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Potential growth at risk – timely action is needed

Marc Schattenberg
Senior Economist
+49-69-910-31875

During the coming years, Germany's potential growth rate will come under increasing pressure from demographic developments. The declining potential labor force is weakening labor as a production factor. Moreover, the shift in the age structure may result in a loss of labor productivity and innovativeness. German potential growth looks set to slow to just below ¾ %.

Apart from the available volume of labor, the capital stock and total factor productivity (TFP) are key determinants of potential growth. Both factors may offset the negative impact from demographics to some extent. TFP in particular can help with this. However, any positive effects will probably be limited by feedback loops within the economy.

Shrinking potential growth will dampen cyclical resilience and tend to reduce debt sustainability. Cyclical fluctuations may occur more often and trigger fiscal and monetary policy responses. Weak potential growth limits the ability to reduce debt.

A new government should focus even more on potential growth. After all, it would be the great binding theme between the efficient and at the same time climate-friendly economy, demographics and the megatrend of digitalization.

The potential coalition partners have much in common in some areas. Climate change is an issue for all parties. They also pay attention to growth topics, such as research and development, openness for new technology, education and infrastructure. However, their goals and implementation plans are different. This becomes evident when it comes to labor-market flexibility, particularly against the background of the inevitable demographic change.

The transition to a climate-neutral economy will be the main challenge of the coming decade – and provide opportunities for modernization. The ambitious EU climate goals will require far-reaching changes to the capital stock in Germany. This will affect both production facilities and buildings.

In the short term, rising energy expenses and the regulatory shortening of the useful life of machinery and equipment have a similar effect to a negative supply shock. If efforts to seize the opportunity for new investment and the installation of adequate replacements fail, the production-relevant capital stock would shrink, thus reducing potential growth.

During the coming decade, German potential growth[1] will have to cope with considerable headwinds. It may weaken to just below ¾% p.a. by 2025 [2] – and that is if we assume net immigration of about 220,000 people per year, which seems reasonable. Demographic developments will increasingly become a challenge for the German growth outlook. The workforce looks set to shrink considerably – a development that will lead to a weakening of labor as a production factor. There may also be negative spillover effects on capital stock and on innovativeness. In theory, weaker total factor productivity (TFP) and declining capital intensity may also slow down labor productivity growth.

Decline in workforce dampens potential growth

What makes the shrinking workforce and the impending decline in potential growth particularly important is the fact that Germany's social security system is essentially a pay-as-you-go system. The future government will have to address this huge challenge before the ratio between pensioners and contributors continues to increasingly deteriorate. There are some measures which might increase the pool of labor, for example higher participation rates, longer working lives, better qualification and an employment-oriented immigration policy. If these steps are to be effective, some disincentives in the labor market must be eliminated.

Climate-friendly replacement and modernization of the capital stock

At the same time, the medium and long-term EU climate-policy goals should require adjustments in the economy's capital stock. New regulation may force companies to stop using their machinery and equipment before they can install adequate replacements. Moreover, it is not certain that the plans to modernize the capital stock will indeed strengthen potential output in the medium term. If companies see themselves at a competitive disadvantage on a global scale, they may shift or reduce capacities. Misguided climate-policy incentives may also hamper investments in efficient carbon-reduction measures.

Digitalization as a challenge to the economy's adaptability

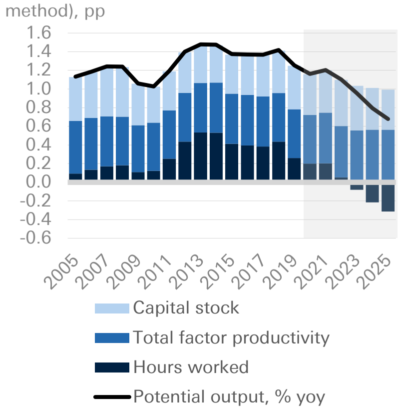
The global trend towards digitalization is another challenge for the adaptive capacities of the German economy. Nevertheless, numerous new technologies also offer opportunities to strengthen potential growth. Productivity increases may dampen the impact of ageing, and efficiency improvements should make it easier to shift towards a more climate-friendly economy. A highly qualified workforce and regulation that is open to technology are two prerequisites that must be met if Germany is not to fall behind in the area of digitalization.

Renewed pandemic-related state support slows down the reorganization of production factors (creative destruction)

Large-scale government support during the COVID-19 pandemic dampened the economic impact of the crisis. At the same time, the tendency to extend the support measures hampered the usual restructuring of production factors. While the short-term impact on the economy was minimized, potential growth may suffer in the medium term. In an extreme scenario, state loan guarantees may make banks lend to companies that are not viable in the long run.[3]

Figure 1: Potential GDP growth might fall below 1%

Components of potential output (modified EU method), pp



Source : Federal Statistical Office; calculations and projections of the Joint Economic Forecast (Gemeinschaftsdiagnose)

Figure 2: The concept of potential growth

Potential growth represents the rate of change in economic production possibilities resulting from the normal use of resources that does not lead to an increase in inflation. Potential output cannot be observed directly, however, and needs to be estimated using econometric methods. The biggest differences between the individual methods can be found in the way they consider structures in the economy. The range is broad; it starts with "peak-to-peak" observation, which is based on noting a series of cyclical peaks and does not pay much attention to economic theory, goes on to time-series-based filters and ends with models that include production-theory explanations. Many of these methods are based on a separation of cyclical and trend components. The trend growth determined in this way is then used as a quantification of potential growth.

Source : Deutsche Bundesbank (2014). On the reliability of international organisations' estimates of the output gap. Monthly Report April, p. 13-35.

1 Econometric trend-cycle decomposition methods can help to determine the long-term GDP growth trend. While these approaches are used to quantify potential growth, potential and trend growth are not really the same. See German Council of Economic Experts (2007). Annual Report: "The gains must not be squandered", p. 439.

