

Advances in strengthening the economy's growth potential

Following a prolonged period of stagnation in growth and persistently high unemployment, the German economy is now on quite a stable upswing. Stronger investment activity and the turnaround in the labour market which began in 2006 are not just cyclical but are, at the same time, a reflection of structural adjustments which also promise higher growth in the medium term. The restructuring efforts in the business sector have likewise played a part in this, as have moderate wage policy, greater flexibility in the deployment of labour and the reorientation of labour market policy.

This article takes this development as a starting point for reassessing the earlier estimates of the German economy's potential output. At present, potential output growth may be estimated at between 1½% and 1¾% annually and, therefore, around ¼ percentage point higher than in the preceding period. This means that the German economy has made up some ground again in the intensified competition among production locations. However, strengthening the sources of growth must remain an integral part of the economic policy reform agenda, especially since the recently identifiable improvement was preceded by a protracted process of deceleration.

Upswing marked by special structural features and economic policy reforms

*Upswing with
retarding
elements*

The German economy is currently in quite a stable upswing. At first, the economic recovery was being sustained almost exclusively by extremely dynamic exports, before business investment started to form the second pillar of the cyclical upturn in mid-2004. The basis for growth strengthened and broadened in the past year, as private consumption and housing construction, which are quantitatively important components of domestic demand, turned positive. When observing its course, the ongoing upswing matches the pattern typically seen in Germany. However, in terms of the underlying momentum and the duration of the recovery period hitherto, it is marked partially by a sluggishness that may be classified as exceptional by historical standards. Apart from last year's anticipatory effects, which were generated by the increase in the standard rate of VAT and the abolition of the grant to homebuyers, the propensity of households to spend has remained quite subdued given that the economic upturn has already lasted four years now,¹ and the underlying trend in housing construction is still weak, too.

*Accumulation
of structural
deficits in the
1990s*

The retarding elements in the cyclical development point to after-effects of reunification and deeper-lying problems of the German economy. Following the fall of the Iron Curtain, it not only had to accomplish the transformation of the economic system in eastern Germany but also had to hold its ground in the competition for products and production locations which has become increasingly

fierce in view of the rapid catching-up process pursued by transition countries and emerging market economies. The abrupt and often pressing challenges that also accompanied the reunification process in economic terms tied up energies and resources during the 1990s and, moreover, obscured the view of the adverse implications stemming from the, overall, too hesitant adjustment of the German economy's structure to the changed global economic setting.

The economic performance of the 1990s, which had begun promisingly with the unification boom, was ultimately disappointing. Already in the second half of that decade, Germany was mostly ranked at the bottom of the growth table of countries which now constitute the euro area. Afterwards, with the bursting of the "New Economy" bubble and the occurrence of adverse shocks, the German economy experienced a stagnation which lasted three years. During that period, numerous full-time jobs subject to social security contributions were lost. In particular, the large hard core of unemployment and the overstrained social security schemes became a persistent burden on the economy and society. The necessity of making adjustments in the areas of economic, social and wage policy was becoming ever more apparent.

The unfavourable price competitiveness position in which German enterprises found themselves in the mid-1990s had to be corrected partly under the conditions of the

*Sobering
economic
performance
at the start of
the decade*

*Fiercer competi-
tion among
production
locations*

¹ For more details, see Deutsche Bundesbank, Private consumption in Germany since reunification, Monthly Report, September 2007, pp 41-55.

monetary union by the arduous adjustment process of a moderate wage and price development.² The fairly long period of marked wage moderation began at that time. This strategy helped to restore Germany's diminished attractiveness as a location for investment and production.³ Furthermore, in order to cut production costs, firms used the opportunity of offshoring labour-intensive stages of the production chain, which initially intensified the problems in the labour market.⁴ At the peak of the economic crisis in 2003, the Federal Government of the time introduced first reform steps as part of its Agenda 2010 and what is known as "Hartz legislation" in order to modernise outdated labour market structures and to lower the high employment threshold of economic growth.

Potential output path and labour market

*Level effects
on potential
output*

It seems appropriate to make a connection between the strong expansion in the total number of hours worked observable since early 2006, especially in the business sector, and the wage and economic policy efforts to break up the hardened structures on the labour market. When calculating the growth potential, however, the cyclical revival has to be separated analytically from the structural improvement. Moreover, the positive overall effect on potential output is not confined solely to labour since interactions exist between labour market developments and fixed capital formation.⁵ In addition, a major part of technological progress is embodied in capital, which means that, through fixed investment, the degree of the economy's mod-

ernity is also likely to have benefited from the improved interaction of labour and capital.

