January 2006
IMF Country Report No. 06/17

Germany: Selected Issues

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International Monetary Fund
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INTERNATIONAL MONETARY FUND

GERMANY

Selected Issues

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Approved by the European Department

October 12, 2005

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I. Long-Run Growth in Germany[1]

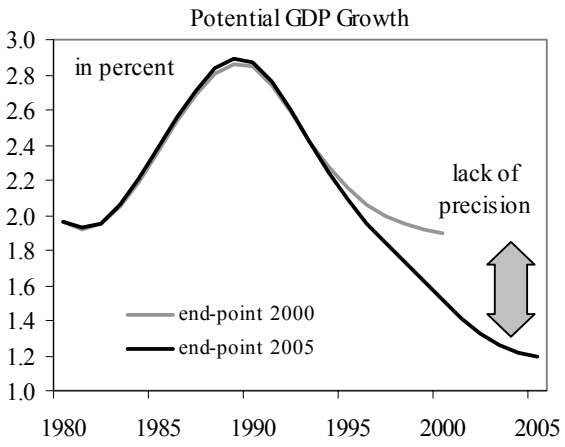
1. **Potential or trend GDP is crucial for short-term economic analysis.** The size of the output gap and possible inflationary consequences depend critically on the level of potential GDP. Equally important, potential GDP and its components determine the level of the structural fiscal balance and hence the assessment of fiscal policies.

2. **However, potential GDP analysis is sensitive to estimation errors in the present and near future.** The reason for this is the so-called "end-point problem" of smoothing methods such as the HP filter. Calculating potential GDP invariably involves some smoothing of time series, either of total factor productivity (TFP), labor and capital input, or GDP itself. Since the HP filter assigns greater weight to more recent observations, their quality determines to a large extent the quality of the HP trend estimate. Recent observations are prone to revisions, and projections of the immediate future may be ad-hoc or in turn depend on estimates of potential GDP, creating circular logic. Thus, conventional estimates of potential GDP are least reliable in present years, where they would matter most.

3. **This paper attempts to get around the end-point problem and improve the quality of potential GDP estimates for Germany.** It uses demographic projections to push out the end-point problem to 2050, where it matters less for present analysis. Demographic variables move slower and in a more predictable way than economic ones, making them a convenient anchor of the projections. A simple yet analytically rigorous production function model is then used to calculate GDP, taking demography and productivity as the main exogenous variables. The note presents the main ideas in a mostly visual fashion.

A. Main Quantitative Results

4. **Potential GDP growth is declining faster than anticipated, mainly because of slowing labor input.** Potential growth is now estimated to be around 1¼ percent a year, rather than 1¾ percent in previous calculations. This new "benchmark" may still be optimistic because the model does not include a feedback from taxes to labor supply. As aging pushes payroll taxes up, labor input and growth may be reduced further, absent other policy changes.



5. **Potential growth is projected to slow further to only 1 percent over the coming two decades, as aging shrinks the labor force.** The table below details the results of the calculations, and shows

[1] Prepared by Benedikt Braumann.

that total hours worked decline most strongly in the 2020s. As a result, returns on investment decline as well, and capital accumulation slows down. However, the picture is better in per-capita terms, as productivity is assumed to hold up well.

Table 1. Germany: Potential Output Growth 1/

	1970-79	1980-89	1990-99	2000-09	2010-19	2020-29	2030-39	2040-49
Real GDP	**2.4**	**2.3**	**2.2**	**1.4**	**1.3**	**1.0**	**1.1**	**1.1**
Total factor productivity	**2.1**	**1.0**	**1.6**	**0.9**	**1.0**	**1.0**	**1.0**	**1.0**
Total hours worked	**-1.0**	**-0.1**	**-0.2**	**-0.2**	**-0.5**	**-1.0**	**-0.5**	**-0.6**
Working age population	-0.3	1.0	0.4	-0.1	-0.2	-0.8	-0.7	-0.5
Participation rate	0.2	-0.2	0.1	0.5	-0.1	0.0	0.2	-0.1
Employment rate	-0.2	-0.3	-0.3	-0.1	0.0	0.0	0.0	0.0
Hours per employee	-1.2	-1.0	-0.7	-0.3	-0.2	-0.1	0.0	0.0
Capital stock	**3.9**	**2.2**	**2.1**	**1.4**	**1.5**	**1.3**	**1.2**	**1.2**
Memorandum:								
Capital share of income	0.36	0.37	0.39	0.40	0.40	0.40	0.40	0.40
Population, e.o.p.	78,299	78,617	82,087	83,049	82,903	81,444	78,844	75,493
Per capita real GDP, ave. annual change	2.3	2.3	1.8	1.3	1.3	1.1	1.4	1.5

Source: IMF staff calculations.
1/ Arithmetic average growth rates

B. The Method in Brief

6. **The calculation uses a neoclassical growth model with an endogenous capital stock response.** This is a general equilibrium framework, the appropriate setting for analyzing long-term growth. In particular, we use a calibrated Solow model, which is probably the simplest general equilibrium structure. The main relations are the production function,

$$(1) \qquad Y_t = A_t K_t^{\alpha} N_t^{1-\alpha}$$

the savings-investment relation,

$$(2) \qquad I_t = S_t = sY_t$$

and the capital accumulation equation

$$(3) \qquad K_{t+1} = (1-\delta)\, K_t + I_t\,.$$

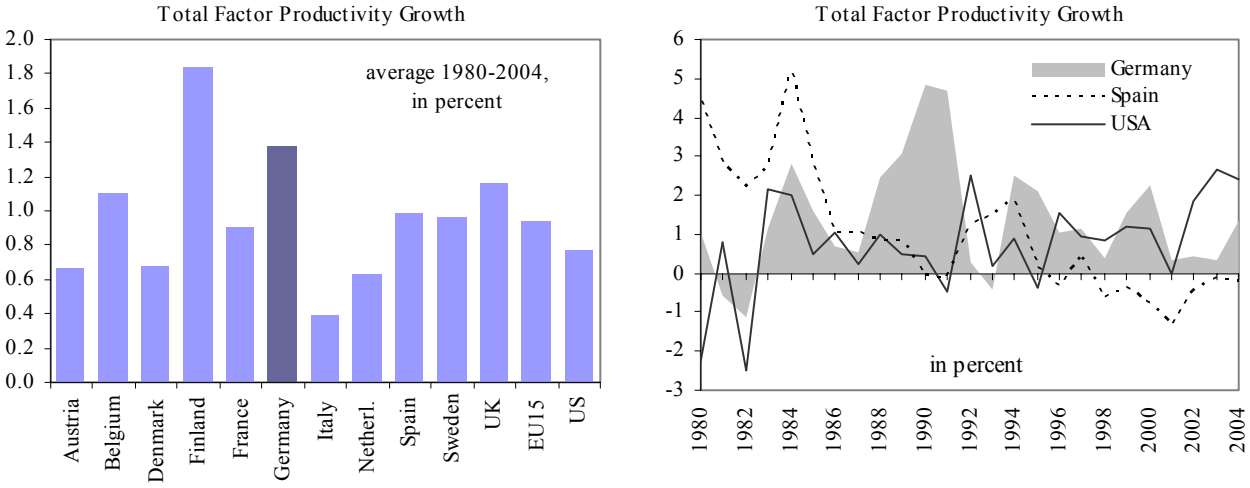
7. Two exogenous variables and six parameters have to be determined outside the model: (1) labor input N_t, (2) total factor productivity A_t, (3) the savings/investment rate s, (4) the capital income share α, (5) the participation rate, (6) the unemployment rate, (7) average

hours worked, and (8) the depreciation rate δ. Endogenously determined variables are output Y_t, the level of investment I_t, and the capital stock K_t. The sections below explain in detail how these parameters are determined from past observations and demographic projections. Given the numerical values of the parameters and exogenous variables, potential GDP is calculated as follows:

- In a first step, past and future input factors are calculated: TFP, labor and capital.
- In a second step, a raw GDP series Y_t is calculated by applying the production function to the input factors. Since capital accumulation is endogenous and investment derives from calculated GDP, there is a feedback loop to step (1). The recursive nature of equation (3) ensures that the model does not become circular.
- Finally, a HP filter is passed through Y_t to obtain a smooth potential GDP path.

8. **Clearly, the assumptions of this model contain strong simplifications.** Total factor productivity and labor input may not be completely exogenous. Labor input in particular depends on the incentives provided by payroll taxes and labor market institutions such as unemployment benefits and collective wage bargaining. Also, the elasticity of substitution between capital and labor may differ from one, as postulated by the model. Nevertheless, the Solow model has worked quite well for an analysis of growth in industrialized countries in the past, and may be a robust benchmark for potential GDP projections.

C. Total Factor Productivity (TFP)



Source: Timmer, Ypma and van Ark (2003), updated June 2005

9. TFP cannot be observed directly and has to be estimated. This is done by subtracting historical labor and capital inputs from GDP. The resulting time series is the so-called Solow residual, which shows a cyclical pattern, and reached a peak during German unification. The average growth rate of TFP over the past 35 years was about 1½ percent per year, but this has declined to below 1 percent in the present decade.

10. **Going forward, we assume TFP growth to be at 1 percent per year, in line with the average for the EU15 and the U.S. for the past three decades.** Projecting productivity growth is fraught with uncertainties. A modest improvement is possible due to the implementation of new information technologies, as witnessed e.g. in the United States. However, this may be offset by the effects of an aging labor force.[2] An older labor force may be less innovative and prefer stability over risk taking: new business startups tend to be undertaken by individuals under 40 years of age. Also, the structure of demand changes further from manufacturing to services as a country ages, including health and long-term care. Productivity gains in services may be more limited than in manufacturing, so overall TFP increases could suffer. On the other hand, the work experience of older people may lead to a more efficient use of existing technology and to fewer investment failures.

11. **Finally, there may be trade-offs between productivity gains and higher labor force participation, as the example of Spain shows.** When the country lowered its unemployment rate from 24 percent in the early 1990s to less than 10 percent at present, it added mostly jobs at the lower end of the pay scale and TFP growth turned negative. In the absence of strong indications in either direction, we assume a conservative increase of productivity growth from the recently observed rate of 0.8 percent to 1 percent a year. This corresponds to the average TFP growth in the EU15 and the U.S. since 1980, as estimated by Timmer and others (2003), in work done by the Groningen Growth and Development Center.

D. Labor Input

12. **The variable used for labor input is total hours worked, which is the product of four factors:**

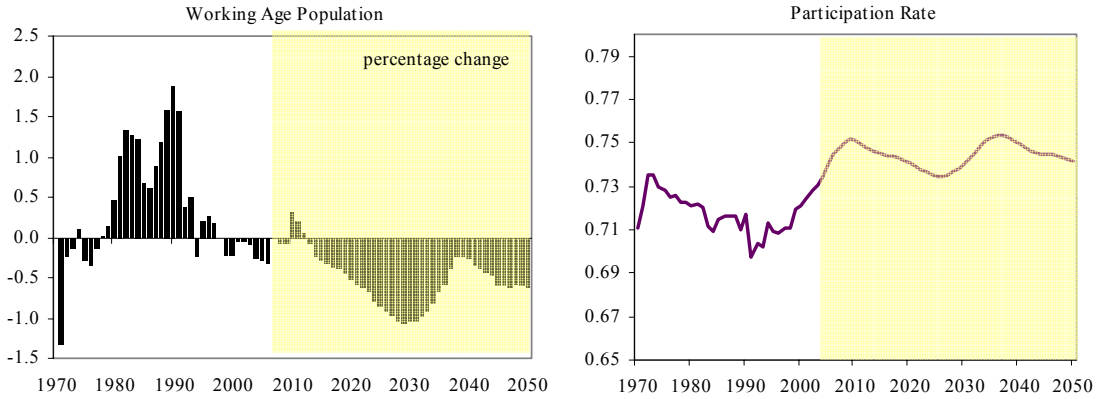
Total hours worked	=	*Working-age population*	*X*
		Participation rate	*X*
		Employment rate	*X*
		Average hours worked.	

13. **Germany has reached a demographic peak, and its population will start to decline within the next 10 years.** Simple extrapolations from the past are thus inappropriate to derive future labor input. The most recent demographic projection from the Federal Statistical Office (2003) predicts in a "central scenario 5," that the working-age population will decline by over 20 percent until 2050. This comes despite a steady stream of immigration assumed at 200,000 people per year.

14. **The participation rate is assumed to increase somewhat as more women enter the labor force.** This variable translates working-age population into the labor force. An IFO projection assumes that the effect of women offsets weaker demographics for the coming few years. After 2010, however, no further contribution from participation is

[2] See Faruquee (2002) for a discussion of age-earning profiles.

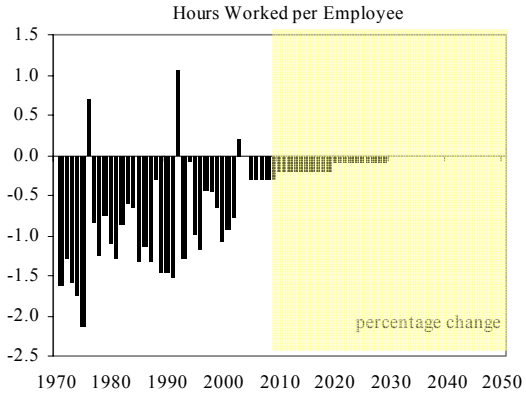
projected. Fluctuations are then purely mechanic, driven by changes in the age composition of the population.

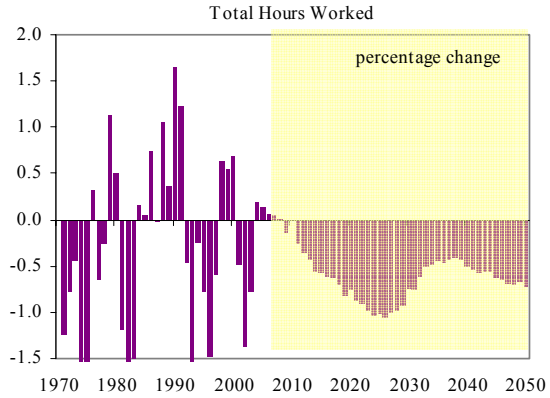


15. **The equilibrium unemployment rate (or NAIRU) is assumed to decline to around 8 percent.** This is a more conservative assumption than IFO (2005), which sees unemployment falling to 3.3 percent over the medium term (as mentioned in section 7). In this paper, we project a baseline model with unchanged policies and argue that unemployment would behave as the past in the absence of further reforms. Over the past three decades, unemployment has been highly persistent in Germany, rising in recession, but failing to decline much in upswings. The last section explores the sensitivity of the results to falling unemployment, as assumed by IFO. While potential growth might be higher, productivity growth could temporarily suffer as in the case of Spain over the past 10 years.

16. **Average hours worked have declined steadily since 1970.** Some of it was due to shorter workweeks, but increasingly part-time jobs also played a role. Part-time work will continue expanding in the near future, in particular if more women enter the labor force. However, the shortening of the workweek may have reached a limit, and is even reversing to a small extent. For projections, we assume that average hours worked will continue to taper off until 2030 and then stay constant.