2 Calculations and projections of the Joint Economic Forecast (Gemeinschaftsdiagnose, 2021).

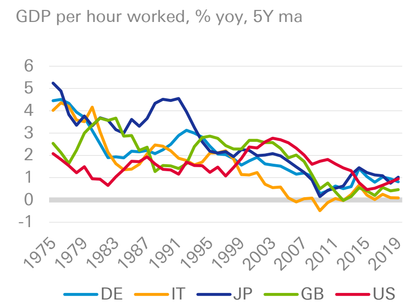
3 Laeven, Luc, Glenn Schepens and Isabell Schnabel (2020). Zombification in Europe in times of Pandemic. VoxEU, 11 October 2020.

In contrast to former crises, many companies got into difficulties because of government decisions taken to restrict the spreading of the virus and not because of their fundamental business situation. As the ECB has pointed out, moral hazard is probably less of a problem for lending than in earlier crises because many of the companies which require short-term support are structurally healthy.[4] Quite apart from this, however, the long lasting low-rate environment in the euro area has probably intensified the "zombification" problem.

Potential growth as a guideline for economic-policy decisions

Estimates of potential growth are important for numerous economic issues. If potential or trend growth is weak, cyclical fluctuations may be more pronounced and trigger more frequent economic-policy interventions.[5] The relative difference between actual and potential GDP may help to judge the situation of an economy. The calculated output gap forms an important basis for monetary and fiscal-policy decisions. Under the EU fiscal rules, cyclical adjustment methods used to calculate the structural deficits use this concept. Among other things, the ECB uses output gap estimates to gauge inflation pressures in the euro area.[6] And on the labor market, potential output affects the employment threshold. "Okun's Law" defines the growth threshold needed for higher employment or a decline in unemployment. Moreover, as labor productivity increases, so does the scope for distribution-neutral wage hikes.

Figure 3: OECD: Continued decline in labor productivity



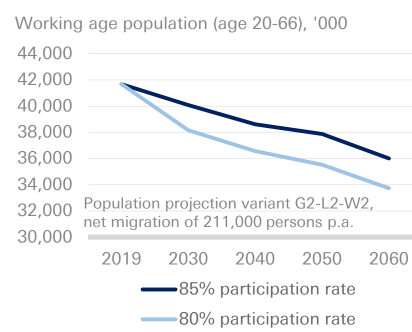
Source : OECD, Deutsche Bank Research

In the medium to long term, the factors which determine potential growth are of particular importance. Production theory breaks down the economic resources into labor, capital and TFP. This allows a more differentiated analysis of how these major components develop. The results can be used to take suitable economic-policy measures to counteract the slowdown in potential growth.

Demographic development dampens Germany's growth potential

Demographic developments are key for German growth. Potential output as such hinges on the size of the workforce, the participation ratio, the average number of hours worked and workers' qualifications. The volume of labor, which is measured in hours worked, represents labor as a production factor. By the middle of the decade, the ageing and shrinking of the workforce will reduce potential growth by 0.1 of a pp[7] on average per year. By 2025, the accumulated negative impact might amount to about 0.4 of a pp.

Figure 4: Demographic change leads to sharp decline in the labor force



Source : Federal Statistical Office

Inevitable shrinking and ageing of the workforce

During the current decade, demographic developments will considerably reduce the workforce in Germany. Towards the mid-2020s, more and more "baby boomers", who were born during the 1950s and 1960s, will retire. This development will peak around 2030. By comparison, the cohorts reaching working age (15 years) will be far weaker. This suggests that, on average, the number of

4 European Central Bank (2021). The initial fiscal policy responses of euro area countries to the COVID-19 crisis. Economic Bulletin 1/2021, p. 80.
5 Deutsche Bundesbank (2003). The development of production potential in Germany. Monthly Report March, p. 41 et seq.
6 The ECB believes that inflation accelerates by about 0.2 of a pp for each 1% decline in the output gap. See ECB (2021). ECB staff macroeconomic projections for the euro area. March 2021, p. 18.
7 Joint Economic Forecast 1-2021 (2021). Pandemic delays upswing – Demography slows growth, p. 59 et seq.

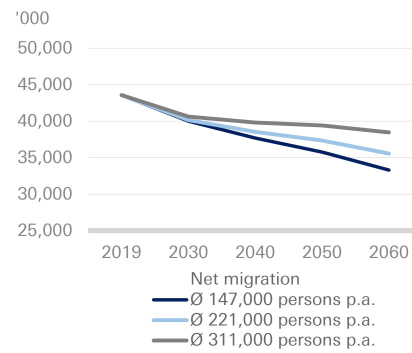
retirees will exceed that of young people about to start their working lives by about 480,000 each year[8] up until 2030. Depending on how the actual retirement age develops (2019: 64.3 years), the gap may amount to just above 520,000 in 2025/26 and rise to 570,000 by 2029. Assuming the usual age thresholds (15-74 years or 20-66 years) and net immigration of about 220,000 persons per year, the workforce may shrink by 1.5 or up to 3.5 million people by 2030. Based on the actual ages for entering working life and retiring, the 20-66 thresholds look more plausible, which means that the decline in the workforce is likely to be relatively pronounced.

Immigration will not bring much relief

The long-term trend in the German workforce is clear; it hinges on domestic demographic developments. On a shorter horizon, the potential labor force can only grow through higher net immigration. However, the medium variant of the current workforce projection already expects annual net immigration of just above 220,000 persons. Annual immigration figures would need to be much higher, however, to offset the impact from the ageing and shrinking process. At the same time, social and political willingness to accept above-average immigration in the long run is limited, as the refugee crisis of 2015 has shown.