Above all, the "promote and push" principle of the Agenda 2010, the introduction of a means-tested basic allowance for persons able to work, and the strengthening of the risk insurance nature of unemployment benefit were important guidelines and measures of the reform agenda that has been implemented by economic policymakers since 2003. Furthermore, the correction of generous early retirement schemes and the gradual raising of the statutory retirement age have removed the previous reduction in the labour supply. Since they have also contributed to the financial stabilisation of the social security systems, leeway was created for a lowering of the high tax wedge, which, owing to the reduced additional burden of taxation, has had a positive influence on the supply of and demand for labour. "Mini-jobs" and "midi-jobs" as well as a flexible use of temporary employment have simplified (re-)entry into the labour market. In this way, some proportion of the inactive part of the working-age population is also likely to have been encouraged to take up employment. In terms of negotiated pay policy, it was important that

*Efforts to
overcome the
crisis in growth
and employ-
ment*

² See also Deutsche Bundesbank, German intra-euro-area trade: cyclical effects and structural determinants, Monthly Report, March 2007, pp 35-45.

³ See also Deutsche Bundesbank, Investment activity in Germany under the influence of technological change and competition among production locations, Monthly Report, January 2007, pp 17-30.

⁴ See also Deutsche Bundesbank, The labour market in Germany: general developments seen in an international context, Monthly Report, January 2007, pp 31-51.

⁵ This relationship was already addressed in Deutsche Bundesbank, Factor prices, employment and capital stock in Germany: results of a simulation study, Monthly Report, July 2001, pp 49-61.

the recent corrections in the wage structure and increased degrees of freedom for enterprises have established a sound basis for the effectiveness of the reform measures. This applies, not least, to working time schedules. The flexibility granted, together with longer working hours in some cases, has directly enlarged the potential deployment of labour and has improved its time availability, which is now also counteracting the risk of a potential shortage of specialised labour. Indirectly, the improved working hour arrangements allowed a higher utilisation of fixed capital. Furthermore, longer working hours have undoubtedly also alleviated the problem of nominal wage rigidity and preserved the purchasing power of labour income.

Since the reform measures, as a whole, can be used either to increase the willingness to take up a job and thus reduce the length of time spent in unemployment or in the inactive part of the labour force or to make a higher labour input attractive for enterprises, positive effects on potential output in terms of a positive level shift may be expected. This applies even when taking into account the fact that, from a macroeconomic perspective, the statistically measured average labour productivity is being dampened by (re-)integrating persons from so-called problem groups into the labour market. A similar short-term effect is that the pressure to rationalise, which is reflected by an accelerated capital deepening, has now become less of an acute issue and that there has been a clear shift in investment motives towards the enlargement of capacities. All in all, in the past few years it has been possible to increase

employment intensity without impairing the actual basic conditions for economic growth. In reality, however, the adjustment to the new, higher trend path of total output will also take place as a function of cyclical influences over a longer period of time, which means that temporarily stronger growth rates may be expected for the convergence period. This is also the case because experience shows that room for manoeuvre which has been created is exploited only gradually.

Disaggregated estimation of potential output on the basis of production theory

The potential output of an economy cannot be determined exactly. The uncertainty is increased further if the estimation – as in the present case – relates to a period of adjustment to a setting of broadened economic flexibility, in particular to new labour market structures, which has not yet been completed. The effectiveness of the reform measures to make the labour market more flexible can be assessed only provisionally at present, especially as no reliable findings concerning the sustainability of the effects are available.

Potential output estimations surrounded by uncertainty

In economic analysis, numerous measures and procedures are applied in order to estimate the potential output of an economy.⁶ Technically speaking, it is obtained by extracting the trend component from real gross domestic product (GDP). Against this background, it seems self-evident to use statistical

Diversity of approaches to estimating potential output growth

⁶ See Deutsche Bundesbank, The development of production potential in Germany, Monthly Report, March 2003, pp 41-52.

filtering techniques that generally adjust the time series for those (stylised) fluctuations which, owing to their frequency, are generally to be ascribed to the business cycle, the seasonal pattern or an irregular component. In contrast to these purely statistical techniques, methods based on production theory are applied as an alternative. At their core is the theoretical construct of an aggregated production function with several input factors. Even though this approach can, in practice, hardly work without smoothing the basic series needed, it is to be seen as an advantage that the potential output can be traced back to major economic determinants. This property is especially important in the present context, as the direct effects of the structural reforms can be integrated into the estimation of the potential output through the trend component of hours worked. Furthermore, the interactions between labour, on the one hand, and productivity and fixed capital formation, on the other, can – at least in part – also be considered.