17. **Total hours worked will decline rapidly after 2010.** They are the final labor input in the production function, being the product of the four factors discussed above. After a stagnation during the present decade, total hours start declining after 2010. The decline accelerates during the 2020s, when demographic transition will be in full swing, and slows somewhat thereafter. However, from here to 2050, labor input will diminish potential GDP growth. The feedback through capital accumulation only reinforces this effect.



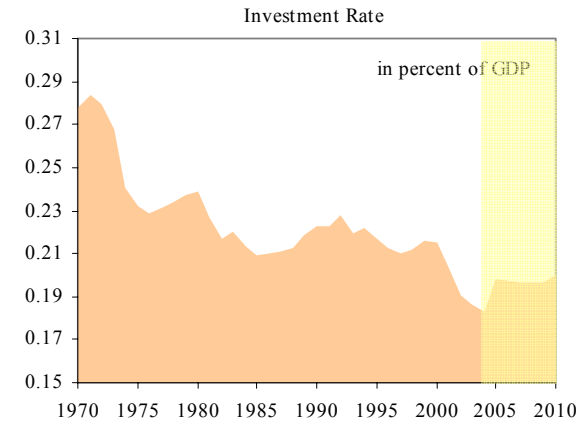


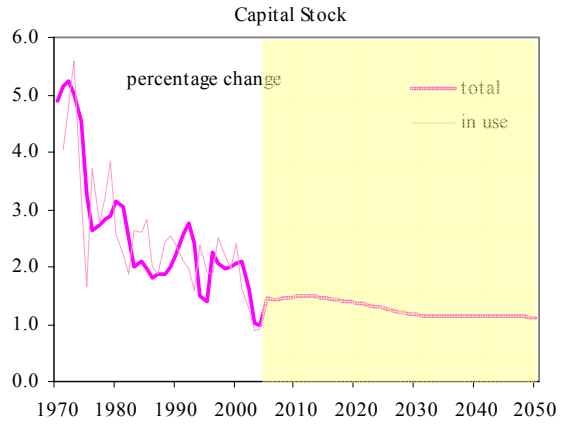
E. Capital Input

18. **The production input of capital is the capital stock in use:**

Capital input = Capital stock X Utilization rate

The future capital stock is calculated according to equation (3), also called the "perpetual inventory method." The capital stock of the following period obtains from the present capital stock by adding investment and subtracting depreciation.





19. **The model assumes a recovery of the investment rate to around 20 percent of real GDP.** To simplify, the German economy is assumed to have a balanced current account, with savings equal to investment. A constant investment rate, as assumed in the Solow model, also obtains in more complex intertemporal models, provided that preferences are logarithmic[3]. On trend, however, the German investment rate has been declining over the

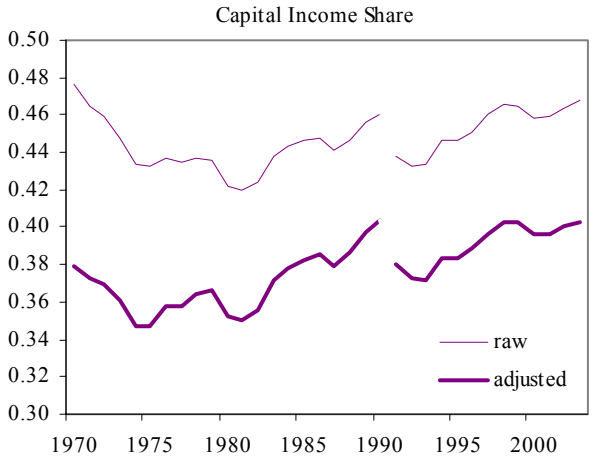
[3] See e.g., Barro and Sala-i-Martin (2003).

past three decades, as discussed in Brunner (2004). Values have been particularly low in years of stagnation such as the past ones. Going forward, it is assumed that the investment rate recovers somewhat and settles at around 20 percent of GDP. The constant investment rate links the capital stock to past GDP. Capital formation is thus endogenized, and as GDP growth slows, capital accumulation slows as well. Over time, output and capital tend to move together, limiting fluctuations in the real interest rate.

20. **The calculation assumes that the depreciation rate and capital utilization remain constant at their post-unification average.** Data show that the rate of depreciation has been fairly constant at around 5 percent of the capital stock since unification. This number is used for the projections as well. Capacity utilization in industry fluctuated over the business cycles, but has a strong tendency towards an average value. To include the service sector, capacity utilization in industry is scaled for the share of industry in GDP. All other sectors are assumed to have a capacity utilization of 1. In the projections, capacity utilization is assumed to increase slightly to 96.5 percent, as the economy approaches potential.

F. Capital Income Share

21. **The calculations assume a constant share of capital income in GDP (α) of around 40 percent.** This share is a crucial parameter of the production function, but it is hard to observe. "Capital income" in the national accounts includes the income of self-employed workers, which is mostly labor income. Thus, raw measures tend to overstated the capital income share. Gollin (2002) proposes to scale capital income by the share of the self-employed in total employment. The adjusted measure of the capital share is around 0.4 in Germany right now. It has been trending up since the late 1970s, with a downward break after unification. Blanchard (1998) observed this trend in a wider European context, but not in the US and Switzerland. He argues that it is mostly due to rising unemployment over this period. Since we assume a constant unemployment rate in our projections, keeping the capital share constant seems justified.

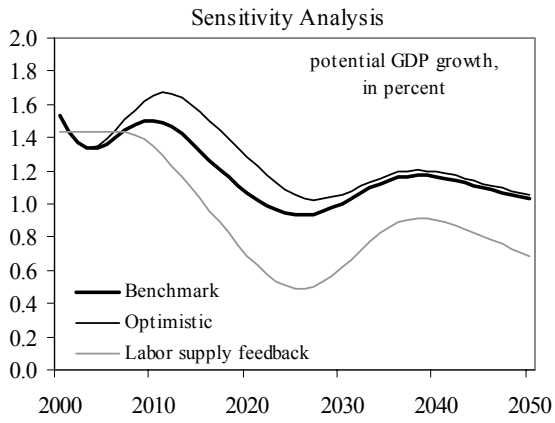


G. Alternative Models

22. **Labor market developments can be key to potential growth in the near future.** A recent study by Werding and Kaltschütz of IFO (2005) found a more benign slowdown in growth, particularly over the near future if a more optimistic assumption is used for unemployment. In the IFO model, the unemployment rate is assumed to decline to 3.3 percent over the coming 20 years, instead of keeping it at 8 percent as in this paper.

However, Werding and Kaltschütz admit that this is optimistic and depends on further decisive reforms. Also, there is no feedback from the capital stock and payroll taxes, which creates an upward bias to growth in the face of aging. They present a "risk scenario" with no decline in unemployment and growth rates very similar to ours. However, their model is still partial equilibrium and allows for no feedback from aging to either the capital stock or labor supply.

23. **A more complete general-equilibrium model is likely to yield even lower growth, because of the high fiscal costs of aging.** The model above abstracts from government finances and labor supply. The labor force is assumed to respond to demographic trends, but not to economic incentives. The government is not present in equations (1) – (3). While this is a useful starting point, public finances and the labor supply can interact with aging in a way that further slows GDP growth.



24. **This is particularly true if the costs of aging are financed by increasing payroll taxes, as in Germany.** The costs of aging could also be financed by higher public debt. Debt financing may temporarily postpone higher taxes, but will raise real interest rates over time as the risk of default increases. In the case of Germany, emerging imbalances in the social security finances have led to pressures to increase payroll taxes although there is no immediate legal mandate to do so. A section in last year's Selected Issues dealt with this outlook in depth (IMF country report No. 04/340, chapter III: Pensions and Growth). Higher taxes will deter labor supply and lead to a further reduction in GDP growth, possibly close to zero in the 2020s. It is thus likely that the GDP growth rates above are still optimistic.

H. Conclusions

25. **This chapter projects that Germany's potential GDP growth will slow over the coming decade, mainly because of declining labor input.** This result is based on demographic projections, current policies and a general-equilibrium macro model. Potential growth for the coming years is now estimated to be around 1¼ percent a year, slowing to only 1 percent after 2010, as aging shrinks the labor force. However, the picture is better in per-capita terms, as productivity is assumed to hold up reasonably well.

26. **Government policies can improve this outlook, in particular if they encourage labor utilization.** Growth rates could be boosted significantly during demographic transition if labor market reforms succeeded in bringing down Germany's high unemployment rate. Raising the effective retirement age would also have a high payoff for economic growth. Even total factor productivity should not be seen as being out of reach for public policies, as

recognized, for example, by the Lisbon Agenda. Indeed, past experience demonstrates that Germany is capable of significant productivity sprints, and this could well occur again in the future.

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II. GERMANY: A LONG-RUN FISCAL SCENARIO BASED ON CURRENT POLICIES[4]

A. Introduction

27. **A fiscal baseline scenario is a simulation of what might happen to the government fiscal balance and public debt if policies remain as they are today.** Such a scenario is useful because it offers insight whether the current set of policies would be sustainable under well-specified assumptions. If the long-run public finances appear unsustainable, the baseline scenario can help to provide direction to the adjustment that might be required to achieve sustainability.

28. **Constructing a baseline scenario is not an exact science.** Assumptions need to be made about future movements of important macroeconomic and fiscal variables. Moreover, in this paper, the underlying model is kept simple. This makes the exercise tractable, and focuses the discussion on the key assumptions and outcomes, but it does not treat at length complicated interactions that might exist within the economy and that over time may become important.[5] Nevertheless, even a straightforward exercise with some analytical rigor can be valuable to stimulate an informed discussion. As such, the estimates are not intended as predictors of the future. Rather, they serve to illustrate the potential scope of the deterioration in fundamentals that could occur unless corrective policy action is taken. An advantage of keeping the model tractable is that this makes the exercise accessible to a wider audience, which helps foster a better appreciation why adjustment policies are necessary.

29. **This paper is organized as follows:** section B first presents the assumptions about baseline indicators and some details used to construct the model, and then presents the results for the baseline scenario. This is then compared with an optimistic scenario in Section C. Section D provides some comparisons of this analysis with alternative long-run public finance scenarios prepared recently by the IFO Institute in Munich for the Federal Ministry of Finance (see Werding and Kaltschütz, 2005; and the Fiscal Sustainability Report 2005 prepared by the Federal Ministry of Finance). Section E concludes with some policy considerations.

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[4] Prepared by Bob Traa. I would like to thank Mrs. Velleuer at the Ministry of Finance, Mr. Werding and Ms. Kaltschütz at IFO, and seminar participants at the Bundesbank and Ministry of Finance for their helpful comments.

[5] For instance, the real interest rate on the debt is assumed to be constant in future years, even when the debt rises significantly. This is a simplifying but not a realistic assumption.

B. Main Assumptions and Results

Main baseline indicators and assumptions

30. **The main macroeconomic indicators and assumptions underlying this baseline scenario are depicted in Figure 1 and Table 1:**

- **Potential real GDP growth.** Germany is subject to aging and population decline over the next several decades.[6] This is a driving force behind gradually slowing output growth. The analysis in "Long-Run Growth in Germany" in this volume of selected issues papers suggests that potential real GDP growth is likely to slow from around 1 ¼ percent a year today to 1 percent a year in the next few decades (assuming that the unemployment rate will drop to the NAIRU of around 8 percent in the steady state). This implies a long-run *per capita potential output growth* of 1–1½ percent a year.

- **Output gap.** Current economic activity is below potential output, with the gap estimated at about 1 percent. Growth is assumed to rise above potential in the next few years so that the output gap is closed by the end of the decade. After it closes, the model assumes that actual output follows the path of potential output.

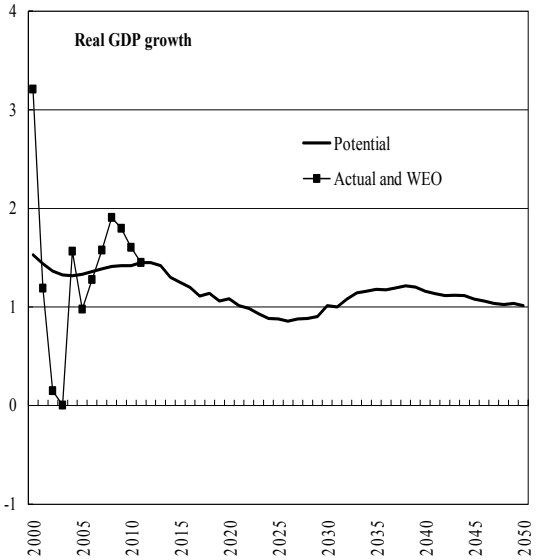
- **Inflation and nominal GDP growth.** German inflation has been below the European average. As the output gap closes, the scenario assumes that inflation in the GDP deflator will drift up to 1¾ percent a year. Combined with long-run potential real GDP growth, this implies that nominal GDP growth is seen to remain slightly below 3 percent a year in future. This rate is lower than in the past, and puts limits on public sector deficits that can be absorbed by the economy.

- **Interest rates.** With the recent slowing of activity and the rise in saving, *marginal* interest rates on newly placed debt have been falling. Indeed, the *average* implicit interest rate on the entire gross public debt has declined from 5.6 percent in 2000 to 4.7 percent in 2004. Similarly, the *average* implicit *real* interest rate on the debt (deflated by the implicit GDP deflator) also has fallen considerably. For the future, this baseline scenario assumes that the average real interest rate settles at 3.2 percent

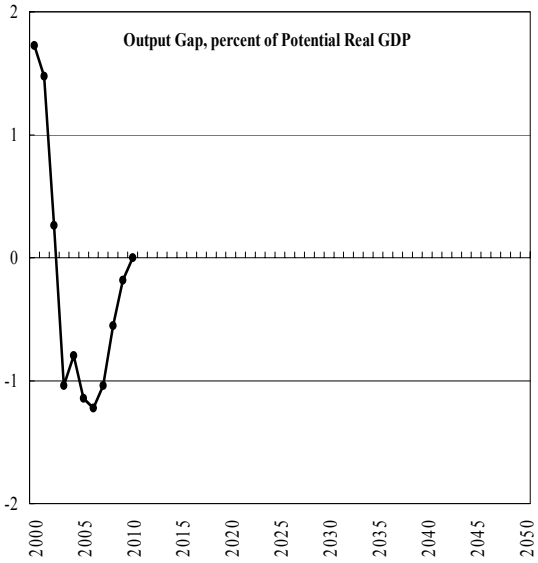
[6] The population projections used for the growth exercise are from the 2003 demographic forecasts prepared by the German Institute of Statistics—the middle scenario ("5"). It assumes an annual net immigration of 200,000 persons. The population is projected to drop from 83 million persons in 2005 to 75 million in 2050. Alternatively, the highest and the lowest population growth scenarios (with higher and lower fertility and immigration, respectively) result in projections of about 9 percent more or fewer persons (81 and 67 million, respectively) by 2050—the end of the projection period.

Figure 1. Germany: Macroeconomic Indicators and Assumptions for the Fiscal Baseline Scenario, 2000-50
(In percent)

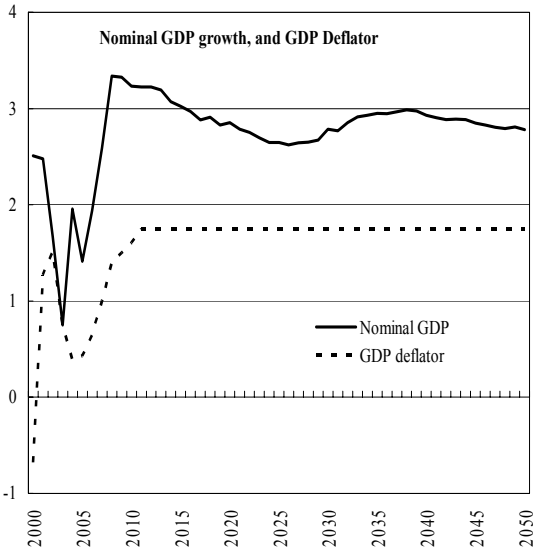
Potential output growth is projected to slow to around 1 percent a year...