Moreover, it is not clear how quickly immigrants can integrate themselves into the German labor market. In many cases, the educational and professional qualifications acquired in their countries of origin do not meet requirements in Germany. At the same time, highly skilled immigrants may find it impossible to get an adequate job simply because their degrees are not recognised. This may be a starting point for improvements to labor market integration.

Figure 5: Immigration can only dampen the decline in the working population



Source : Federal Statistical Office, Deutsche Bank Research

Activate the existing workforce better

It seems unlikely that the number of net immigrants who can be quickly integrated in the labor market rises strongly in the near future. That leaves Germany with only one option: to better exploit the available pool of labor. There are several ways to increase the supply of labor: raising the participation ratio, increasing the number of hours worked or improving workers' qualification. Moreover, education and labor-market-policy initiatives may help to achieve a better balance between labor supply and demand. In many cases, new job seekers or people who are looking for a career change do not know about opportunities in important sectors for the economy as a whole. This may be one reason why craftspeople are finding it difficult to find apprentices. The shortage of skilled labor is already weighing on the realization of urgently needed infrastructure projects and thus hampering the modernization of the economy.

Strengthening employment incentives, making it easier to take up a job

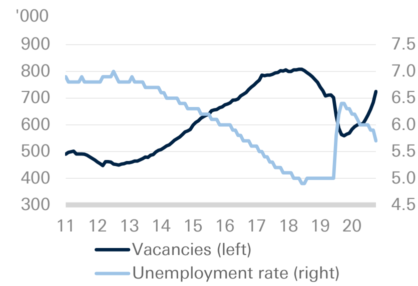
Up until the COVID-19 pandemic, unemployment has steadily declined and employment has risen strongly over the last few years. Nevertheless, there is still a large, untouched reservoir of potential workers. This includes registered unemployed (currently about 2.6 million) and other job seekers who are not registered with the Federal Employment Agency. Depending on the survey method, this "hidden reserve" consists of almost 900,000 persons. However, only about 50% of them are quickly available. While these figures are highly dependent on cyclical influences, they underline that further labor-market action is needed. This becomes even more evident if we remember that, according to the Institute for

8 Based on the G2-L2-W2 variant of the recent 14th coordinated population projection of the Federal Statistical Office and the reasonable assumption that the current actual retirement age of just above 64 years does not rise significantly.

Employment Research (IAB) survey, 1.17 million jobs were vacant in Q2 2021. While frictional unemployment is almost impossible to prevent, the discrepancy points to matching problems between supply and demand. In many cases, unemployed people may simply not meet the requirements for a given job. In addition, misguided tax and transfer incentives may keep low-qualified workers in particular from taking up work. Take the provisions concerning additional earnings under the Supplementary Unemployment Benefit II ("Hartz 4") rules. The law foresees fixed exempt amounts. As a result, a large chunk of any additional earnings will be offset against the transfer payments, which means that there is no incentive to work more.

The problem might be resolved by smoothing out the thresholds for additional earnings. Turning to the gap between existing and required qualifications, the principle of "promote and encourage" should be adhered to. With core sectors of the German economy becoming digitized and undergoing structural change, potential workers should be better educated and trained.

Figure 6: Germany: Robust labor market even during pandemic but massively supported by short-time work



Source : Deutsche Bundesbank

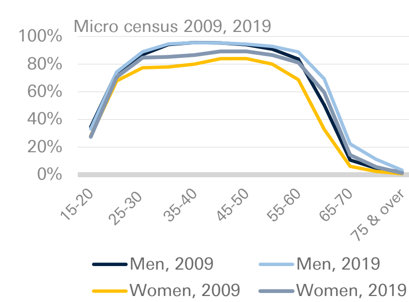
Strengthen parents' participation rate

Targeted labor-market and social policy initiatives can strengthen the participation rate in numerous ways. Many people start a family during the first third of their working lives. Once they have children, they often find that no adequate childcare options are available which would allow both parents to go to work – at least not until the children go to school. Usually, one parent (often the mother) reduces their working hours or does not work at all for some time. Getting back into work becomes more and more difficult the longer the break is. Tax splitting rules for married couples can also keep parents from returning to work, as marginal tax rates may be prohibitively high.[9] While the trend towards working from home, which was triggered by the COVID-19 pandemic, makes it easier for many households to combine work and family life, this does not change anything about the structural shortage of childcare options. This has become evident during the pandemic, too. Working from home may often be less efficient than it could be if parents have to simultaneously take care of their children. Nevertheless, the new flexibility about the place and hours of work has probably reduced the opportunity costs of taking a job or extending working hours for many people.

Make retirement more flexible

There are options to increase the participation rate at the other end of working life as well; after all, many workers retire early. Average participation in the age group between 60 and 65 was about 64% in 2019, down from 85% for people aged 55 to 60. There are often several reasons to retire. Workers who have made contributions to the statutory pension system for 45 years may retire before the age of 65. In addition, health reasons, personal commitment to work or attractive early-retirement offers by employers may play a role.

Figure 7: Germany: Age-specific labor force participation rates



Source : Federal Statistical Office, Deutsche Bank Research

At the same time, there are many people who would like and would be able to extend their working lives, not least in order to increase the number of years for which they have made contributions to the pension system. In view of the imminent shrinking of the workforce and the resultant lack of qualified labor, it is in employers' best interests to keep skilled, experienced workers on instead of giving them a golden handshake and sending them into retirement. However, further flexibilization of retirement is often met with strong political resistance, which was

9 Peichel, Andreas and Helmut Rainer (2021). Better Exploiting Employment Potential. Ifo Schnelldienst 7/2021, pp. 6-10.

made clear not least by the promises made during the Bundestag election campaign. This became evident once again when the latest reform proposals by the Board of Academic Advisers to the Federal Ministry for Economic Affairs and Energy (BMWi) were rejected.[10]

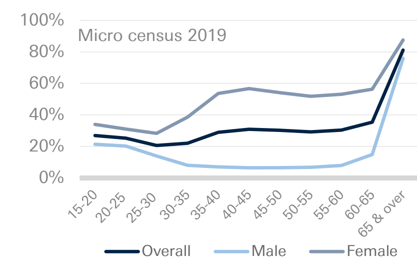
Nevertheless, a more flexible retirement threshold should be on the agenda of the next federal government. The demographic development will put pressure not only on potential growth, but also, and above all, on contributions to the social security system.