Disaggregated approach

In general, however, the foundation in production theory does not fit every economic sector equally. From a conceptual point of view, it is fundamentally appropriate for the sector of market-oriented production enterprises. In the case of public and private service providers, however, the necessary preconditions for a production function approach are effectively not met because this sector is predominantly characterised by non-market production, which is statistically measured by input developments to a large extent. In addition, real estate and healthcare are treated separately in the analysis owing to

Shares of selected economic sectors in nominal GDP in 2006

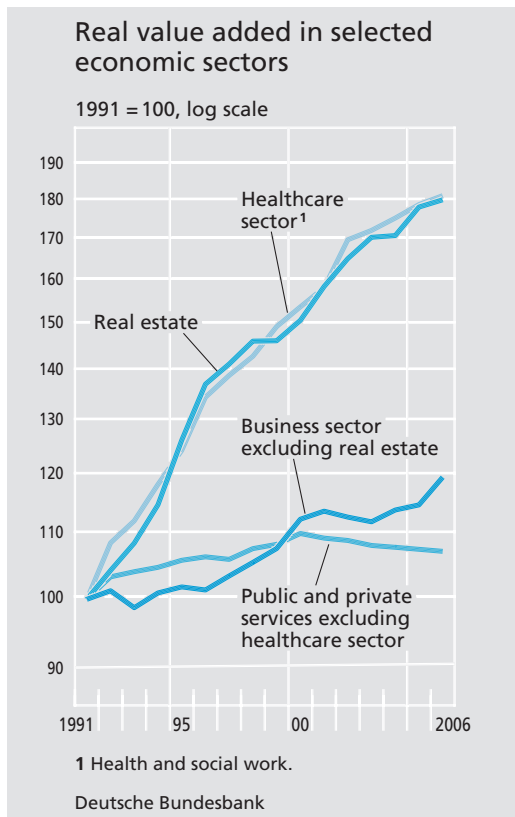
Economic sector	Gross value added in € bn	Percentage shares of gross domestic product
Agriculture, hunting, forestry and fishing	17.84	0.8
Business sector	1,608.38	69.3
<i>of which</i>		
Manufacturing	474.31	20.4
Real estate	250.04	10.8
Public and private services	468.00	20.2
<i>of which</i>		
Public administration and defence, compulsory social security	120.68	5.2
Education	92.95	4.0
Health and social work	149.49	6.4
Other public and private services	97.94	4.2
Household services	6.94	0.3
All economic sectors	2,094.22	90.2
<i>Memo item</i>		
Net taxes on products	227.98	9.8
Gross domestic product	2,322.20	100

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the specific properties of the economic development of each subcomponent as compared with the respective main sector.

At the centre of the disaggregated approach to potential output estimation is the business sector excluding real estate, which comprises the production sector, trade, transportation and communication, hotels and restaurants as well as commercial service providers (accordingly, excluding real estate), and which produces about two-thirds of the German economy's output (valued at basic prices). Using simplified assumptions regarding the factor substitutability, the output of this core segment is generated by the two primary factors of production, which are labour and capital, with the production function showing constant returns to scale and auto-

Business sector excluding real estate



nomous technological progress being permitted through total factor productivity (TFP). Labour services are measured by the sector's amount of hours worked, while capital services are approximated by the sector's capital stock (excluding residential buildings). The potential output growth of the business sector (excluding real estate) is obtained by smoothing the rates of change of the factors of production as well as TFP and linking them via Solow's growth accounting equation. For an estimation of the medium to long-term growth prospects, perfect competition in the goods and factor markets is assumed, making it possible to use the sectoral labour income share as a weighting factor for determining the growth contributions.