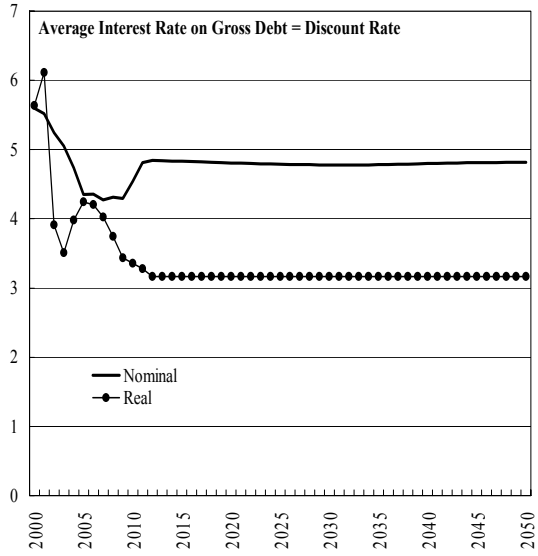
...and the output gap is assumed to close by 2010.



Nominal output growth is projected to stay below 3 percent a year, ...while inflation settles at 1.75 percent a year.



Average interest on the gross debt is just below 5 percent... ...or the equivalent of 3.2 percent in real terms.



Sources: Data provided by the authorities; and Fund staff calculations.

a year. This is higher than the real GDP long-run growth rate, and reflects Germany's integration in world capital markets.[7] The average nominal interest rate is then just below 5 percent.

31. Figure 2 shows two additional important assumptions in the baseline scenario:

- **Social security revenue.** The top left panel indicates that social security revenue has been falling lately in percent of GDP. This reflects the falling share of wage income in output—the wage bill is the base for social security revenues. We assume that the wage share in national income stops declining when the output gap closes in 2010, and that social security contribution rates are held constant.[8] The latter avoids negative effects on labor supply and helps to calculate the implicit liabilities obtained in the entitlement system. This implies that social security revenue will stabilize in relation to GDP.

- **Entitlement spending.** Aging will lead to increased spending on pensions, civil service retirement outlays, health care expenditure, and long-term care provisions. At the same time, expenditures on education and unemployment may fall as the fraction of young people in society declines and the rate of unemployment adjusts to the NAIRU when the output gap closes. Estimates of the total increase in entitlements are the key drivers behind long-run fiscal developments. Such estimates were first presented in the October 2002 Staff Report for the German Art. IV Consultation and they suggested that the entitlement pressures could add 6½ percent of GDP to primary fiscal expenditure by 2050. After the measures of Agenda 2010, this staff baseline assumes that about 4 percent of GDP of these long-run pressures remain, as summarized below in the text table in paragraph 41. The increase in spending is assumed to follow a path in proportion to the rise in the overall dependency ratio as shown in the top right panel of Figure 2.[9]

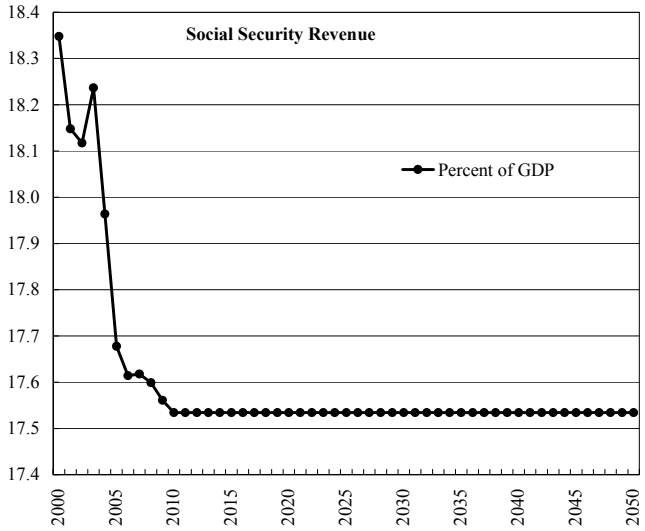
[7] Nevertheless, it abstracts from risk premia that are likely to emerge if debt swells to levels that are considered unsustainable.

[8] We return to this important assumption in paragraph 44 below.

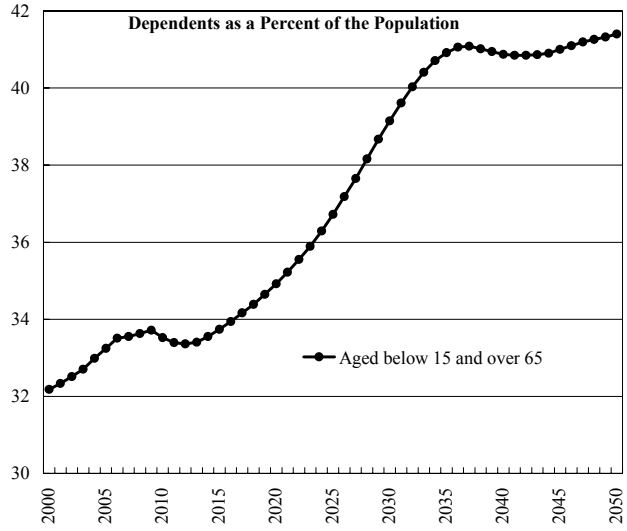
[9] The panel shows the *total* dependency ratio (including children below 15 and the elderly over 65 years of age) to allow both pension and education spending effects. The old-age dependency ratio (over 65 in relation to the working age population), rises even sharper and would be a better benchmark when analyzing pension pressures in isolation.

Figure 2. Germany: Public Finance Indicators for the Fiscal Baseline Scenario, 2000-50

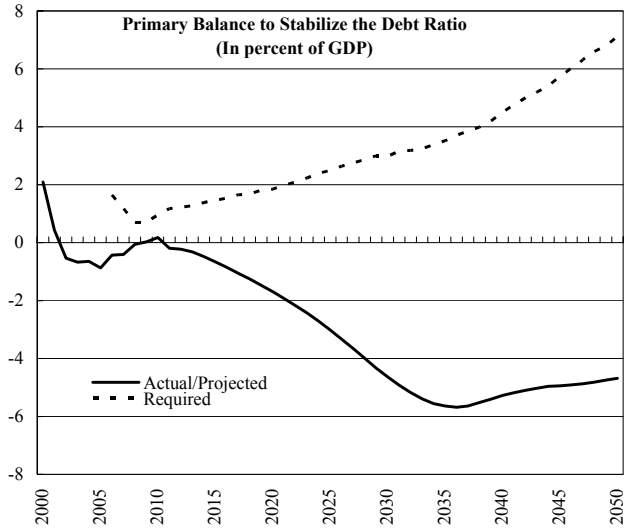
Wage income in relation to GDP is assumed to stabilize from 2010, and so would social security revenue, which is based on wages...



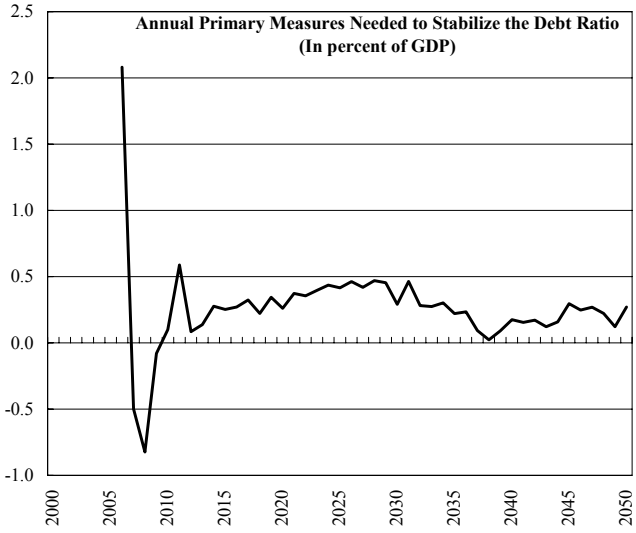
...but the rising dependency ratio will drive up social security outlays well into the 2030s.



Postponing adjustment is costly: it rapidly increases the gap between the projected and required primary balance to stabilize the debt ratio.



Instead, starting early and then maintaining a steady pace of annual cumulative adjustment looks more feasible: annual structural measures close to ½ percentage point of GDP would be enough.



Sources: Data provided by the authorities; and Fund staff calculations.

32. **The projections can now be completed with two final fiscal assumptions:**

- **Tax and nontax revenue**. The tax ratio has been falling in recent years, reflecting the policy of graduated cuts in income tax rates. The model includes a small further loss in income tax pressure in 2005, because of the last step in the income tax cuts, and the planned corporate income tax cut. Beyond that, the model assumes that revenue remains constant with any rate cuts being offset by base broadening.

- **Other primary expenditure.** The public sector wage bill, and spending on goods and services and capital are kept constant in percent of GDP for the long run.

Some preliminary results

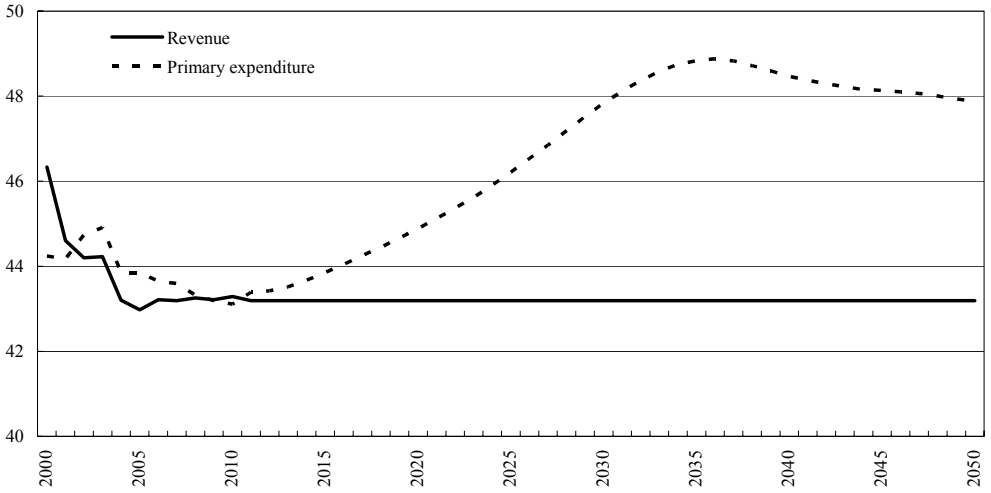
33. **Figure 3 summarizes the main results of the projections.** Recently, the primary fiscal balance has turned from a surplus of 2 percent in 2000 to a deficit of 0.6 percent of GDP in 2004. Looking ahead, primary expenditure will rise with demographic pressure through 2036, before starting to decline gradually after the main effects of aging have passed. The divergent trends between revenue and expenditure cause a sharp widening in the primary deficit to almost 6 percent of GDP in 2036, followed by a slow decline to below 5 percent by 2050 (middle panel).

34. **The bottom panel of Figure 3 suggests that current fiscal policies are unsustainable.**[10] With the deteriorating primary balances in the baseline projection, and a growing annual interest bill, the overall general government balance would register widening deficits and the debt ratio would steadily increase to above 350 percent of GDP by 2050. As the figure suggests, in the current decade, the increase in the debt/GDP ratio would seem relatively subdued. However, after 2010 the primary balances would start to deteriorate, and the interest bill on the growing debt stock would accelerate—the debt ratio would then begin to climb at a faster pace as well.

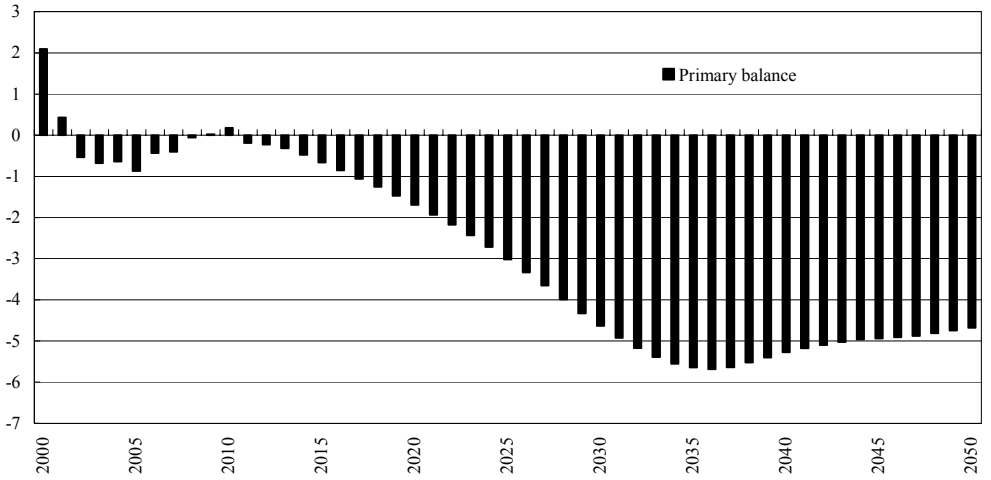
[10] Standard and Poor's recently published an analysis for the G-7 countries, including Germany, suggesting that the federal credit rating for long-dated bonds would likely be downgraded to junk status in the 2020s on the basis of rapidly rising debts if current policies were maintained over the long run. See Kraemer, Chambers, and Merino, 2005.

Figure 3. Germany: Revenue, Expenditure, and Primary Balance for Baseline Scenario, 2000-50
(In percent of GDP)

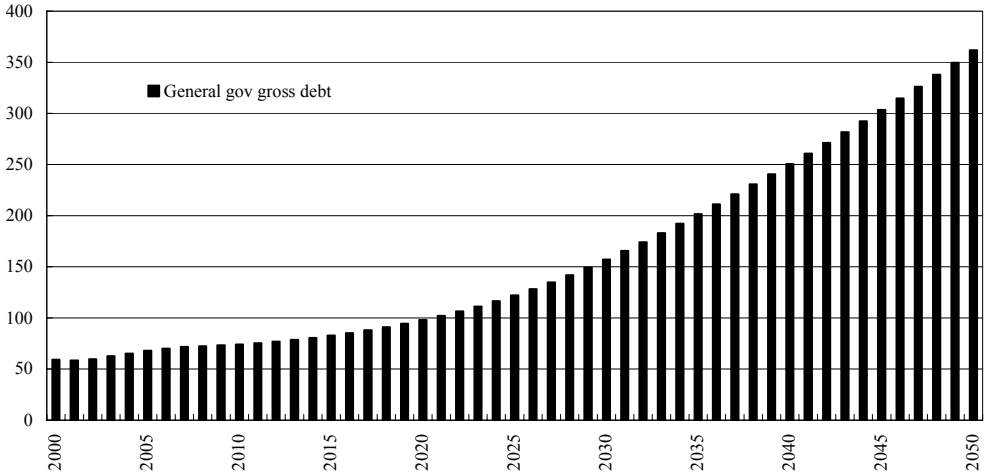
Expenditure cuts are following, not leading, income tax cuts...
...while aging is making its presence felt in entitlement outlays, peaking in the 2030s...