Part-time work might increase

As the workforce ages and shrinks, the number of part-time workers is likely to increase, assuming that the current employment patterns remain in place. This will additionally decrease labor supply and continue the trend towards a decline in working hours per capita.

Nevertheless, the participation rate of older workers has increased considerably during the past decade. While any increase among over-70-year-olds should remain limited, a reduction of the gap between actual and statutory retirement ages may lead to higher participation rates in the age group from 65 to 70. Part-time retirement offers for older workers may increase the participation ratio, particularly if people may also work from home. This might mitigate the negative impact of part-time work on overall labor supply.

Figure 8: Part-time employment according to age groups

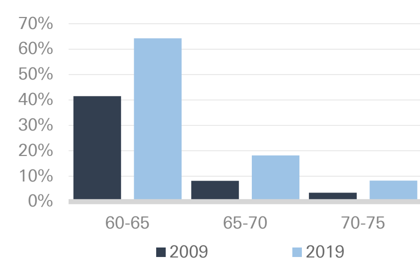


Source : Federal Statistical Office, Deutsche Bank Research

Lifelong learning remains key

Apart from increasing the participation rate, good professional qualifications are crucial for people's employability. More than ever, structural changes in the core sectors of the German economy and the general trend towards digitalization require workers to enroll in lifelong learning. The favorable labor market developments of the last few years stemmed to a large extent from an increase in employment in the services sector. Numerous low-qualified workers found a job in that sector. During the coming years, these jobs may increasingly be replaced by digital solutions. People will need to get better vocational qualifications to remain employable. And it is not just low-skilled workers which are experiencing challenges from structural change. Developments in the industry will require many skilled workers to adjust, too. It is here, where practical working life and professional qualification intersect, that a significant opportunity arises to combine appropriate training measures with the academic structures at universities and universities of applied sciences.

Figure 9: Significant increase in labor force participation of older persons



Source : Federal Statistical Office

In addition, internal knowledge transfer is becoming increasingly important for companies, because as baby boomers retire, many highly experienced employees will leave the workforce.

At the same time, the educational system needs to become more flexible and adaptable. Just how huge this task is became evident when schools (tried to) shift to remote and digital learning during the COVID-19 pandemic. At the same time, this is a good example of what becomes possible if efforts are bundled and directed at a common goal. Nevertheless, the differences between students' abilities and options to participate in digital lessons also highlighted once again to what extent potential academic success depends on the children's socio-economic

10 Board of Academic Advisers to the Federal Ministry for Economic Affairs and Energy (2021). Vorschläge für eine Reform der gesetzlichen Rentenversicherung (available in German only).

background. Measures to create more equal opportunities for all children are urgent.

Capital stock as a production factor and climate protection

Apart from the overall supply of labor and TFP, the capital stock is a key production factor. It consists of machinery and equipment, buildings and other assets. Capital stock per employee (or work unit, as measured in efficiency units) is key for labor productivity. In the long run, the development of capital stock and economic output opportunities go hand in hand (one of Kaldor's "stylized" facts). Investment is used to adjust the capital stock in such a way that it changes in line with the trend in production (adjusted for depreciation). This reflects how capital stock interacts with demographic developments (or the supply of labor) and technological progress.[11]

This suggests that the demographic development is one reason why investment activity in Germany has been weak during the last few years. Some German regions which have seen or are still seeing younger workers move away are already experiencing a lack of skilled labor, which hampers the growth opportunities of many companies and dampens their investment activity. Capital stock in the public sector stagnates as well, particularly in the area of non-residential construction. This includes transport infrastructure, for example, which is not being extended and not even maintained properly, as the steady decline in modernity shows.[12]

Low TFP growth probably contributed to anaemic investment activity as well. This explains part of the drop in labor productivity. Nevertheless, from an academic vantage point, the cause-effect relationship between weak investment and labor productivity is not clear. The structural shift in the economy, from capital-intense industrial production to labor-intense services, has dampened overall labor productivity as well.

Moreover, capital-embodied technological progress usually requires high capital spending and does not have a positive impact on labor productivity unless the necessary investments are made. The usual growth decomposition methods do not really capture this effect, as they assume factor-unrelated technological progress. Without a methodological extension of the concept of capital, this blind spot would, for example, leave out quality improvements of capital goods in information and communication technology.[13] While macroeconomic simulations often take this effect into account, its positive impact on labor productivity tends to be often underrated by simple decompositions of growth.

The capital stock which is relevant for German production is represented by gross assets. However, the data on the stock of assets are incomplete. That is why we rely on accumulated flow values (perpetual inventory method). Put simply, the current stock of assets is derived from past gross asset investment and the assumed

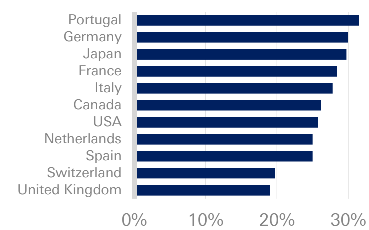
11 Technological progress has to increase the supply of work if equilibrium is to be achieved in line with growth theories.
12 Grömling, Michael, Michael Hüther and Markos Jung (2019). Verzehrt Deutschland seinen staatlichen Kapitalstock? Wirtschaftsdienst 99(1), pp. 25-31.
13 Deutsche Bundesbank (2021). Capital-embodied technological progress and its importance for labour productivity: a DSGE analysis. Monthly Report, January 2021, pp. 25–27

lifetimes of the individual capital goods.[14] As EU rules on reducing carbon emissions have been tightened, this detail has gained considerable importance, seeing that the initial lifetimes of assets were reduced overnight (in some cases drastically).

