*Five-year average

Explanation of priority levels

High: Difference between improvement required and achieved on average each year since 2000 is greater than 1 percentage point

Medium: Difference between improvement required and achieved on average each year since 2000 is between -1 and 1 percentage point

Low: Difference between improvement required and achieved on average each year since 2000 is less than -1 percentage point

Source: KfW Economic Research

skills of the workforce through high-quality education. Education spending is necessary, but that alone is not enough. Factors such as qualified and committed teaching staff and inspiring teaching methods cannot be achieved by merely spending more on education.

High-quality early-childhood education should have top priority, as this lays the foundations for a child’s future education. Equality of opportunity within the education system should also be improved, and the proportion of people leaving education poorly qualified must be significantly reduced. Currently, almost one quarter of people aged between 25 and 30 do not have a vocational qualification. Both workers and the unemployed should be able to continuously gain further qualifications for existing or future jobs through targeted continuing professional development and lifelong learning. The fact that the bulk of continuing professional development is financed by businesses shows that they have a significant interest in ensuring their employees’ skills keep up with the current market requirements. Government support for professional development can also make sense for groups that have high qualification requirements but are currently investing too little in training due, for example, to financing bottlenecks. These groups include SME employees, people in atypical employment, low-skilled workers, older people and those with a migrant background.

Investment and productivity require greatest attention

Although the 2 % target can only be achieved if all the policy areas relevant to growth are successfully addressed simultaneously, the urgency of the need for action varies. A comparison of the speed of previous changes in the relevant labour, capital and productivity categories to the speed of the changes required to achieve the 2 % target by 2030 gives a possible priority ranking (table 2).

There is clearly an urgent need to act with regard to investment – especially by the government, but also the private sector – and productivity. Major improvements need to be made in these areas by 2030. Strengthening both investment and productivity need to be top priorities in our view.

Our indicator shows immigration is another high-priority issue. However, this result has to be treated with caution due to the strong year-to-year variation and difficulty of forecasting.⁶ Currently, net immigration is very high, because of the crisis in southern Europe. If it was possible to stabilise net immigration at the current level, we would already overachieve on the target value. However, we expect this effect will not be permanent and that net immigration will decline with an improvement in the economic situation of southern Europe. In any case, migration can play an important, albeit only very

small part: even in 2012, the year of record-high immigration, net immigration was 369,000, a tiny fraction of the total German labour force (43.9 million).

In contrast, the challenges faced on the labour market appear manageable. We

need to maintain the same average participation rate growth we have achieved since the start of the new millennium until 2030. To meet the target value of the KfW route for 2030, the rate of unemployment decline can even slow down, which is easily achievable. Annual work-

ing time would also have to remain at roughly the current level. ■

¹This paper is a summary of "Borger, Klaus; Lüdemann, Elke; Zeuner, Jörg and Volker Zimmermann: German economic growth caught in demographic trap: Where is the way out?, KfW Economic Research, Papers and Proceedings (November 2013)". There, a detailed explanation is given of the growth model applied (Cobb-Douglas production function), the concepts and the sources used.

²Distribution and pension issues are not taken into account here.

³Australia, Austria, Belgium, Canada, Denmark, Finland, France, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, United Kingdom, United States of America.

⁴Cf. Zeuner, Jörg: Investing for the Future, KfW Economic Research, Focus on Economics No. 23 (May 2013).

⁵TFP represents the portion of potential growth that cannot be attributed to a quantitative change in the factor inputs labour and capital.

⁶We are interested in the long term trend in net migration as that is relevant for our growth prospects. Therefore, we do not use the highly variable yearly values of net migration – as late as 2008 and 2009 Germany had to deal with net emigration – in our priority indicator, but use smoothed values. We settled on the five-year average as our smoothing procedure. However, the result of the priority indicator is very sensitive with respect to the interval over which the average is taken. Below the five-year interval our indicator suggests only little need for action ("priority low"), due to the very high net immigration induced by the crisis.