...as a result, the primary balance on current policies is projected to deteriorate sharply, even including the valuable Agenda 2010 measures...



...and the public gross debt will grow steadily, indicating intertemporal inconsistency.



Sources: Data provided by the authorities; and Fund staff calculations.

35. **The model allows to calculate what the primary balance would have to be in any given year to stabilize the debt ratio.**[11] This "required" set of primary surpluses is shown in the left bottom panel of Figure 2. For example, in 2006 the primary deficit is currently projected to be 0.4 percent of GDP (the solid line). The primary surplus required to stabilize the debt ratio would be 1.6 percent of GDP (the dashed line). Therefore, to step onto a path of fiscal sustainability at the debt ratio of end-2005 would require, in the 2006 budget, permanent fiscal adjustment measures of 2 percent of GDP. Since the gap between projected and "required" primary balances is widening in the future, postponing adjustment measures to close this "sustainability gap" leads to ever-larger measures that would be needed to stabilize the debt ratio from its level of end-2005.

36. **After an initial adjustment, additional but smaller adjustments would have to follow in subsequent years to keep the debt ratio stable.** Even if Germany were to take 2 percent of GDP in permanent measures in the 2006 budget, further entitlement spending growth in next years (driven by demographics) would lower again the primary surplus below its required level. Thus, rising entitlement spending would require further primary measures in each subsequent year to pay for them. The lower right hand panel in Figure 2 shows what these annual adjustments would have to be: they tend to fall within 0–½ percent of GDP a year. Those annual adjustments would exactly offset the cumulative spending pressures on the debt ratio as the effect of aging on the public finances evolves.

37. **The required cumulative adjustment appears substantial.** The gap between the "required" and projected primary balances in the lower left hand panel of Figure 2 suggests that Germany needs 11.8 percentage points of GDP in *cumulative* adjustment through 2050 to stabilize the debt ratio at its level of end 2005. Over 44 years, this is 0.3 percent of GDP a year on average. Fund advice for the next few years to aim for annual structural adjustments of ½ percent of GDP therefore remains sensible, as falling further behind on the adjustment path would be costly.

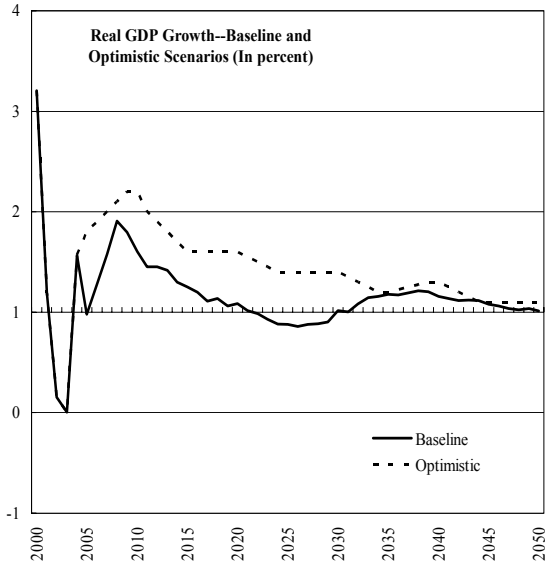
C. Assumptions and Results of an Optimistic Scenario

38. **Figures 4 and 5 show the assumptions and results of an optimistic scenario.** It differs from the baseline scenario in the following ways:

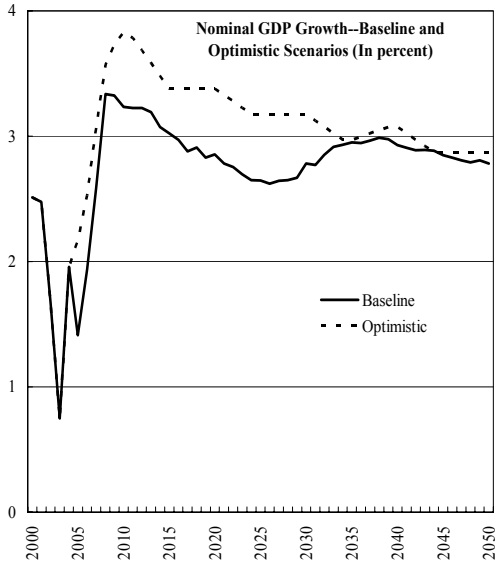
[11] From the equation indicating debt-ratio dynamics, $\partial d = d.*[i-y] - p$, where ∂d indicates the change in the debt ratio, d. is the debt ratio at the end of the previous period, i and y are the interest rate and GDP growth rates, and p is the primary surplus, one can calculate what p would need to be in any given year to stabilize the debt ratio, i.e., $\partial d = 0$. Since in Germany, the interest rate is projected to be higher than the growth rate in every future year (Figure 1), the authorities need a primary surplus of certain minimum magnitude to stabilize the debt ratio. *Any primary deficit* in any year would further increase the debt ratio.

Figure 4. Germany: Optimistic Scenario, 2000-50

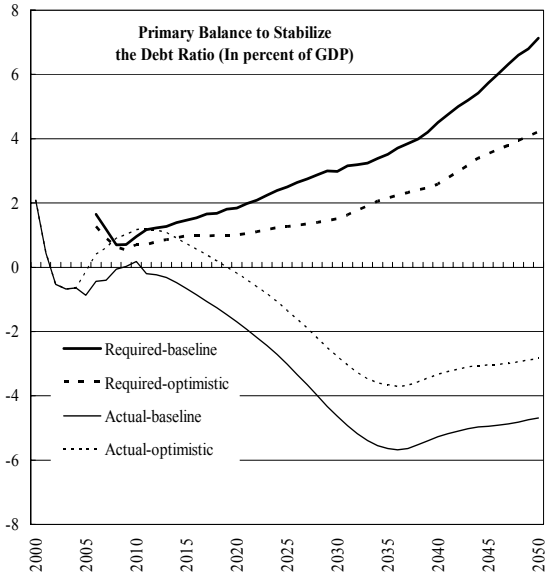
Unemployment dropping to 3.3 percent would lift output growth...



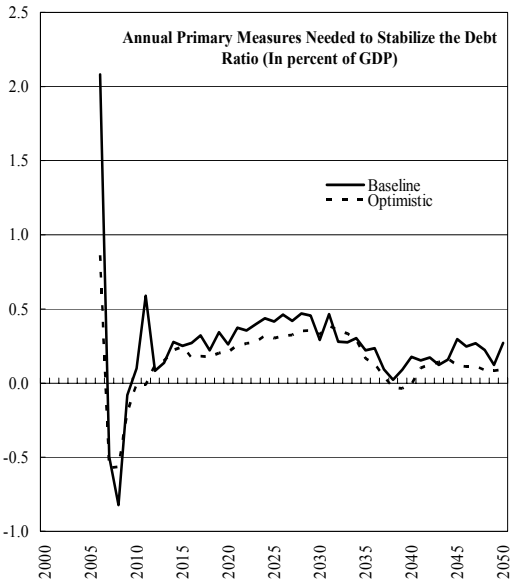
...increasing nominal GDP growth as well.



Higher growth and lower aging costs (2.6 percentage points in 2050) would improve the primary balance...



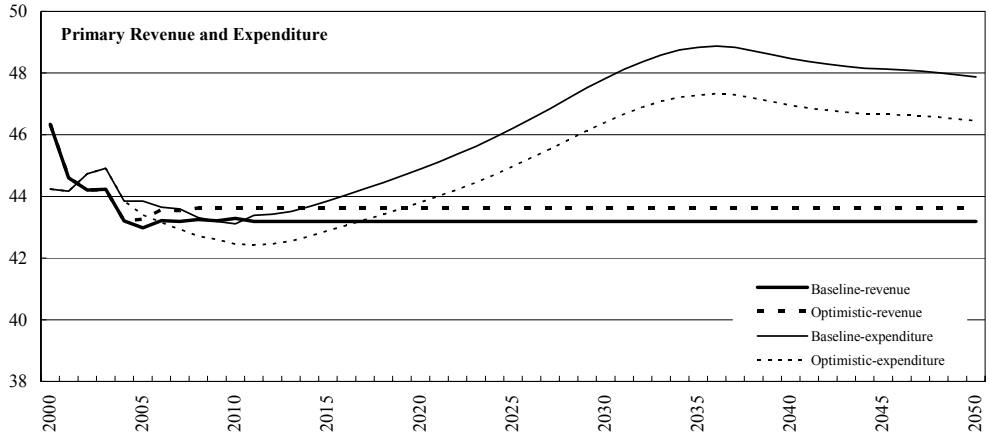
...and reduce the need for annual adjustment measures.



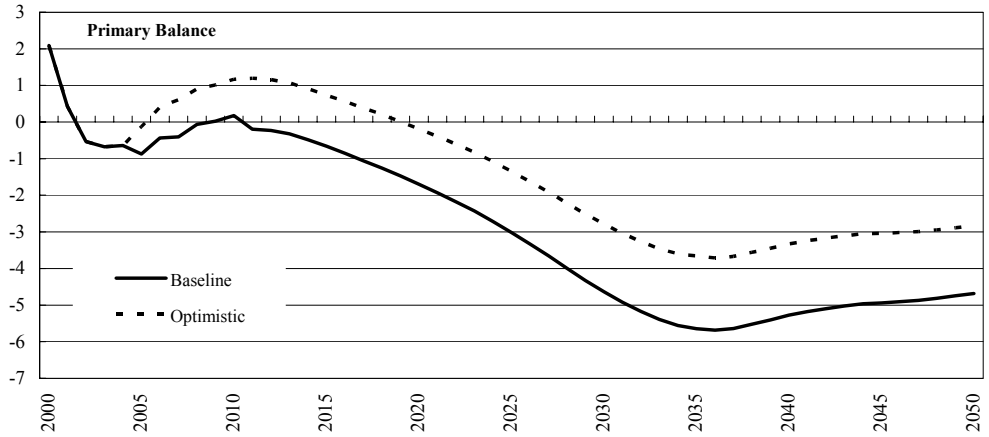
Source: IMF staff calculations.

Figure 5. Germany: Fiscal Projections under the Optimistic Scenario, 2000-50
(In percent of GDP)

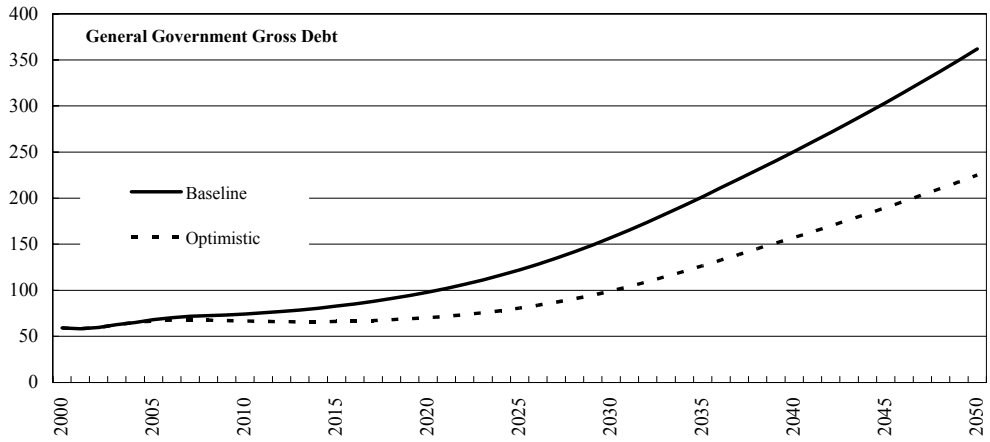
The optimistic scenario reflects lower unemployment insurance expenditure and higher social security receipts...



...resulting in a better primary deficit path...



...but still implying an unsustainable debt accumulation.



Source: IMF staff calculations.

- **Higher employment and lower unemployment.** Instead of a constant unemployment rate of 8 percent as in the baseline scenario, the optimistic scenario assumes a decline to 3.3 percent in the long run.[12]

- **Higher GDP growth.** As labor input increases, real GDP is higher than in the baseline scenario. The inflation projection is not altered.

- **Smaller increase in entitlement spending.** With lower unemployment, the outlays for unemployment insurance decline significantly (see comparison table in paragraph 41). As a result, the increase in total entitlement spending would now be limited to 2.6 percent of GDP by 2050, rather than 4.0 percent as in the baseline.

- **The projected and "required" primary deficits are now lower.** The cumulative fiscal adjustment required to stabilize the debt-GDP ratio is now 7 percentage points, rather than 11.8 percentage points in the baseline scenario. The bottom-right panel of Figure 4 shows that this corresponds to an average annual adjustment effort of 0.2 percent of GDP, compared with 0.3 percent in the baseline scenario.

39. **But even the optimistic scenario is still unsustainable.** As Figure 5 indicates, the fiscal balance would still deteriorate, and the debt ratio would increase steadily. However, the sharp acceleration in the debt-ratio would be delayed by about ten years.

D. Some Comparisons with Estimates Prepared by the IFO Institute and Presented in the Authorities' Long-Run Fiscal Sustainability Report

40. **A recent technical background study prepared by IFO for the authorities' fiscal sustainability report reaches similar conclusions as this paper:** even under more favorable scenarios, current fiscal policies need to be strengthened to avoid debt problems in future. We can briefly review the main differences in assumptions and results. Referring to the *baseline* scenarios presented by IFO and in this note, some key issues are:

- **Employment** grows faster in the IFO/official baseline. Indeed, the IFO assumes in its *baseline* scenario that the unemployment rate gradually declines to 3.3 percent of the labor force. Instead, this paper considers this assumption *optimistic* given current relative factor prices and structural rigidities in the labor markets.

[12] Germany's unemployment rate has been above 8 percent of the labor force for some 15 years, and the staff's 8 percent estimate for the NAIRU is shared by some labor specialists in Germany. To reduce the NAIRU to 3.3 percent, as is assumed in the Long-Run Fiscal Sustainability Report, would require further labor market liberalization and changes in relative prices of labor, especially for elderly workers and those with lower productivity.

Key Assumptions and Results for the Macroeconomic Framework for the Period 2005-50												
	IFO	IMF	IFO	IMF	IFO	IMF	IFO	IMF	IFO	IMF	IFO	IMF
	Population 1/		Employment 1/		Unemployment %		Real GDP Growth %		Labor Prod. 2/		Interest Rate 3/	
2005	82.9	82.9	38.3	38.6	8.4	9.2	1.8	1.1	1.45	0.64	3.5	4.1
2010	83.1	83.1	39.3	39.1	7.3	8.5	2.2	1.5	1.69	1.31	3.5	3.3
2020	82.8	82.8	39.1	37.6	6.3	8.4	1.6	1.1	1.74	1.76	3.5	3.2
2030	81.2	81.2	37.7	34.5	3.9	8.2	1.4	1.0	1.74	1.77	3.5	3.2
2040	78.5	78.5	36.1	32.8	3.3	8.0	1.3	1.2	1.75	1.67	3.5	3.2
2050	75.1	75.1	34.0	30.8	3.3	8.0	1.1	1.0	1.75	1.73	3.5	3.2

Sources: IFO; and Fund staff calculations.