Creating an investment-friendly economic environment

Legal certainty plays a paramount role for corporate investment decisions, as most assets have long useful lifetimes. Political uncertainties about ownership rights or returns from the projects are major hurdles to investment activity. The investment climate will also suffer from excessively complex regulation or opaque, protracted permission procedures. In contrast, an efficient tax system, which aims to support the international competitiveness of German SMEs, can help promote investment. However, Germany is one of the countries with the highest corporate tax rates worldwide. Apart from streamlined permission procedures, infrastructure (transport, high-performance internet) and the availability of skilled labor are key if investment plans are to be realized. And, of course, local financing conditions play a role.[15]

Figure 10: Statutory corporate income tax rates



Source : OECD

EU climate targets raise many questions for the economy

Long-term considerations of economic growth are clearly incomplete without taking into account a healthy environment, which provides the basis for life.

From an economic vantage point, the ambitious EU climate protection targets and their implementation in Germany mean that large parts of the capital stock will need to adjust. Regulatory requirements will reduce the lifetimes of many capital goods (metals production, power plants, etc.), in some cases drastically. Average lifetimes of capital assets are particularly long in energy-intense sectors such as chemicals production (18 years) or metals production (almost 16 years). They average 14 years across manufacturing as a whole. This means that we will probably see one-off losses of capital stock. The decarbonization plans will ultimately squeeze many production facilities out if companies cannot adapt to them or offset their emissions adequately. Until new facilities are installed, many energy-intense sectors will reduce their capital stock – a phenomenon which is already visible in electricity production. If the modernization does not go as quickly as hoped for, this development will be an additional burden on production potential, on top of the demographic effect.

In addition, immaterial assets (such as patents) will be revalued, as the outlook for their use has changed. Taken together with rising carbon prices, this development is similar to a negative supply shock in the medium term. Nevertheless, the planned transition periods will help companies to adjust; they limit the surprise effect in the short term, in contrast to the supply-side oil price shock of the 1970s, for example.

As of today, electrification and alternative sources of energy are regarded as key elements to reach the EU climate goals. Among other things, this implies adjustments to the German electricity network, which needs to be able to cope with the technical requirements of alternative sources of energy. Once this has been achieved, it may be possible to implement a more widespread electrification, for example of the mobility infrastructure.

14 Schmalwasser, Oda and Nadine Weber (2012). Revision der Anlagevermögensrechnung für den Zeitraum 1991 bis 2011. Wirtschaft und Statistik 11/2012, p. 935.
15 Schuknecht, Ludger (2020). For Stability and Growth in Germany and Europe – Dare a More Market-Friendly Regulatory Policy! Ifo Schnelldienst 73(9), pp. 78-88.

At the same time, the climate-friendly adjustment of production structures is not the only challenge for the capital stock. After all, that item includes residential buildings as well. The ambitious climate targets need to be implemented in this sector, too. Given the current mid-term renovation rate of the building stock of about 1% per year, the 2030 targets seem unattainable. Policymakers may therefore move towards stricter regulation and/or more comprehensive subsidy programs. However, it will be difficult to realize climate-friendly refurbishments in view of the lack of skilled labor, which looks set to intensify in the future.

Following a medium-term transition period, the efforts to make the German economy carbon-neutral may have a positive impact on the country's competitiveness. This requires a global coordination and enforcement of ecological standards, however. Otherwise, we may experience a "green paradox",[16] as discussed in detail by Hans-Werner Sinn and others.

Finally, one should not simply assume that stricter ecological regulations will result in competitive advantages and lead to growth-raising investment.[17] Nevertheless, this argument, which is based on the weak version of the Porter hypothesis,[18] is often trotted out in speeches on environmental policy. Agents in a free market economy can always opt to reduce capacities without replacing them. In the long run, doing so will weaken potential growth and thus reduce the prosperity of subsequent generations.

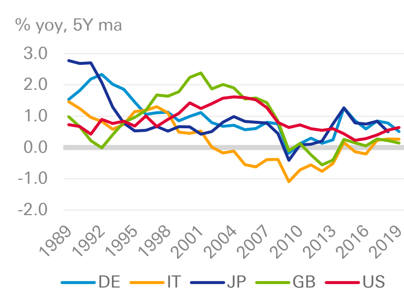
Total factor productivity: The big unknown

Total factor productivity (multifactor productivity), or TFP, is obtained as the residual of a growth decomposition of real GDP based on the Cobb-Douglas production function. During the past 20 years, the TFP growth rate has declined to about ½%. TFP covers all those growth drivers not captured by the development of the labor volume and of the capital stock. If we rearrange the production function, we find that TFP and trends in capital intensity are the main drivers of labor productivity.