In the branches of the business sector under consideration, fixed capital formation has picked up perceptibly over the past three years in the wake of the renewed strong demand for machinery and equipment as well as for commercial buildings, with the latter showing something of a time lag. In purely arithmetical terms, the contribution of the business sector's capital stock to the total-economy potential output growth may amount to, on average, just over $\frac{1}{4}$ percentage point in this and the coming year, which is a noticeable increase compared with the first half of the decade. According to the estimate, the TFP contribution will go down somewhat from the relatively high level of the preceding year. The dampening effect of the labour input which has persisted for several years seems to be fading away at the current juncture. Given the steadily negative contributions, which have been lowering potential output growth by up to $\frac{1}{4}$ percentage point annually since 1991, this finding is something conspicuously new in the economic development of Germany as a whole.

The production of the real estate sector, which yields just over one-tenth of GDP, is modelled by means of a fixed-proportions production function, with the stock of dwellings serving as the determining factor of production. The long-lasting adjustment crisis, which corrected the exaggerations in housing construction in the aftermath of German reunification, as well as the unfavourable demographic outlook have left visible marks of a slowdown in the capital accumulation of this sector. Not least owing to the typically long service life of residential buildings, this

Real estate

will limit the growth outlook of the real estate sector in the longer term.

*Public and
private services*

In the area of public and private services, which contribute just over one-fifth to German GDP, the assumption of a traditional production function is conceptionally unsuitable for the reasons cited. Nevertheless, the value added generated by public and private service providers is generally likely to be subject to both permanent and temporary influences. Besides its intensity, however, the transitory component of this sector differs from the cycles in the business sector mainly in that it reflects politically initiated or controlled adjustment processes rather than market-driven cyclical movements. According to the structure of the national accounts, the economic sector of public and private service providers – apart from quantitatively subordinate household services – comprises four sub-segments, whose shares of value added are similar in size.

Healthcare

Owing to its growth dynamics, healthcare assumes a special position and is therefore dealt with separately in the estimation of potential output. Until 2003, this subsector was expanding very sharply, which – leaving aside economic policy mismanagement – is generally linked to the fact that, first, demand for healthcare services increases more than proportionately with rising income and, second, advances in medical technology also promote a relatively strong growth in services in this area from the supply side. The healthcare reform, which entered into force on 1 January 2004, dampened the steep trend with a view to curbing the cost explosion in the social

security systems; however, this should not place in doubt the intrinsic dynamics of this typical growth market in the longer term. Given the demographic outlook, the demand for healthcare products is more likely to grow in importance, and medical and pharmaceutical progress remains desirable.⁷

In the estimation procedure, the growth possibilities of the healthcare sector are set at the trend rate of the business sector plus a mark-up rate which takes account of the fact that demand for healthcare services tends to increase more than proportionately with rising income. At roughly 1 percentage point, the mark-up is comparatively low in this and the following year. The supply of public and private services excluding healthcare is approximated by the developments in employment in these sectors. The constraints of budget consolidation have had to be taken into account regarding the trend in public spending in recent years. Among private service providers, flexibility measures in the area of services to households are having a positive impact, but these are quantitatively of minor significance relative to the macroeconomic issue in question.

Finally, account has to be taken of a residual component, which makes up roughly one-tenth of GDP (at market prices). This component contains economic sectors such as agriculture, hunting, forestry and fishing, which are not modelled separately owing to their minor quantitative importance for the

*Residual
component*

⁷ Ultimately, the healthcare reform was about the financial situation of the statutory health insurance institutions and about ensuring an efficient provision of services.

German economy. For the greatest part, the residual component captures the net taxes on products,⁸ which, in arithmetical terms, form a wedge between the sum of the gross value added of all the economic sectors at basic prices and GDP at market prices.⁹

Estimation results and interpretation

Estimation results

According to the estimates, the potential output of the whole economy is likely to expand this year and in the coming year by about 1½% to 1¾% respectively, compared with potential output growth of no more than around 1¼% to 1½% annually between 2003 and 2006. At the current juncture, it is thus tending to move back towards rates that characterised the German growth trend in the second half of the 1990s. The improvement should thus also be seen as part of a return to normal. While, at the start of this decade, the market-based sectors as well as public and private services contributed to the flattening of the trend path of output, the current strengthening of potential output growth stems primarily from the business sector. Real estate is showing an exceptional development with a continuing decrease in contributions to potential output growth. On the whole, the public and private services sector is providing no new impulses for the aggregate supply.