1/ Millions of persons.
2/ Annual percent change in real GDP per employee.
3/ Percent, in real terms.

- **Real GDP growth** is faster in the IFO/official baseline—consistent with its different assumption on labor utilization.

- **Labor productivity** is comparable in the long run in both studies. The staff sees productivity growth evolving somewhat more gradually to its long run steady state of about 1¾ percent a year.

- **Real interest rates** are slightly higher in the IFO/official baseline (3.5 versus 3.2 percent, respectively).

- **The starting fiscal balances.** The IFO scenarios assume that the authorities will adhere through 2008 to the government's medium-term fiscal plan (*Mittelfristiger Finanzplan)*. However, the plan is off-track and this paper thus calculates its baseline from 2005 onward on current policies that suggest larger near-term deficits as compared with those included in the official plan.

41. **There are also some differences in the assumptions for pressures on entitlement expenditures in the two studies:**

- **Aging costs and unemployment in the baseline scenarios.** In its baseline scenario, the IFO study sees the subtotal costs of aging growing by 4.9 percentage points of GDP through 2050. This amount is partly offset by lower costs for schooling (fewer persons of school age in future),[13] and by lower costs for unemployment insurance for

[13] It is not certain that fewer pupils means lower costs. First, lower density of pupils can actually *increase* education costs (because of reduced economies of scale). Second, Germany has higher student/teacher ratios than average in the OECD. Savings may thus be allocated to lower this ratio to improve the quality of education. Lastly, industrial countries need to increase human capital if they are to compete effectively in higher-value-added markets (the lower-value-added markets are increasingly dominated by lower-cost countries). Increasing human capital is expensive.

a total spending increase of 2.6 percent of GDP by 2050. The staff baseline has unemployment dropping less, so the saving from unemployment insurance is also less, and the total increase in expenditures is the 4 percent of GDP noted earlier.

- **Aging costs and unemployment in the risk and optimistic scenarios.** The IFO study notes that its baseline may be somewhat optimistic and that it may underestimate the costs from aging and unemployment. Therefore, IFO presents a *risk* scenario with higher aging costs and a smaller drop in unemployment (to around 7 percent of the labor force). This would cause additional total spending pressures by 2050 of 4.9 percentage points (rather than 2.6). Alternatively, it can now be seen that the staff's *optimistic* scenario described above closely corresponds to the IFO *baseline* scenario—with additional spending pressures by 2050 limited to 2.6 percent of GDP.

Additional Public Sector Spending by 2050 1/

	Level	IFO 2/		IMF 3/	
	2003	Base	Risk	Base	Optim.
Public pension system	10.3	2.3	2.8	2.3	2.3
Civil service pension system	1.7	0.5	0.5	0.5	0.5
Health insurance system	6.1	1.1	1.4	1.1	1.1
Long-term care insurance system	0.8	1.0	1.1	1.0	1.0
Subtotal	18.9	4.9	5.8	4.9	4.9
Education system	4.1	-0.5	-0.1	-0.5	-0.5
Unemployment system	2.9	-1.8	-0.8	-0.4	-1.8
Total	25.9	2.6	4.9	4.0	2.6

Sources: IFO; and Fund staff calculations.

1/ Level is outlays in percent of GDP, scenarios reflect further increase by 2050.
2/ Baseline scenario and risk scenario, respectively.
3/ Baseline scenario and optimistic scenario, respectively. For ease of comparison, the optimistic scenario focuses on lower unemployment costs only.

42. **The conclusions from these comparisons point in the same direction for fiscal adjustment.** The IFO/official baseline scenario may be somewhat optimistic; hence, it is complemented with a risk scenario. The staff baseline scenario may be somewhat pessimistic; hence, it is complemented with an optimistic scenario. Nevertheless, all scenarios point to a need for additional fiscal adjustment if Germany is to prevent the debt-GDP ratio from rising to unsustainable levels.

E. Some Policy Considerations and Other Key Aspects

43. **Many in Germany recognize that aging requires further policy measures, but agreeing on the precise balance of measures is understandably difficult.** Choices need to

be made between the weights on tax increases versus expenditure cuts; policy options need to be further identified and carefully quantified, and explained to the public; and there are a host of other key aspects, such as the role of onetime measures and the distributional impact of adjustment that enter into discussion. This last section touches briefly on these issues.

44. **Raising taxes or cutting expenditures?** Germany will likely need a combination of tax increases and expenditure cuts to absorb the costs of aging and unemployment. Levying the required adjustment only on expenditure or only through tax increases (exploring either corner solution, so to speak) would have wide-ranging distributional impacts and be politically very difficult. Also, certain solutions may be economically inconsistent. For instance, while the social security system has built-in stabilizers to drive up social security contributions, the associated higher payroll taxes could reduce significantly the labor supply—and hence potential output growth. The IFO study estimates that the magnitude of the required increase in payroll taxes is very high—around 8 percentage points for the aging effects (as shown below), offset only partly by saving from the unemployment insurance fees (which in any event seem less likely). Such sharp increases in payroll taxes should be avoided. Indeed, both the IFO/official baseline and this paper exclude for now further increases in payroll taxes.

Potential Increase in Payroll Tax by 2050 1/

	IFO 2/	
	Base	Risk
Public pension system	4.1	5.0
Civil service pension system	...	...
Health insurance system	1.3	1.4
Long-term care insurance system	2.1	2.1
Subtotal	7.5	8.5
Education system	...	...
Unemployment system	-4.0	-1.7
Total	3.5	6.8
Memorandum item:		
2004 payroll tax rate is 41.4 percent on taxable wage income.		

Source: IFO.

1/ Percentage points of taxable wage income.
2/ Base scenario and risk scenario, respectively.

45. **Some alternative measures could be considered.** Using detailed information from various agencies and ministries, the IFO has estimated how some proposed alternative adjustments might be able to reduce expenditures by 2050.

Possible Impact of Some Adjustment Proposals	
Measures	Impact by 2050 1/
1. Gradually increase retirement age from 65 to 67.	0.3
2. Cut indexation of healthcare and long-term benefits.	2.0 2/
3. Increase education spending.	-0.5
4. Further discretionary spending cuts.	1.2

Source: IFO, 2005.

1/ Projected reduction in expenditure pressures in percentage points of GDP by 2050.
2/ Assumes constant morbidity and no advances in medical technology. If recent trends in these variables continue the net savings by 2050 would be zero.

- **Increasing the retirement age** by 1 month a year until it reaches 67 is projected to lower pension expenditures by 2050 by 0.3 percentage points of GDP. This proposal has been made by the Rürup Commission and is under study by the government.

- **Reducing indexation of some health and long-term care benefits** is also under study and could provide significant expenditure savings over time. However, IFO points out that the (typical) baseline assumptions of constant morbidity and health technology are likely incorrect. It points out that if these variables evolve in future on trend, the cuts in outlays would likely just serve to offset the pressures already in the pipeline.

- The assumption on **education spending** in the baseline may be too optimistic, since investments in human capital in future will likely require additional funds. Thus, the savings from lower volume (fewer school age children) in the calculations above would be converted into higher per pupil spending.

- Finally, IFO examines a path of substantially **lower discretionary spending**, but the exact areas where to cut are not specified.

These options do not include explicitly possible further cuts in tax expenditures and subsidies. The Koch-Steinbrück Commission reported that spending on subsidies and tax exemptions may comprise as much as 6 percentage points of GDP. They reflect allocations that are a part of the "welfare state" for families and corporations and also need to be rethought for long-run sustainability.

46. **Besides the quantification of precise measures, some other key aspects will need to be taken into account:**

- **Onetime adjustments don't count.** Germany is currently using asset sales and other one-time measures to keep the debt ratio from rising in line with the full deficit. These measures do not alter the primary deficit path because they are not permanent adjustments. Moreover, when seen from the point of view of the public sector net worth, asset sales are as corrosive to Germany's wealth as debt increases.[14]

- **Growth matters but is not a panacea.** Germany's difficulties are caused in part by the projection that output growth will remain well below the interest rate. Whenever that happens, countries need to run primary surpluses of a certain minimum just to keep the debt ratio constant (since $\partial d = d.*[i-y] - p$). Any structural reform that could increase growth (e.g., more hours worked) would dampen the need for primary surpluses and make it correspondingly easier to absorb the costs of aging. At the same time, higher growth is not a panacea because entitlements are broadly indexed to wages. With higher growth, wages will be higher, and so will be entitlement pressures. Indeed, indexing to wages is a crucial cost driver of the welfare state.

- **Income distribution matters.** This indexation, or more generally, the distribution of income between capital owners, wage earners, and benefit recipients, is perhaps the most difficult political issue to solve. In the 1960s and 1970s, when the modern welfare state was created, income was significantly redistributed from capital owners to wage earners and benefit recipients. More recently, with the onset of wage moderation, and under pressure from globalization, the pendulum has begun to swing back from wage earners and benefit recipients to capital owners. The effects of the initial large shift, when the welfare state was created, was difficult to discern because the economy was growing rapidly, the population was rising, and benefit recipients were relatively few so that the main costs would become visible only later. Germany has now arrived at this "later" stage, characterized by a rising dependency ratio. Thus it is possible that promises under the welfare state had overshot, and that income distribution needed to be recalibrated again to regain overall sustainability. Reducing welfare benefits in its different manifestations (including corporate and family subsidies alongside entitlement spending) seems necessary to save the welfare state.

- **Finding the right balance is difficult**. Figure 6 shows the implied income distribution of the staff's baseline scenario and the effects of recent adjustment measures. In the past few years, wage shares have been falling, and benefits have been scaled down. Thus, between 2000 and 2006, the level of benefits per recipient has been slowing while the economy generated moderate increases in overall per capita incomes. Virtually all these income gains have been accruing to capital—because wage incomes have been flat. This temporary "deindexing" of benefits from per capita incomes has generated fiscal savings. However, the policies to get there

[14] "A Preliminary Public Sector Balance Sheet" and its implications are presented in the next chapter of these selected issues papers.

have been very difficult to implement. Further adjustments to the welfare state are needed. This will require a strong political consensus.

47. **It follows that a substantive discussion is required to make some difficult choices.** The discussion should be positive and forward looking, and could address the following three concluding remarks:

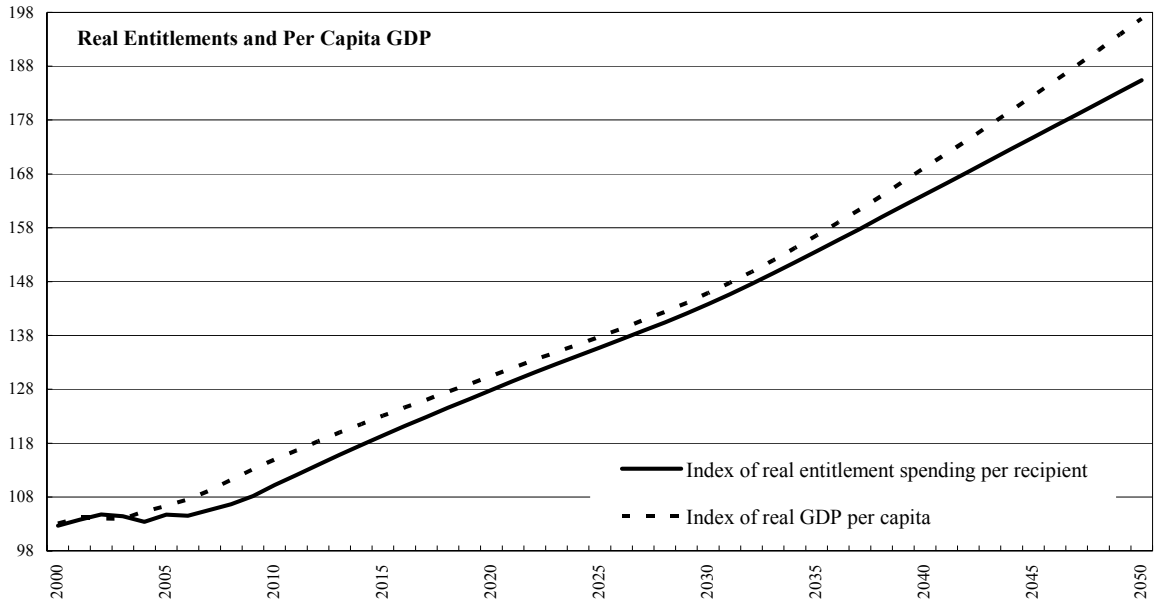
- **Solutions are possible.** Germany is not without options, as shown by the magnitudes in the Koch-Steinbrück list, the quantified measures in the IFO list above, and the adjustments already made in Agenda 2010. The political system, however, will need to make clear choices, explain them in a consistent quantified framework, and then implement them forthrightly.

- **Transparency is essential.** The authorities have published a helpful long-run fiscal sustainability report, which demonstrates that further policy adjustments are needed to prevent debt sustainability problems in future. This report should be updated regularly, perhaps following the annual budget debate, and on the basis of policies currently in place, instead of assuming ex-ante success with the medium-term fiscal plan. Indeed, the official projections show less debt pressure in future than the baseline projections of this paper, substantially owing to the assumption that the near-term fiscal plan will be implemented. Implicitly, the difference between the two baselines demonstrates that postponing corrective measures, i.e., falling behind on the plan, is very costly.

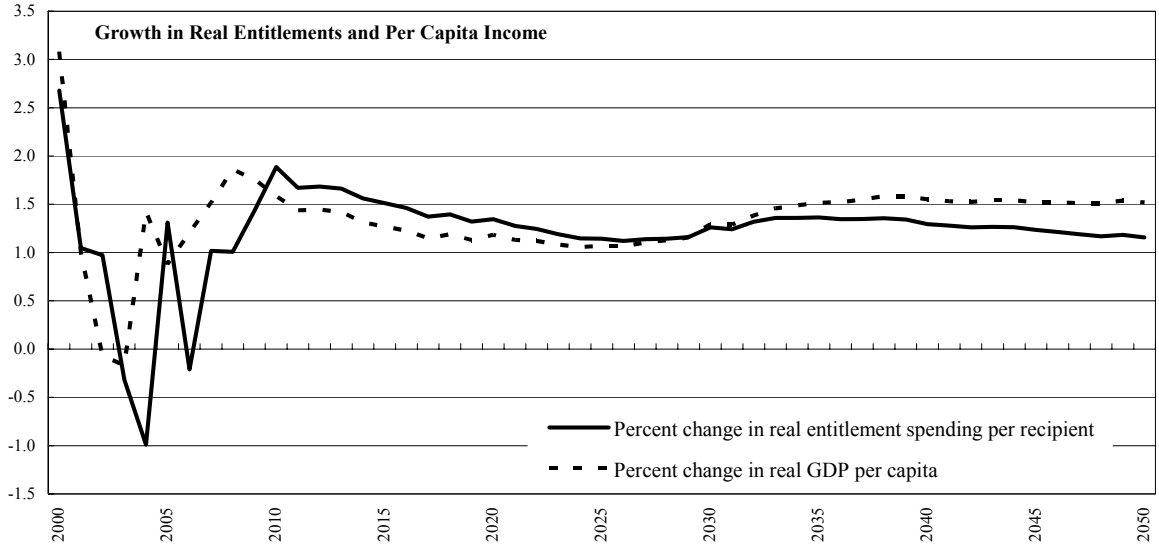
- **The challenges could be presented in form of a public sector balance sheet.** The large future deficits on current policies are flows that can be discounted and presented as the NPV of implicit future liabilities. It is helpful to show that such implicit debts are large. Also, it could demonstrate that some difficult reforms, which have most of their beneficial effects in the longer-run such as those of Agenda 2010, can make a substantial contribution in reducing the intertemporal inconsistencies. The accompanying selected issues paper explores such a preliminary public sector balance sheet and how it could assist in the policy discussion.