TFP is often regarded as a measure of factor-unrelated technological progress. However, it should be regarded rather as a general indicator of production efficiency in the economy. Moreover, any interpretation of this variable should take into account that TFP figures may be distorted by changes in the capacity utilization of production factors over time. In addition, many methods used to forecast potential growth (for example the EU method "MODEM") do not capture the demographic impact on TFP; due to their construction, they only include the decline in labor supply.[19]

Nevertheless, research on the components of TFP gives insights for a growth-promoting economic policy. Corporate data from the EU suggest that the analyzed sectors do not suffer from a lack of innovation, but rather from a slow diffusion of new technologies. This is a piece of good news: it means that the TFP weakness is

Figure 11: Slowdown in TFP growth in country comparison



Source : OECD, Deutsche Bank Research

16 Sinn, Hans-Werner (2012) (German edition: 2008). The Green Paradox: A Supply-Side Approach to Global Warming MIT Press.
17 Rubashkina, Yana, Marzio Galeotti and Elena Verdolini (2014). Environmental Regulation and Competitiveness: Empirical Evidence on the Porter Hypothesis from European Manufacturing Sectors. FEEM Working Paper No. 080.2014, Available at SSRN: https://ssrn.com/abstract=2504425 or http://dx.doi.org/10.2139/ssrn.2504425
18 Porter, Michael E. and Claas van der Linde (1995). Toward a New Conception of the Environment-Competitiveness Relationship." Journal of Economic Perspectives, 9(4), 97-118.
19 Deutsche Bundesbank (2021). January 2021 6 GD 2021, more details to follow.

probably not due to "secular stagnation".[20] However, it seems that the slow diffusion of new technology is caused by inertia (in terms of new market entries and exits) in the European corporate landscape. The lack of highly skilled labor is probably another plausible reason why innovative developments are slow to take hold. And finally, the specific features of digital technologies and immaterial assets may have created hurdles to adaptation.

We should also take a look at the negative impact of the prolonged low-rate environment in the euro area in this context. Low rates may have kept many not very innovative companies alive during the last few years – a phenomenon aptly described by the term "zombification". This may have made it more difficult for new, innovative competitors to enter the market. "Creative disruption" has not taken place, and as a consequence, TFP growth has remained below its potential.

Corporate inertia is a relevant factor in the current situation, too. Large-scale state support for companies during the coronavirus pandemic has a flip side as well: companies have been protected against the usual market adjustments or "creative disruption". In the short term, shifts in the structure of production factors towards the most productive use have been successfully prevented. This policy has probably strengthened the market position of established companies in the medium term. At the same time, innovative competitors may have found it more difficult to enter the market. Following sweeping state intervention during the COVID-19 pandemic, policymakers should pay more attention to strengthening competition.

Turning to the features of digital technologies and immaterial assets which stand in the way of their diffusion, it probably makes sense to strengthen and bundle research activities. As explained above, better qualification and training of workers is key. Qualification is also a solution to the lack of skilled workers who can use the new technologies.

Even beyond digitalization, it is important to remain open to a broad range of potential technological solutions. Take genetic engineering, which is often met with skepticism – and imagine what might have happened during the COVID-19 pandemic if companies such as Biontech had not existed.

Potential coalition parties should focus more on potential growth

After the federal elections, the demands formulated in the election programs are likely to continue to serve at least as a guideline for the exploratory talks and the coalition negotiations. The emerging structural weakness of the German economy would have deserved a more prominent position in the parties' election programs. Some observers may point out that economic issues around potential growth are possibly too complex for election platforms. However, this argument does not appear very plausible, as the main parties deal with some parts of the issue at least. Moreover, many parties do not mind detailing their election programs on more than 100 pages.

TFP between technology openness and regulation plans

Under the impression of the coronavirus pandemic, the CDU/CSU, SPD, Bündnis

20 Summers, Laurence H. (2015). Demand Side Secular Stagnation. The American Economic Review, Papers and Proceedings, 105(5), pp. 60-65.

90/Die Grünen (Greens) and FDP stated right at the beginning of their election programs that Germany should be modernized and reformed. This is, of course, quite a general aim. Nevertheless, its implementation may strengthen German TFP in particular. TFP includes all factors that boost production and are not based on an increase in labor supply or capital stock. This means that a broad range of political goals may support TFP, even if the election programs do not explicitly say so. Fortunately, all parties have recognized the necessity of promoting digitalization and making improvements to the digital infrastructure. Moreover, they all want to promote research and development (R&D) and cut red tape. The CDU/CSU and the FDP in particular rely on new technology to manage the transition to a climate-neutral economy. Still, the SPD and the Greens also regard technology as important to reach the climate-protection goals. Broad openness for technological solutions (something which has not always been the case) may give TFP a boost in the coming decade.

Major differences arise when it comes to the structure and future development of the economic system. The left-wing parties are more in favor of regulatory intervention than the conservatives and the liberals. What is interesting is the wording used by the Greens. They do not often use the term "regulation", but intend to "strengthen" certain areas. This will probably involve regulation, however in our view.

From an economist's vantage point, competition-oriented policy approaches are welcome, as they promote market-based, efficient factor allocation. The continuous reorganization of production factors, so-called "creative destruction", is part of the normal development of market economies, which, in contrast to centrally planned economies, rely on decentralized coordination. Nevertheless, there remains sufficient scope for political action when it comes to ensuring free market access and fair competition. Even well-meant direct market interventions usually increase the complexity of the regulatory framework. In the worst case, they may even have a negative impact overall, as they do not take into account broader market developments.

The details of the election programs differ as well, for example when it comes to regulating supply chains. In recent years, German companies have increased their efficiency by outsourcing some production processes. Ultimately, TFP benefited from this behavior. Now, regulation is to be tightened, with the ideas ranging from seeking an EU-wide approach (CDU, FDP) to extending the rules both at the national and the international level (Greens, SPD in a very general way).

Counteracting the demographic development

The shrinking and ageing of the German population (and workforce) is a done deal, as demographic trends cannot be reversed quickly. It is useless to ignore or argue against the downtrend in labor supply during the coming decade. There are, however, several approaches to mitigate the demographic headwinds to potential growth. Four major areas of action come to mind: education and professional training, participation rates, working lives and immigration.