Direct and indirect effects of the labour market reforms

In order to estimate the direct effect of the labour market reforms on potential output growth, the trend path of hours worked in the business sector was adjusted from 2003 onwards so that, despite the extremely strong

recovery characterising the actual development of this variable since 2006, no major elements of tension are signalled at the current juncture. In this and the coming year, this is undoubtedly a realistic assumption for the German labour market as a whole. The trend path without this “constraint” is considered in comparison, which, in the context of the potential output estimation, corresponds to the hypothetical case of a scenario without labour market reforms. With regard to the direct effect, it should also be taken into account that the more favourable trend in hours worked is likely to be accompanied by a weaker development in aggregate productivity. The sharp rise in the number of “mini-jobs” and “midi-jobs” mainly in 2003-04 and the ensuing rise in temporary work, which has been used mostly for jobs with a low and medium skills profile, allow the assumption that lower-skilled workers benefit to a considerable extent from greater flexibility in the labour market. Even if the TFP contribution therefore turns out to be somewhat weaker,¹⁰ the net effect on potential output should

⁸ In the national accounts, taxes on products are production and import taxes that are payable per unit of a good or service produced or transacted (for example, sales tax, insurance tax, real property transfer tax). The subsidies payable per unit of a good or service produced or transacted are deducted from this.

⁹ In terms of production theory, the net taxes on products should not be able to have an effect on the potential output of an economy. The value added by all the economic sectors at basic prices would thus be the suitable reference for measuring the production potential. In practice, however, the estimations of potential output are generally based on GDP at market prices, which means that, for reasons of comparability, an average contribution of the net taxes on products enters into the estimation of the growth potential.

¹⁰ These are changes to the average hourly productivity which are due to shifts in the employment structure. Productivity effects that are based on an adjustment of the capital deepening, on the other hand, do not come under this category.

Results of the disaggregated estimate of total-economy potential output

Year	Potential output growth ¹ (rounded)	Contributions to potential output growth ²							Residual component
		Business sector	of which				Public and private services	of which	
			Total factor productivity ³	Capital stock ³	Hours worked ³	Real estate			
1996	1.6	1.03	0.59	0.20	-0.26	0.50	0.32	0.18	0.22
1997	1.6	1.07	0.67	0.18	-0.27	0.49	0.28	0.19	0.23
1998	1.6	1.10	0.66	0.17	-0.20	0.47	0.31	0.20	0.23
1999	1.6	1.09	0.67	0.16	-0.16	0.42	0.33	0.20	0.23
2000	1.8	1.24	0.82	0.14	-0.11	0.39	0.36	0.21	0.22
2001	1.7	1.21	0.83	0.12	-0.13	0.39	0.31	0.21	0.22
2002	1.5	1.03	0.78	0.07	-0.21	0.39	0.30	0.23	0.20
2003	1.3	0.91	0.74	0.06	-0.27	0.38	0.23	0.21	0.19
2004	1.4	0.95	0.74	0.06	-0.19	0.34	0.23	0.21	0.17
2005	1.4	0.98	0.75	0.05	-0.16	0.34	0.24	0.20	0.17
2006	1.5	1.10	0.77	0.08	-0.06	0.31	0.22	0.20	0.17
2007 ⁴	1.6	1.21	0.65	0.23	0.06	0.27	0.22	0.18	0.16
2008 ⁴	1.6	1.26	0.62	0.30	0.09	0.25	0.22	0.18	0.16

¹ As a percentage. — ² In percentage points. — ³ Business sector excluding real estate. — ⁴ Projected.

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still be regarded as positive. The estimation of the indirect effect on potential output through fixed capital formation is based on the consideration that, in a growth equilibrium, the additional persons in employment are supplied with capital according to their labour efficiency and the optimal factor input combination, with adjustment measures of this kind typically being time-lagged and partial.