Figure 6. Germany: Distributional Indicators for the Staff Baseline Scenario 1/

Even in the baseline scenario, real entitlements per recipient, and real GDP per capita would still rise over time...
...but in the very short run, entitlement recipients are lagging behind as a result of adjustment measures.



Considering that real wages are currently flat, rising real per capita incomes must be accruing to capital.



Sources: Data provided by the authorities; and Fund staff calculations.

1/ These distributional indicators must be interpreted as indicative, because the baseline scenario is financed with debt and is therefore not sustainable. Real entitlements and/or real wages will need to be reduced to limit the debt.

Table 1. Germany: Baseline Scenario, Including 2005 Budget Measures

	2000	2004	2005	2010	2020	2030	2040	2050
A. Growth and inflation								
Levels								
Potential real GDP	2,028	2,140	2,169	2,325	2,631	2,885	3,234	3,599
Real GDP	2,063	2,123	2,144	2,325	2,631	2,885	3,234	3,599
-Output gap	35	-17	-25	0	0	0	0	0
Real GDP per 1000 hours worked	36.4	38.7	39.2	42.8	49.1	57.8	68.9	80.8
Nominal GDP	2,063	2,207	2,238	2,580	3,474	4,529	6,041	7,996
GDP deflator	100.0	104.0	104.4	111.0	132.0	157.0	186.8	222.2
Percentage change								
Potential real GDP	1.5%	1.3%	1.3%	1.4%	1.1%	1.0%	1.2%	1.0%
Real GDP	3.2%	1.6%	1.0%	1.6%	1.1%	1.0%	1.2%	1.0%
-Output gap (%pot)	1.7%	-0.8%	-1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Real GDP per 1000 hours worked	2.5%	2.1%	1.4%	1.2%	1.5%	1.9%	1.4%	1.6%
Nominal GDP	2.5%	2.0%	1.4%	3.2%	2.9%	2.8%	2.9%	2.8%
GDP deflator	-0.7%	0.4%	0.4%	1.6%	1.75%	1.75%	1.75%	1.75%
B. Population and Labor markets								
Population	82,188	82,786	82,869	83,066	82,822	81,220	78,539	75,117
Employment (hours worked)	56,602	54,921	54,693	54,377	53,596	49,864	46,975	44,529
Unemployment (persons)	3,066	3,839	3,788	3,621	3,500	3,157	2,950	2,796
Dependent population (<15 >64)	26,448	27,307	27,551	27,846	28,920	31,797	32,103	31,099
Dependents/population	32.2%	33.0%	33.2%	33.5%	34.9%	39.1%	40.9%	41.4%
C. Public finances								
General government balance								
Revenue	956	954	962	1,117	1,500	1,956	2,609	3,453
Taxes and other	577	557	566	662	891	1,162	1,550	2,051
Social security contributions	378	397	396	452	609	794	1,059	1,402
Primary expenditure	912	968	982	1,112	1,559	2,166	2,928	3,828
Pensions and health	495	542	548	627	897	1,312	1,795	2,335
Unemployment	38	46	55	50	65	76	95	119
Other	380	379	385	443	597	778	1,038	1,374
Primary balance	43	-14	-20	5	-59	-210	-319	-374
Interest	68	66	64	85	159	327	702	1,353
Overall balance	-25	-80	-84	-80	-217	-537	-1,021	-1,727
General gov gross debt stock, eop	1,222	1,438	1,522	1,912	3,407	7,122	15,144	28,939
Interest rate on new gross placements	4.9%	4.4%	4.7%	5.0%	5.0%	5.0%	5.0%	5.0%
in real terms (deflated by GDP deflator)	5.6%	4.0%	4.2%	3.4%	3.2%	3.2%	3.2%	3.2%
Indicators								
Revenue, % GDP	46.3%	43.2%	43.0%	43.3%	43.2%	43.2%	43.2%	43.2%
Primary expenditure, %GDP	44.2%	43.8%	43.8%	43.1%	44.9%	47.8%	48.5%	47.9%
Pensions, health, U ins, %GDP	25.8%	26.7%	26.9%	26.2%	27.7%	30.6%	31.3%	30.7%
Other, %GDP	18.4%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%
Primary balance, %GDP	2.1%	-0.6%	-0.9%	0.2%	-1.7%	-4.6%	-5.3%	-4.7%
Interest bill in %GDP	3.3%	3.0%	2.9%	3.3%	4.6%	7.2%	11.6%	16.9%
Overall balance, %GDP	-1.2%	-3.6%	-3.7%	-3.1%	-6.3%	-11.9%	-16.9%	-21.6%
General gov gross debt stock, %GDP	59.2%	65.1%	68.0%	74.1%	98.1%	157.2%	250.7%	361.9%
∂d = d.*[i-y] - p				0.8	3.5	7.6	9.8	11.8
p' = d.*[i-y]				1.0%	1.8%	3.0%	4.5%	7.1%
D. Distributional indicators								
Pensions, health, U insurance, per								
1,000 non-active person (dependents + U)	18.0	18.9	19.2	21.5	29.7	39.7	53.9	72.4
-Index 1999=100	102.7	103.4	104.7	110.2	127.9	143.8	164.2	185.4
-percent change	2.7%	-1.0%	1.3%	1.9%	1.3%	1.3%	1.3%	1.2%
Per capita real GDP	25,096	25,646	25,871	27,986	31,770	35,515	41,182	47,914
-Index 1999=100	103.1	105.3	106.3	115.0	130.5	145.9	169.2	196.8
-percent change	3.1%	1.4%	0.9%	1.6%	1.2%	1.3%	1.6%	1.5%

Source: IMF staff calculations.

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III. A Preliminary Public Sector Balance Sheet for Germany[15]

A. Introduction

48. **Fiscal policy is generally analyzed with the help of flow accounts.** The first and best know flow account is the budget, which records the revenue and expenditure for a certain period of time A second flow account is the financing statement. This provides insight how the deficits are financed, how many bonds the government has issued and how many assets it has sold. The only stock item that is widely cited is the debt (gross or net).

49. **However, flow accounts capture only a part of the public finances, and should be complemented by relevant stock indicators such as a public sector balance sheet.** Over time the consequences of flows accumulate into stock values (assets and liabilities) that provide additional information about the state of the public finances. This is particular relevant because correcting flow imbalances is relatively easy compared to adjusting stock imbalances. Most governments that experience financial stress do not succumb to a large deficit per se, but to a collapse in underlying net worth that suddenly becomes visible "on the radar screen" of analysts and the public in the form of a financial crisis. Warning signs of insolvency need to come well in advance, because restoring net worth takes years.

50. **A balance sheet can be valuable in offering a view of the underlying financial health of the state.** Public sectors have many more assets and liabilities than just the registered debt. Performing only debt sustainability exercises can thus miss a great deal of the action. Other assets and liabilities also need to be taken into account, especially those that are not directly visible such as unfunded promises in the welfare state.

51. **This paper attempts to construct a preliminary public sector balance sheet for Germany.** The data are incomplete and therefore the bottom-line numbers are likely to be inaccurate. The purpose of the paper is to "open the door" to public sector balance sheets, rather than present hard numbers. Nevertheless, while the magnitudes are preliminary, the image that emerges suggest that continued work to improve the data is warranted—and that policy makers should consider the implications of the balance sheet.

B. What is a Public Sector Balance Sheet?

52. **The balance sheet presents information on all assets and liabilities of the public sector.** To collect this information is not easy, but should not be exaggerated either. Siemens, Mercedes-Benz, and SAP, among others, are very large German multinational corporations that operate in most countries of the world and in most states of Germany and produce a comprehensive balance sheet on a quarterly basis. Once a year, these entities produce a balance sheet that is checked by independent auditors—by law, which shows that the task

[15] Prepared by Bob Traa. I would like to thank Mr. Burgtorf at the Bundesbank for helpful discussions, Mr. Stein at the Ministry of Finance for data assistance, and seminar participants at the Bundesbank and Ministry of Finance for their comments.

may be large, but is possible. Corporate balance sheets aim to give transparency to the entity and protect the affected parties such as shareholders, employees, and managers. A balance sheet can also enhance transparency in the public finances, and help to prevent surprises for policy makers or the citizens down the line.

53. **Germany has begun to collect selected balance sheet data.** The Bundesbank publishes data on financial assets and liabilities of the general government (Table 1). While this is only partial, it is already helpful: on a consistent basis, financial liabilities exceed financial assets, and the mismatch is getting worse.[16] The *negative* financial net worth of Germany has deteriorated from 28 percent of GDP in 1993 to over 56 percent in 2004.[17]

54. **Negative financial net worth is not by itself a cause for alarm.** The net debt presumably has been used to built public infrastructure which enhances the productive capacity of the economy and generates a bigger tax base in future with which to repay these debts. Therefore, a complete balance sheet should also include the value of the public sector capital stock, as shown below.

55. **The financial net worth only records debt that has already been explicitly recognized—the registered debt; the implicit (forward-looking) debt from promises under the welfare state also needs to be considered.** Estimating the implicit debt involves projecting the path of general government fiscal balances, including the social security system. It involves constructing a fiscal baseline under clearly-defined assumptions, not unlike the requirement for private sector corporations to conduct an annual actuarial assessment of their future pension and health liabilities.

56. **The previous chapter of this selected issues paper presents such a long-run fiscal projection.**[18] It suggests that:

- On current policies, the fiscal deficit would start to grow quickly after 2010, when aging accelerates.

- Thus under existing policies, and if left unchecked, this forward looking implicit debt—the net present value of future deficits—would quickly become visible to the broader public as it is converted into registered debt.

[16] Preliminary analysis conducted by the Bundesbank suggest that the *level* of financial assets of subnational governments is probably underestimated; however, the erosion over time of financial net worth appears robust.

[17] In a project underway at the European level, the Federal Statistical Institute is now collecting more comprehensive data on public sector assets and liabilities.

[18] See "A Long-Run Fiscal Scenario Based on Current Policies."

Table 1. General Government Financial Assets and Liabilities

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004 Prel.
					(billions of euros)							
Financial assets	**319**	**323**	**315**	**326**	**345**	**331**	**321**	**372**	**335**	**304**	**308**	**296**
Cash and equivalents	164	158	156	157	157	162	167	212	171	155	154	148
Money market paper	0	0	0	0	0	0	0	1	1	1	2	1
Bonds	11	12	13	13	13	14	9	10	8	10	11	12
Equity holdings and equivalents	117	117	102	108	125	103	95	96	101	83	87	86
Loans	25	34	41	45	47	49	50	53	54	54	54	48
Claims on insurance companies	2	2	2	3	3	3	1	1	1	1	1	1
Financial liabilities	**784**	**832**	**1,031**	**1,106**	**1,159**	**1,222**	**1,220**	**1,236**	**1,254**	**1,324**	**1,400**	**1,499**
Cash and equivalents	7	8	8	8	8	8	8	8	6	4	5	5
Money market paper	17	11	5	15	14	13	13	12	24	31	36	36
Bonds	460	476	615	644	681	738	731	764	782	855	915	1013
Loans	299	337	404	440	457	463	469	452	442	430	440	441
Other	0	0	0	0	0	0	0	0	0	4	4	4
Financial net worth	**-464**	**-509**	**-716**	**-780**	**-815**	**-891**	**-899**	**-863**	**-919**	**-1,020**	**-1,092**	**-1,203**
					(In percent of GDP)							
Financial assets	19.3	18.6	17.5	17.8	18.4	17.1	16.2	18.3	16.2	14.4	14.5	13.6
Financial liabilities	47.4	47.9	57.2	60.3	61.9	63.3	61.7	60.9	60.5	62.8	65.8	68.9
Financial net worth	-28.1	-29.3	-39.7	-42.6	-43.5	-46.2	-45.4	-42.5	-44.3	-48.4	-51.3	-55.3
Memorandum items												
Gross debt (Maastricht definition)	**779**	**857**	**1,028**	**1,096**	**1,143**	**1,185**	**1,224**	**1,231**	**1,242**	**1,293**	**1,381**	**1,451**
in percent of GDP	47.1	49.4	57.1	59.8	61.1	61.4	61.9	60.6	59.9	61.4	64.9	66.6
GDP	1,654	1,736	1,801	1,834	1,872	1,929	1,979	2,030	2,074	2,107	2,128	2,177

Source: Deutsche Bundesbank.

57. **To show estimates of implicit debt and monitor them annually, the net present value of future fiscal balances should be included in the balance sheet.** For this paper, the projected future deficits (for the period 2004–2053) were discounted back at the average interest rate on the debt (just below 5 percent a year). This suggests that the 2004 NPV of future fiscal deficits amounted to €7.0 trillion (322 percent of GDP). This estimate of the implicit debt is added to the public sector financial balance as shown in Table 2.

58. **Germany's intertemporal financial position appears to be unsustainable.** When the implicit debt is added to the net liabilities already outstanding, Germany's financial net worth appears negative by 378 percent of GDP. Taxes need to increase or expenditures need to decrease to restore solvency.

59. **Policy measures can have a strong impact on net worth.** For instance, calculations for this paper suggest that the entitlement reforms of Agenda 2010 reduced the implicit stock of debt by almost €1.5 trillion in NPV terms, or the equivalent of *70 percent of GDP*.[19] While this was not enough to restore solvency, it represents valuable progress.

[19] Before Agenda 2010, aging related expenditure was projected to increase by 6½ percent of GDP by 2050. In the staff's scenarios, Agenda 2010 reduced these pressures to 4 percentage points. All else remaining equal, the corresponding improvement in the future deficit paths, discounted to 2003, yields the above-mentioned 70 percent of GDP reduction in implicit liabilities.

Table 2. Expanded General Government Financial Assets and Liabilities

	2002	2003	2004 Prel.
	(Billions of euros)		
Financial assets	**304**	**308**	**296**
Cash and equivalents	155	154	148
Money market paper	1	2	1
Bonds	10	11	12
Equity holdings and equivalents	83	87	86
Loans	54	54	48
Claims on insurance companies	1	1	1
Financial liabilities	**1,324**	**9,481**	**8,515**
Cash and equivalents	4	5	5
Money market paper	31	36	36
Bonds	855	915	1013
Loans	430	440	441
Other	4	4	4
NPV of future fiscal balances 1/	...	8,081	7,016
Intertemporal financial position	**-1,020**	**-9,173**	**-8,219**
	(In percent of GDP)		
Financial assets	14.4	14.5	13.6
Financial liabilities	62.8	445.5	391.1
Intertemporal Financial position	-48.4	-431.0	-377.5
Memorandum items			
Gross debt (Maastricht definition)	**1,293**	**1,381**	**1,451**
in percent of GDP	61.4	64.9	66.6
GDP	2,107	2,128	2,177

Source: Deutsche Bundesbank; and Fund staff calculations.