The parties' stances on education and training

Before discussing party positions – the election programs are likely to remain the guiding principles – it is worth mentioning the fact that schools and large parts of higher education in Germany are the responsibility of the German federal states. A good education which prepares students for the labor market is a precondition for having as many young people as possible get a good job. Most of the election programs we have analyzed state that pupils and students, up from toddler age, need a good education. Nevertheless, the parties focus on – sometimes considerably – different issues. The SPD, the Greens, and the CDU/CSU, as well as the FDP, directly address the issue of preschool education and its impact on equal opportunities.

The picture is similar for schools, dual vocational training and university studies, with the parties obviously putting importance on different issues. The FDP aims to reform the federal education system. The SPD is calling for a substantial increase in personnel in the education sector. However, it remains unclear how the large number of qualified workers is to be recruited. The SPD and the Greens pay particular attention to education infrastructure, while the CDU/CSU focuses on financial support. The parties largely agree on the benefits of dual vocational training. If the education-policy goals are implemented, the qualifications of potential new workers may indeed improve so that more young people get a job. However, none of the parties clearly say that they plan to get people to work earlier in life in order to increase the pool of labor.

Against the backdrop of imminent structural changes on the labor market (digitalization), professional training will become ever more important. In this area, too, the parties set different priorities. The Greens establish a connection between the right to professional training and funding demands; however, they propose "short-time wages for qualification purposes". The FDP calls for "mid-life BAföG" (BAföG is the German acronym for state student support) of up to EUR 1,000 per year and better tax write-offs for employers' spending on training. They also emphasize that the links between professional training and university education should be strengthened. The CDU/CSU also wants to make BAföG more flexible and extend it to include professional training, as they regard lifelong learning as key. The SPD, too, is calling for a similar approach towards funding and flexibilization and for an explicit right to professional training. All parties put particular importance on education in their election programs. In view of the structural change of the economy it is welcome that professional training gets considerable attention. However, explicitly pursuing a redistribution goal at this point is likely to dampen the implementation success of corresponding measures. Overall, realizing the education-policy goals would improve people's employability. Moreover, there may be a positive feedback loop with TFP.

Higher participation rate and longer working lives

"Work" is a key term in all parties' election programs. In order to counteract the decline in the workforce, it would make sense to take policy decisions that lead to higher participation rates. Moreover, incentives need to be adapted in such a way that more workers continue at least up to the regular retirement age – of course only if their health permits. From a macroeconomic perspective, the labor market needs to be sufficiently flexible to allow for an efficient allocation of the production factors. Excessively restrictive labor-market rules will limit people's opportunities to find a job; remember, for example, the period before "Agenda 2010".

This is the issue where the parties' programs differ most. The FDP and the CDU/CSU clearly support labor-market flexibility. Both parties regard temporary work as an important option for low-qualified or (long-term) unemployed workers to (re-)enter the labor market. They also intend to develop mini jobs (EUR 450 jobs) further, which offer an opportunity to earn additional money. This also underlines the importance they put on flexibility. At the same time, the FDP and the CDU/CSU also take into account employees' interests by asking employers to be more flexible about working times and locations (mobile work), particularly in the case of (single) parents. The SPD calls for making the pandemic-related flexibility in terms of working times and locations a more permanent feature of working life. Self-employment is to be promoted and the reach of collective wage agreements is to be extended, particularly in trade. The SPD demands: "If work should become less due to productivity gains, everyone must benefit from it."[21] However, this also implicitly means that working hours should be redistributed accordingly. Where trade unions demand cuts in working hours, the SPD wants to support this. An abrupt minimum wage increase to EUR 12 (currently EUR 9.60) is likely to noticeably dampen the willingness to hire in the lower wage segment, at least in the short term. Even economists[22] close to the unions point to the negative employment effects of a sudden increase. Moreover, such an increase would interfere with the existing structure of collective wage agreements. Companies must be able to rely on a transparent adjustment procedure based on the decisions of the independent Minimum Wage Commission. To circumvent this procedure, the Minimum Wage Act would have to be amended. In the simplest case, the adjustment cycle could be shortened to one year in order to follow collective wage developments more closely. In addition, however, the Social Democrats in particular would like to make the minimum wage "poverty-proof" so that minimum wage earners do not have to rely on state pension subsidies in old age. By the time such a change in the law is implemented, the Minimum Wage Commission could also have reached the EUR 12 target in steps by regular means.

The parties are almost unanimous in their calls for better opportunities to combine work and family life. Even though the issue is not explicitly mentioned, this may make households supply more labor. All parties also agree on the aim of improving women's position in working life. The implementation of these targets will increase the participation ratio and counteract the decline in the workforce. In addition, tax breaks for mobile working or working at home may also support the participation rate.

In contrast, there are clear differences when it comes to working lives. The FDP in particular appears quite progressive; it clearly says that those who retire earlier should touch lower pensions and those who retire later should enjoy higher pensions.[23] At the same time, workers' health is to be taken into account in order to prevent unfair treatment. The Greens want to keep the retirement age of 67, but allow people to retire later. The CDU/CSU only aims at having people work up to the official retirement threshold. The SPD makes similar demands and excludes further hikes in the retirement age. Overall, the programs of the FDP and the Greens are best suited to get more people to work.

Sensitive handling of immigration strategies

Immigration of working-age people, if possible with labor-market-relevant qualifications, would mitigate the demographic pressure on potential growth. It was with this in mind that Detlef Scheele, Head of the Federal Employment Agency, recently warned of a lack of skilled labor: "We need 400,000 immigrants per year. This is much more than in recent years."[24] Targeted immigration is key in this

21 Election program of the SPD (2021). The Future Program of the SPD. P. 29.
22 Krebs, Tom and Moritz Drechsel-Grau (2021). Mindestlohn von 12 Euro: Auswirkungen auf Beschäftigung, Wachstum und öffentliche Finanzen. IMK Study.
23 Election program of the FDP (2021). There's never been more to do. P. 87.
24 https://www.sueddeutsche.de/karriere/arbeitsmarkt-arbeitsagentur-chef-brauchen-400-000-zuwanderer-pro-jahr-dpa.urn-newsml-dpa-com-20090101-210824-99-946632 (own translation)

endeavour. However, this is a highly sensitive issue since the immigration wave of 2015.