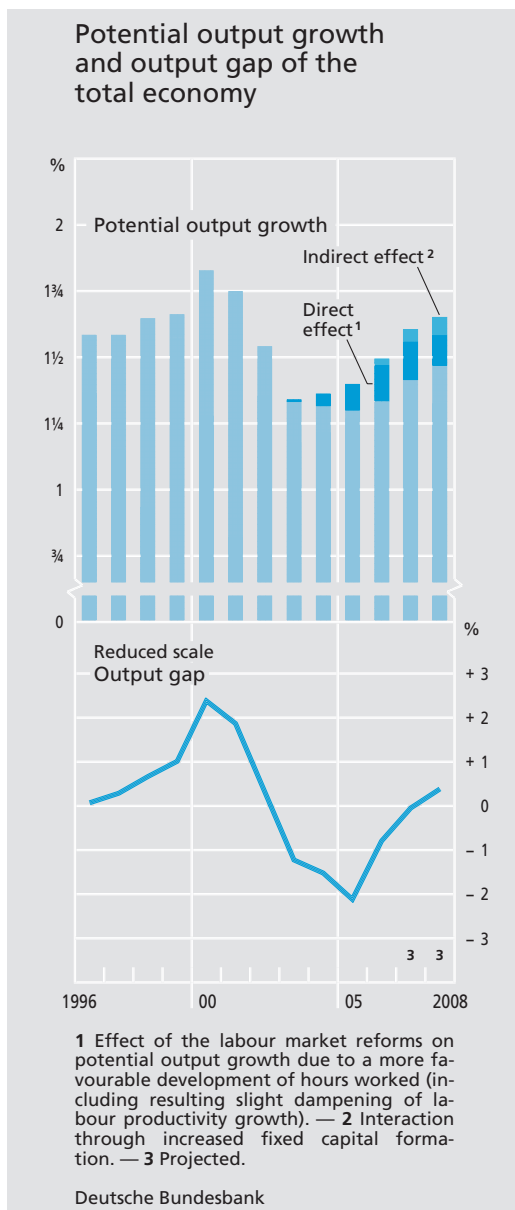
Owing to the direct and indirect effects of the labour market reforms, the potential output of the German economy is estimated to grow this year and in the coming year by just under $\frac{1}{5}$ percentage point more than in the hypothetical scenario without increased labour market flexibility. On account of the adjustment process towards an equilibrium with

low structural unemployment, potential output growth is currently showing annual rates above the $1\frac{1}{2}\%$ mark again. In this context, the indirect interactions via fixed capital formation are becoming increasingly important. In the period between 2004 and 2006, by contrast, the direct effect was most effective and helped to stabilise potential output growth at annual rates of between $1\frac{1}{4}\%$ and $1\frac{1}{2}\%$.

In spite of the strengthening of the supply-side forces of growth, the dynamic upturn, which is currently characterising the German economy, is mainly of a cyclical nature. The output gap, which was still above 2% of production capacity in 2005, was reduced by over 1 percentage point last year. The decline has continued so far this year. All in all, the

Quantitative assessment of the effects on the growth potential

Output gap



German economy is likely to be within the corridor of normal utilisation at present, although – from a sectoral point of view – there are still discernable substantial differences in the degree of capacity utilisation. In view of the cyclical position that has now been reached, there is still a good outlook for the upswing. This is all the more the case as the medium-term growth prospects have also brightened owing to the fact that the trend is

more favourable again. This should be especially helpful for the development of private propensity to consume, which has been subdued for a number of years.

Following the weakening during the lengthy period of stagnation there are now clear signs of a regeneration of potential output growth in Germany. This is revealed not only by a higher trend rate. It is just as noteworthy that the medium-term path of economic activity has also improved in quality, meaning that the strengthening of the growth process is stemming from the business sector by means of an increased level of fixed capital formation and structurally higher labour input. By contrast, the need for adjustment in real estate has still had a dampening effect. Added to this were the consolidation and restructuring requirements in the government sector, which, in turn, nevertheless constituted a major precondition for structural improvements in the business sector.

Preliminary conclusion positive

The documented procyclical reaction of potential output is not the outcome of purely statistical filtering techniques, which, by construction, regularly produce such results at the end of the sample. Rather, it can be explained economically by the reduction of structural shortcomings in the labour market. Seen in this light, the labour market reforms implemented since 2003 have been a major step in the right direction. As a necessary supplement, it has bolstered wage policy which has geared more strongly towards raising employment and improving the attractiveness of domestic production sites. In their current stage, however, these reforms are not suffi-

Continue reform policy

cient to exploit fully the opportunities that, in principle, exist in the German economy in terms of potential output growth. A trend rate of 2% annually, which should by no means be regarded as too ambitious in the medium term, is currently not in sight despite a positive development in actual output. This requires staying power in reform policy. An extended pause in reform or even a watering-down of the measures already implemented

would again jeopardise the ground strenuously regained by the German economy. In particular, the fundamental character of unemployment insurance as risk insurance should be retained and the incentives for taking up employment should be further strengthened. The current upswing clearly shows the employment-promoting effect of the reform measures undertaken in the labour market over the past few years.