1/ Staff projections of fiscal balances for 50 years based on structural and fiscal policies currently in place (baseline scenario) discounted at the average interest rate on the public debt. The projections for 2003 exclude the reforms in Agenda 2010. The projections for 2004 include the reforms of Agenda 2010.

60. **Two further assets complete the main components of the balance sheet:**

- Some other financial assets and the equity value of public sector banks, and
- The public sector capital stock.

61. **Some other financial assets and equity in the public banks.** The "other" financial assets are distinguished from the financial assets already included in the Bundesbank data because they cannot easily be freed up to meet current or future cash flow needs. They include mainly subscriptions to international organizations. More importantly, the balance

sheet also needs to reflect the equity holdings in public sector banks, which have not yet been included elsewhere. They comprise the net worth of the Bundesbank, the Kreditanstalt für Wiederaufbau (KfW), and the equity participation in Landesbanken and Sparkassen. The consolidated equity value in public sector banks is currently estimated at some €100 billion.

62. **Public sector capital stock.** The public sector capital stock comprises the accumulated investments in public infrastructure, government buildings, and machinery and equipment, net of depreciation. Two independent data sources yield similar results. First, the federal authorities publish information on land holdings and improvements in the public domain, including roads, bridges, tunnels, etc. in units of square hectares. On a preliminary basis, these volumes are assigned an accounting value of €1 million per unit. This provides a value of €1.1 trillion, equivalent to 51 percent of GDP. A second method is to construct the capital stock from investment data with the perpetual inventory method. Using this method, Christophe Kamps (2004) estimated the public sector capital stock to be around 50 percent of GDP.

63. **Public sector net worth.** Putting together the above-mentioned components provides a preliminary figure for the public sector net worth (Table 3 and summary table below). In the baseline scenario, the German public sector shows a negative net worth at end-2004 of about €7 trillion (324 percent of GDP)—a strong improvement from the negative €8 trillion (377 percent of GDP) in 2003—mainly reflecting the benefits from Agenda 2010.

General Government Balance Sheet (preliminary)

	2003	2004 Proj.
(Billions of euros)		
Intertemporal financial position	-9,216	-8,240
Net debt already issued	-1,135	-1,224
NPV of future net debt 1/	-8,081	-7,016
Other, net	104	106
Public sector net capital stock	1,096	1,098
Net worth	**-8,016**	**-7,036**
(In percent of GDP)		
Intertemporal Financial position	-433	-379
Other, net	5	5
Public sector net capital stock	51	50
Net worth	**-377**	**-324**

Source: Bundesbank; Ministry of Finance, and Fund staff calculations.

1/ Staff projections of fiscal balances for a rolling 50-year period (baseline scenario) discounted at the average interest rate on government debt.
Figures for 2004 include the impact of reforms of Agenda 2010.

Table 3. General Government Balance Sheet

	2002	2003	2004 Prel.
	(Billions of euros)		
Financial assets	**304**	**308**	**296**
Cash and equivalents	155	154	148
Money market paper	1	2	1
Bonds	10	11	12
Equity holdings and equivalents	83	87	86
Loans	54	54	48
Claims on insurance companies	1	1	1
Financial liabilities	**1,324**	**9,481**	**8,515**
Cash and equivalents	4	5	5
Money market paper	31	36	36
Bonds	855	915	1013
Loans	430	440	441
Other	4	4	4
NPV of future fiscal balances 1/	...	8,081	7,016
A. Intertemporal financial position	**-1,020**	**-9,173**	**-8,219**
B. Other assets	**102**	**104**	**106**
Special purpose funds 2/	4	4	4
Net worth public sector financial institutions, book value	99	100	102
Bundesbank	39	34	33
KfW	6	8	8
Landesbanken and Sparkassen, participations	53	58	60
C. Public sector capital stock 3/	**1,094**	**1,096**	**1,098**
Land	1,094	1,096	1,098
Improvements (structures)	...	...	...
Net worth (A+B+C)	**177**	**-7,973**	**-7,016**
	(In percent of GDP)		
Financial assets	14.4	14.5	13.6
Financial liabilities	62.8	445.5	391.1
Intertemporal Financial position	-48.4	-431.0	-377.5
Other assets	4.9	4.9	4.9
Public sector capital stock	51.9	51.5	50.4
Net worth	8.4	-374.6	-322.3
Memorandum items			
Gross debt (Maastricht definition)	**1,293**	**1,381**	**1,451**
in percent of GDP	61.4	64.9	66.6
GDP	2,107	2,128	2,177

Source: Deutsche Bundesbank; and Fund staff calculations.

1/ Staff projections of 50-year rolling fiscal balances (2003-2052 and 2004-2053, respectively) based on structural and fiscal policies currently in place, discounted at the implicit average interest rate on the public debt of each year. Projection for 2003 excludes the reforms in Agenda 2010; projection for 2004 includes the reforms of Agenda 2010.
2/ Dedicated funds administered by the Federal Government, not included elsewhere.
3/ Staff estimate based on the perpetual inventory model of budgetary public sector capital spending, and direct estimates of public infrastructure (roads, bridges, public lands, etc.) valued at a fixed accounting rate of euro 1 million per hectare. The authorities are currently estimating the value of land and improvements separately.

64. **Needless to say, these estimates are preliminary and they are sensitive to underlying assumptions.** As noted above, data on financial asset holdings in subnational governments may be underestimated, and those on real assets are also incomplete. Further, the NPV of future implicit liabilities are indicative and depend on key assumptions and developments, such as those that were used to derive the alternative baseline and optimistic scenarios for the fiscal outlook. The net present value of future government liabilities based on the optimistic scenario is smaller than that in the baseline scenario because the optimistic scenario projects smaller future deficits. Thus, as shown below, the "optimistic" calculation of Germany's net worth at end-2004 is more favorable, at negative €4.8 billion, (-224 percent of GDP). Nevertheless, this shortfall is still large.

General Government Balance Sheet (preliminary)
Comparing the Baseline and Optimistic Fiscal Scenarios

	2004 Baseline	2004 Optimistic
Net worth (billions of euros)	-7,036	-4,878
In percent of GDP	-324	-224

Source: Fund staff calculations.

1/ The optimistic scenario includes the NPV of future fiscal deficits calculation with higher real GDP growth and lower unemployment, as compared with the baseline scenario, and as presented in the accompanying chapter on Germany's long-run fiscal scenarios.

C. The Balance Sheet and the SGP

65. **The balance sheet can offer valuable guidance to fiscal policy, perhaps as a complementary indicator to those presented in the SGP.** For instance:

- The SGP focuses attention mostly on year-to-year flows, and it has difficulty showing the benefits of structural reforms (such as the long run benefits of Agenda 2010). The SGP includes a debt criterion, but this reflects deficits of the past and is not forward looking.[20] A balance sheet that includes an NPV estimate of a future fiscal baseline includes such forward-looking features.

- The SGP remains sensitive to one-time measures or accounting adjustments despite calls under the revised rules to exclude these from the required adjustment calculations. For instance, some asset sales have been allowed as revenue and postponing expenditure is also being used to alleviate deficits as measured under the

[20] Medium-term objectives (MTOs) under the SGP are now country specific and are supposed to reflect sustainability issues. However, the SGP is not focused on the MTOs and even permits persistent deviations from them.

SGP. A balance sheet would show that asset sales or expenditure shifts do not improve net worth, indeed they often reduce it, and therefore should not be counted as qualifying measures.[21] In turn, calculations of the public sector net worth in the balance sheet are sensitive to assumptions on the long-run fiscal baseline, as noted above. Thus, some sensitivity analysis is advisable.

- Governments in new accession countries that wish to implement large pension reforms could experience friction with the rules of the SGP, because the budget would likely incur substantial upfront deficits. Recent modifications to the SGP recognize this dilemma and would allow, under some circumstances, limited increases in short-run deficits. Alternatively, a pension reform designed to cut future pension liabilities could be analyzed with a transparent and monitorable quantified path and reflected in the NPV of future liabilities in a balance sheet. This would help to show whether the reform actually improves the intertemporal fiscal position by means of its effect on the public sector net worth.

- The Maastricht criteria are intended to treat all countries equal, but not all countries have the same intertemporal fiscal constraint, which is not visible in the SGP. Balance sheets can offer complementary information where the findings of net worth and their policy implications could be compared and differentiated across countries.

- Sovereign states cannot deny the benefits of fiscal consistency; the balance sheet approach therefore aligns well the incentive structure with ownership. As experience shows, the SGP does not always align well the incentive structure with ownership.

- The SGP requires a substantial bureaucracy and sometimes difficult supranational consultations and consent seeking to monitor and enforce compliance. In principle, a balance sheet can be monitored by private auditors, as already occurs by law for corporations. Government's could publish the auditor's report in the budget document to inform parliament and the voters.

- The public at large does not know well how the SGP works or what it means. However, if they see large intertemporal inconsistencies on the public sector balance sheet, the incentives are strong to ask political representatives for an explanation and an action plan to secure solvency—the health of the public finances thus becomes connected to the sustainability of their own entitlements.

- However, the SGP and a balance sheet could be valuable complements: the SGP, if properly implemented without accounting adjustments, sets a clear collar around short-run fiscal behavior. This is highly valuable and in a strong fiscal program both

[21] In some circumstances, asset sales may help to strengthen net worth, for instance, if the public sector holds assets that yield less than the interest cost on the debt. The sale of such assets to retire debt would improve net worth.

the short-run (SGP) and the intertemporal considerations (balance sheet) should be explicitly considered and presented.

D. Conclusions and Policy Relevance

66. **Over the past 50 years, Germany issued large amounts of debt and made substantial promises under the welfare state**. These policies worked well as long as the population was expanding, dependency ratios were falling, and GDP was growing relatively rapidly. Now the population is starting to decline, dependency ratios are increasing, and economic growth is slowing. This raises questions about the sustainability of fiscal policies.

67. **A public sector balance sheet can provide a concise intertemporal view of the fiscal challenge.** In this respect, it is a necessary complement to flow accounts. Current fiscal rules, including the SGP, focus fairly narrowly on flow accounts. While the SGP debt criterion (60 percent of GDP) is helpful, it reflects actions of the past and is not forward looking. A balance sheet that reflects implicit future debts signals to the voters that the welfare state is less healthy than it appears—and it can help to bring the concept of intertemporal consistency into the public debate. The task for governments will then be to design and agree with the public on fiscal policies that address these challenges.

68. **The public sector balance sheet can be helpful to show the value of fiscal and structural reform.** Analogous to inflation targeting in monetary policy, governments could discuss the targeting of net worth on the balance sheet as a guide for fiscal policy. Fiscal measures and structural reforms should be quantified for their impact on the government's net worth. This way, the public is in a better position to appreciate the value of such policies and is more likely to support even difficult adjustments.

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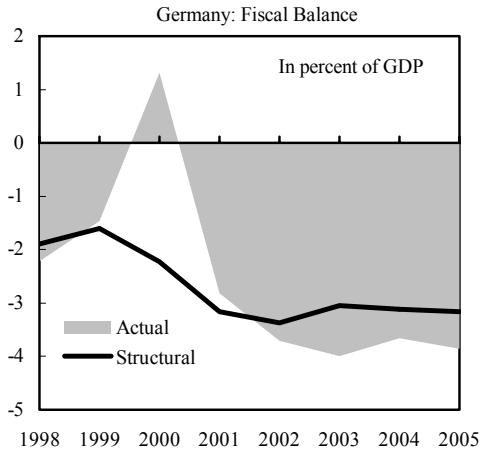
IV WHY IS GERMANY'S DEFICIT SO LARGE?[22]

E. Introduction

69. **There is a fiscal puzzle in Germany: Despite significant adjustment efforts by the government, the structural balance has not improved.** Over the past three years, the efforts included deep reforms under the heading of "Agenda 2010," with cuts in pension, health, and unemployment benefits. In addition, tight management of public investment and the wage bill, and low interest rates on public debt helped contain spending. Nevertheless, the fiscal balance showed no signs of improvement, being stuck at around 3½ percent of GDP. This may have been due to a cyclical slump. But the structural balance, which accounts for the cycle, did not improve either.



70. **This puzzle raises questions about the measurement of the structural balance.** As a tool to analyze underlying fiscal trends remains necessary, it becomes important to improve the conventional method of calculating the structural balance. In particular, policy efforts should be better quantified.

71. **This chapter develops a more detailed decomposition of the fiscal balance.** It stresses the distinction between policy measures and long-lasting changes in the structure of the economy. Changes in economic structure may support or frustrate fiscal adjustment efforts. For policy purposes, it is thus necessary to know their approximate magnitude.

F. The Output Gap Approach

72. **The conventionally calculated structural fiscal balance focuses on the business cycle.** Both the IMF and the European Commission follow an approach that is based on the output gap. The structural balance is taken to represent the long-term orientation of fiscal policy. A widening of the structural balance constitutes a "fiscal impulse," a narrowing implies an adjustment effort.

73. **The standard technique decomposes the fiscal balance into permanent and transitory components.** It cleans out transitory components from the actual balance, in particular the effects of the business cycle and one-off items. The residual permanent component is called structural balance and used to interpret the underlying fiscal policy.

[22] Prepared by Benedikt Braumann.

Fiscal analysis and policy recommendations usually refer to the structural balance—also referred to as the cyclically-adjusted balance—rather than the actual balance.

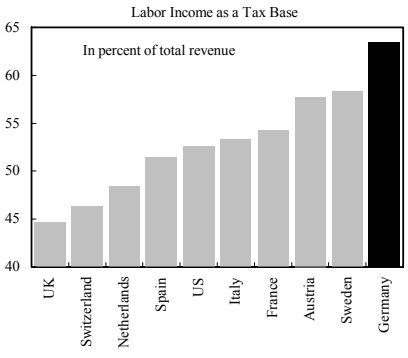
$$B = B^*_{perm} + B_{trans} = B^*_{structural} + (B_{cyclical} + B_{one-off})$$

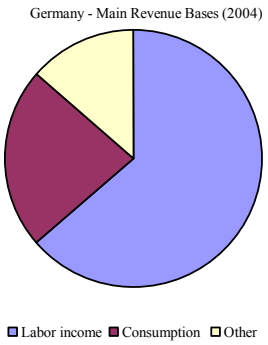
74. **Cyclical revenues and expenditures are scaled by the output gap.** All revenues are assumed to be cyclical, as are some expenditures, e.g. unemployment benefits. One-off items that have transient effects on the fiscal balance are also eliminated. For example, the German government received one-off fees from selling mobile phone bandwidths in the year 2000, but it incurred one-off expenditures related to a flood in 2002–03.

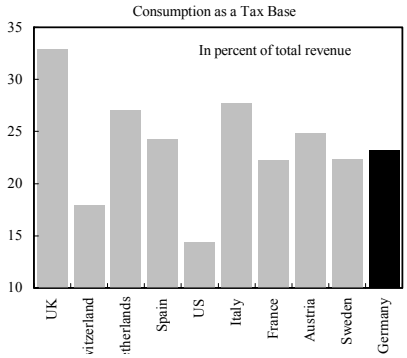
75. **However, some economic changes have wavelengths longer than a business cycle.** We will refer to such long-run changes as *structural* changes of the economy. The conventional calculation assumes that GDP has no internal structure: GDP is treated as a homogeneous aggregate that fluctuates around a long-run trend. However, GDP is not homogeneous, and its internal structure can change profoundly over time, as e.g. the transition from manufacturing to services in most OECD countries shows. This change in structure may in turn have an affect on what is the appropriate fiscal policy.