The Greens and the FDP take particularly progressive approaches. The Greens focus on the advantages of targeted immigration into the labor market and the education system. In addition, they want to support the integration of (former) migrants. The FDP makes similar demands. The CDU/CSU is also in favor of targeted migration, but pays much less attention to the issue. The SPD focuses on fairness in the area of integration and less on labor-market issues.

Capital stock depends on investment

The transition to a carbon-neutral economy requires far-reaching adjustments of the capital stock. Considerable private and public-sector investments are necessary for this purpose. That is why the parties' election programs pay much attention to strategies which are to help implement the EU climate-policy goals. As expected, there are sometimes considerable differences.

The Greens create close links between climate protection and investment activity. They clearly call for abolishing technologies which they regard as detrimental for the climate and say that the public sector should retreat from climate-detrimental investment. In its absoluteness, this demand runs counter to the calls for infrastructure improvements. Infrastructure investments necessarily cause carbon emissions, for example for construction, or facilitate them by their sheer existence (take roads, for example). Nevertheless, implementing the program's goals should deliver a boost to investment, provided that the suggestions are implemented in a targeted way.

The FDP and the CDU/CSU also attach high priority to investments in climate protection. Both parties focus on the economic viability of climate-protection goals, too. The FDP in particular is calling for creating incentives for investments. The SPD also pays much attention to climate-oriented investments. It plans public-sector investments of EUR 50 bn each year. The election programs of the potential coalition partners agree on one issue: they call for ambitious climate-protection investments. Still, there is one major flaw: in the recent past, it was not a lack of funds which hampered public-sector investment, but a lack of available skilled labor.

Construction and housing is another issue which is very important for the capital stock and is considerably affected by climate policy. All parties call for more (affordable) housing. Any initiatives in this area will be influenced by climate-policy issues, regulatory market intervention and capacity limits in the construction sector.[25] Nevertheless, new construction is the only way to resolve the tensions on the housing market. Efficiency should be an important consideration in any decisions about the climate-friendly refurbishment of existing buildings. The Greens in particular link construction and climate-protection policy. Social issues are mentioned in all party programs. The FDP and the CDU/CSU call for market-oriented supply-side solutions and reject rigid, price-setting market intervention. In contrast, the Greens and the SPD favor rent caps or a rent-hike moratorium, even though they, too, plan to promote residential construction.

25 For more details see: Möbert, Jochen (2021). Housing policy concepts in Germany. Only minor overlaps between the plans of left-wing and right-wing parties. Deutsche Bank Research. Focus Germany.

New environmental policy rules and demand for housing are not the only reasons for further investment in the capital stock. As mentioned before, capital deepening can, to some extent, mitigate the ageing and shrinking of the workforce. A modernization of (digital) infrastructure in order to strengthen TFP also requires additional investment. Moreover, the economy would likely gain a boost from the promotion of a start-up culture in Germany. By investing in capital goods which drive technological progress, the government can "kill two birds with one stone", as these efforts will also tend to strengthen TFP. And finally, new innovative companies contribute to technology diffusion. That is why the parties are calling for a stronger venture capital sector. This could help Germany to catch up in an international comparison and become more attractive to investors. So far, many new start-ups turn to the Anglo-Saxon countries, where they find it easier to get funding.

Potential coalition parties with big ambitions

The election programs of the parties which may form a government coalition contain ambitious goals for a climate-friendly transition of the German economy. In principle, the implementation of sustainability-oriented investment plans may strengthen potential growth, which will suffer from increasing demographic headwinds during this decade. However, the ageing and shrinking of the German workforce itself is likely to be one of the main hurdles for the implementation of the investment plans. A combination of digital progress, infrastructure improvements, progressive education policy and flexible working life models probably offers the best chance of mitigating the demographic developments. Labor-market-oriented immigration may strengthen potential growth as well.

Appendix 1

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David Folkerts-Landau
Group Chief Economist and Global Head of Research

Pam Finelli Global Chief Operating Officer Research	Steve Pollard Global Head of Company Research and Sales	Anthony Klarman Global Head of Debt Research	Michael Spencer Head of APAC Research	Andreas Neubauer Head of Germany Research

Gerry Gallagher Head of European Company Research	Matthew Barnard Head of Americas Company Research	Tim Rokossa Head of German Company Research	Peter Milliken Head of APAC Company Research
Jim Reid Global Head of Thematic Research	Francis Yared Global Head of Rates Research	George Saravelos Global Head of FX Research	Peter Hooper Global Head of Economic Research

International Production Locations

Deutsche Bank AG
Deutsche Bank Place
Level 16
Corner of Hunter & Phillip Streets
Sydney, NSW 2000
Australia
Tel: (61) 2 8258 1234

Deutsche Bank AG
Equity Research
Mainzer Landstrasse 11-17
60329 Frankfurt am Main
Germany
Tel: (49) 69 910 00

Deutsche Bank AG
Filiale Hongkong
International Commerce Centre,
1 Austin Road West,Kowloon,
Hong Kong
Tel: (852) 2203 8888

Deutsche Securities Inc.
2-11-1 Nagatacho
Sanno Park Tower
Chiyoda-ku, Tokyo 100-6171
Japan
Tel: (81) 3 5156 6000

Deutsche Bank AG
1 Great Winchester Street
London EC2N 2EQ
United Kingdom
Tel: (44) 20 7545 8000

Deutsche Bank Securities Inc.
60 Wall Street
New York, NY 10005
United States of America
Tel: (1) 212 250 2500