G. German Economic Structure and Fiscal Performance

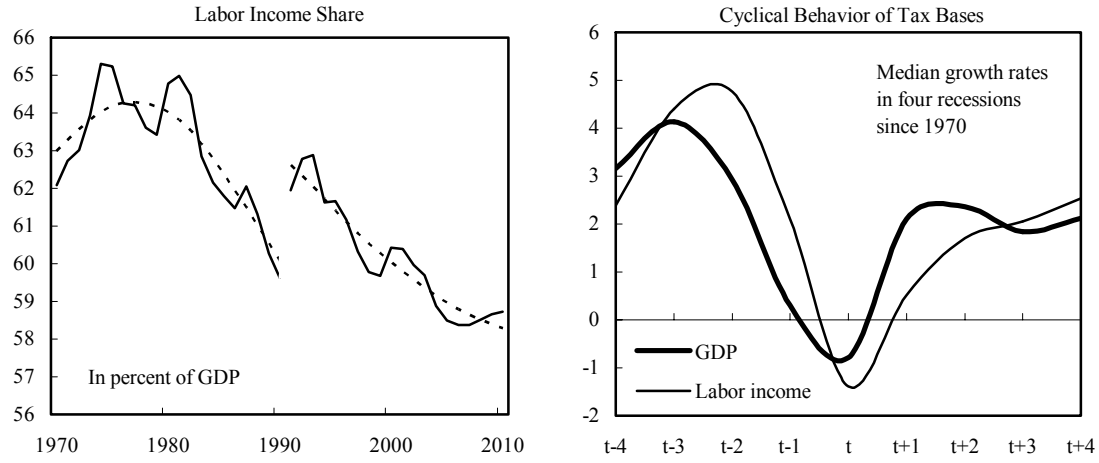
76. **About two-thirds of German fiscal revenue derives from labor income, and much of the remainder derives from private consumption.** In the following, we define taxes on labor income to be personal income taxes, payroll taxes and social security contributions. The charts below give some magnitudes for Germany and other large industrialized countries. Although labor income is the main tax base in most of the OECD, Germany stands out at the extreme end of the spectrum (see chart with GFS data for 2002) with nearly two-thirds of revenue derived from labor income. Not even Scandinavian countries rely on labor as heavily as Germany does.







77. **Labor income is experiencing a long-run decline, in part as a result of high taxation.** The labor share in German GDP (adjusted for self-employment) is presently around 0.6.[23] It has been trending down since a high point in the late 1970s, with a break in the series at German unification. Over this period of time, unemployment increased continuously and employment fell, lowering labor income.[24] However, increasing taxes may also play a role: payroll tax rates increased by 16 percentage points from 26 percent in 1970 to 42 percent in 2003. This created strong incentives to reduce formal, full-time employment. In the present decade, employment gains occurred only in low-wage and part-time jobs, while full-time jobs were declining and subjected to wage moderation. As discussed in last year's Selected Issues (chapter III on Pensions and Growth), the reliance of social security on payroll taxes is likely to exacerbate this trend in the future. As the labor force declines and age-related costs rise at the same time, payroll tax rates will need to increase further to preserve public finances, as required by present law. This will result in a further reduction of hours worked and a loss in potential GDP growth.



78. **The erosion of labor income is estimated to have reduced fiscal revenue by over 1 percent of GDP since 1999.** This is a direct result of Germany's strong reliance on labor taxes and the decline in labor income. Official tax estimates appear to make insufficient allowance of the secular erosion of labor income. Hence, they typically overestimate actual collections leading to frequent downward revisions.

79. **Turning to the expenditure side, rising health care and unemployment cost raise structural expenditure.** Demographic and cost developments have increased trend health

[23] The true share of labor income in GDP is hard to observe. "Labor income" in the national accounts does not include the income of self-employed workers, which is lumped together with capital income. Thus, raw measures tend to understate the labor income share. Gollin (2002) proposes scaling up labor income by the share of the self-employed in total employment.

[24] As argued by Blanchard (1997).

care cost by 0.7 percent of GDP since 1999, and unemployment benefits by 0.3 percent. On the positive side, pension payments are currently flat, as smaller war-time cohorts retire. But this will change after 2010, when large baby-boom cohorts begin to retire.

80. **Finally, the cycle of the main German tax bases lags GDP.** Both labor income and consumption tend to follow GDP with a lag. Revenues are particularly weak in the early years of recoveries, such as 2004. In addition, the cyclical amplitudes of the two aggregates differ from GDP. While labor income has been more volatile than GDP, consumption has been smoother. The output gap is thus not a very precise basis for cyclical revenues, and may mislead the analysis of fiscal policy.

H. An Expanded Decomposition of the Fiscal Balance

81. **A simple extension of the decomposition approach can shed some light on the fiscal puzzle of Germany.** The calculation is augmented by an explicit link from the economic structure to fiscal aggregates. We model the long-run behavior of Germany's main tax bases, as well as the large expenditure items. This procedure generates trends in revenue and expenditure that result in changes in the structural deficit but are unrelated to policy measures.

82. **Fiscal balances can be decomposed into four components:** (1) long-run fiscal policy measures, (2) long-run changes in the structure of the economy, (3) short-run cyclical effects, and (4) short-run one-off items. **The structural balance can then be defined as the sum of the long-run components (1) and (2).** Alternatively, the actual deficit can be reduced by (3) and (4) to obtain the structural balance:

$$B = B^*_{structural} + B_{trans} = (B^*_{policy} + B^*_{economy}) + (B_{cyclical} + B_{one-off})$$

83. **The structural balance has two parts: one related to policies, the other to economic structure.** The second part typically gets less attention, but, as we will see shortly, it accounts for the disappointing fiscal performance in Germany despite adjustment efforts. In other words, fiscal adjustment merely offset a further widening of the structural deficit associated with the change in economic structure.

84. **The cycle is defined with respect to the main tax bases rather than GDP.** By modeling the tax bases in more detail, we can also take into account the different cyclical properties of labor income and consumption compared to GDP. As before, subtracting one-off measures concludes the calculation of the structural balance. More precisely, the procedure involves the following three steps:

- **First, select the relevant economic variables that determine the fiscal outcome.** For revenues, we consider more than one tax base, while the conventional method only used GDP. It was shown above that about two-thirds of German revenues are related to labor income, a quarter to consumption, and the remainder mostly to GDP. For expenditures, we assume that goods and services, salaries and investment follow

trend GDP. However, pensions, health, and child-related transfers are modeled on demographic trends. Pension and health outlays follow the number of people over 65, while child subsidies follow the number of people under 15. Unemployment benefits follow the equilibrium unemployment rate (NAIRU). In equation form:

$$B^*_{economy} = R^*(wN^*, C^*, Y^*) - E^*(U^*, Dem, i^*)$$

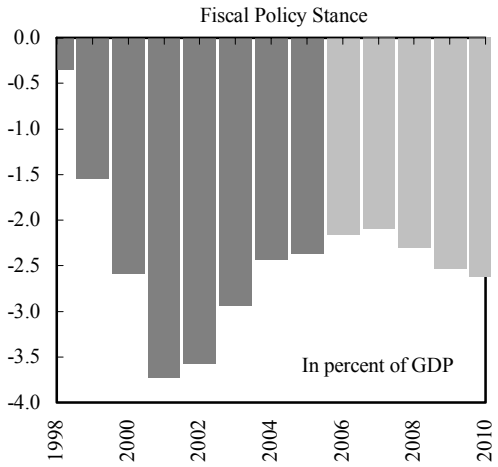
- **Next, separate the trend and business cycle components for each of these variables to establish fiscal trends.** Labor income, consumption, unemployment and GDP are divided into cyclical and structural components with the help of a Hoddrick-Prescott (HP) filter. The related revenue and expenditure items are scaled with cyclical deviations from the HP trend to eliminate their cyclical components.

- **Finally, split changes in interest payments into price and quantity effects.** Price effects are due to fluctuations in long-term bond yields, while quantity effects are due to changes in debt levels. Changes in long-term bond yields are not affected by policy actions. Therefore, price effects are classified as structural economic changes. However, one part of the quantity effects is related to policy actions. Fiscal adjustment lowers debt, while fiscal impulses increase debt. This part is added to the policy component.

I. An Application to the Current Decade

85. **Germany's fiscal deficits in the present decade are the largest since World War II.** With the general government deficit running above 3 percent of GDP for the fourth consecutive year, the present situation is worse than in the 1990s, when Germany accommodated unification. While unification was a historical and costly event, no large shocks explain the deficits since 2001. Nor can a sharp economic slowdown be blamed—the slowdown was much sharper in the aftermath of unification.

86. **Significant adjustment efforts by the government have not yielded the expected results.** The table below examines the adjustment record in detail, and lists the most important fiscal measures since 1998. The years 1998–2001 saw some fiscal loosening, while economic growth was strong. During these years, the government repealed reforms of the previous administration, and introduced important tax cuts. However, as the economy slowed in the following years, the government was forced to adjust. Under the heading of "Agenda 2010," several large benefit programs were cut, and taxes were raised. The government's efforts were supported by interest



rates falling to a post-war minimum, which eased the debt service. Taking into account impact and second-round effects, these policy measures should have improved the fiscal balance by around 1½ percentage points of GDP, but nothing happened.

Table 1. Fiscal Policy Measures, 1998–2004

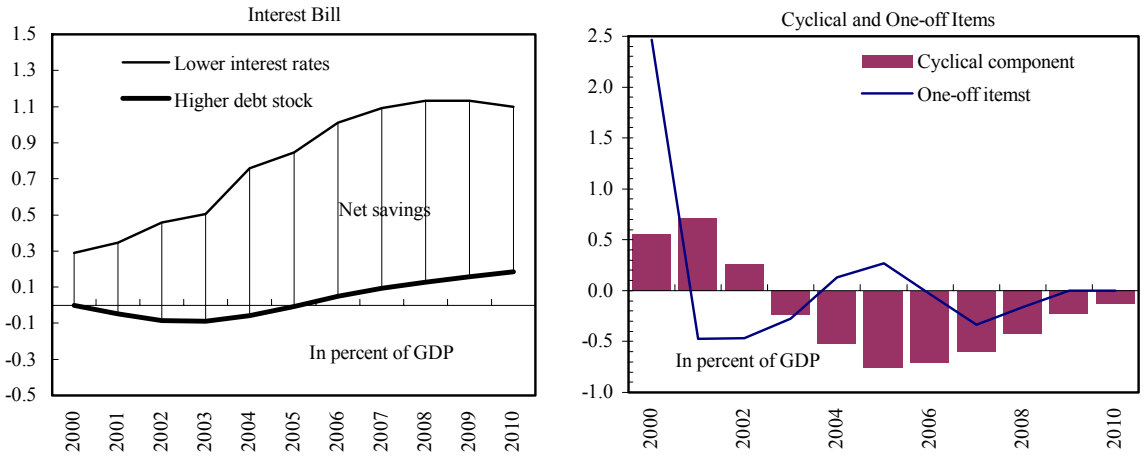
Tightening Measures		*Loosening Measures*	
1998		1998	Repeal of pension reform
			Repeal of health care reform
1999		1999	Increase in unemployment benefits
2000	Employment freeze	2001	Income tax cuts
	Public wage bill limits		Decrease in payroll taxes
			Higher commuter subsidies
2002	Closing loopholes in VAT		Higher family subsidies
	Higher energy taxes		
	Higher insurance taxes		
2003	Higher tobacco taxes		
	Higher corporate taxes	2004	Income tax cuts
2004	Health care reform		
	Pension reform		
	Koch-Steinbrück subsidy cuts		
	Cuts in civil servant bonuses		
	Investment cuts		

87. **The recent adjustment measures faced headwinds from a slowing economy.** After peaking in 2001, the economy cooled significantly and operated below potential since 2002. Automatic stabilizers caused shortfall of up to 1 percent of GDP in 2004–05, mostly in the form of lost revenues. Unemployment benefits rose as well, as slack built up in the labor market. However, the cycle alone cannot explain the observed deterioration in public finances. Around 1½ percentage points of GDP is due to reasons beyond fiscal policy and the cycle.

88. **An eroding tax base, demographics, and unemployment are building up structural fiscal shortfalls.** Germany's main tax bases, labor income and consumption, are shrinking relative to GDP. At the same time, expenditures on health care are rising faster than the economy, due to the pressures of aging. Finally, persistent labor market rigidities have over time ratcheted up the structural unemployment rate, and the cost of unemployment benefits for the state.

89. **Adverse changes of Germany's economic structure may add more than 2½ percentage points of GDP to the structural balance over this decade.** The

decomposition is applied to the German fiscal balance from 1999 to 2010 and shown in the table below. The first half of the decade consists of actual data, while the second half is based on Fund staff projections. The most striking result is a permanent erosion in the tax base and increasing expenditure pressures on health care and unemployment. On the revenue side, the structural deficit widens by about 2 percentage points of GDP. Private consumption is more stable than labor income as a tax base and does not increase the deficit much. This lends support to the view that a shift from labor to consumption taxes may be beneficial for the state, even if it is designed to be initially revenue-neutral.



90. **To a lesser extent, expenditure dynamics also widen the structural balance.** Demographic pressures on health transfers and high unemployment add 1½ percentage points of GDP to the structural deficit by 2010. This is partly offset by declining expenditures on children and education, and lower interest rates. The implicit average interest rate on public debt has declined by over a third from around 6 percent in 1999 to 3.8 percent in 2005. Even assuming an increase in long-term bond yields over the remainder of the decade, debt service will remain extraordinarily favorable. These savings are somewhat offset by the effect of a higher debt stock due to the tax shortfalls (see figure above).

91. **Part of the disappointing performance in 2004–05 is due to the lags of the tax bases relative to GDP.** Rebasing the cycle on labor income and consumption shifts the timing of the structural balance relative to GDP. While the largest output gap occurred in 2003, the largest revenue losses occur in 2004 and 2005, when labor income and consumption reach their minima.

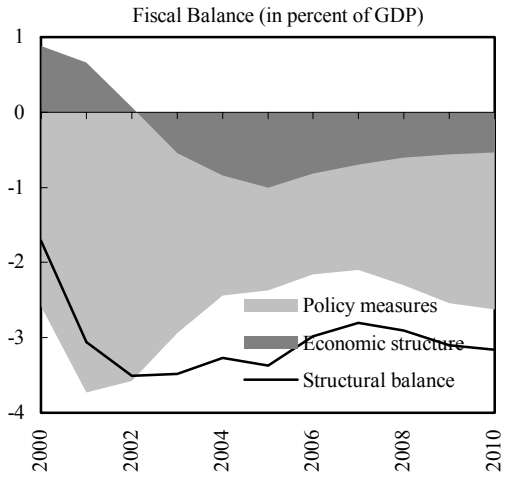
92. **To sum up, the fiscal adjustment effort over the last years has been insufficient to reverse the structural deterioration.** After subtracting economic structure, the cycle and one-off items, the fiscal effort emerges. The figure below shows a separate structural balance for policy measures. Fiscal policy was expansionary during the first term of the present administration (1999–2001), but contractionary in the second term. Yet the switch in fiscal policy has merely stabilized the structural deficit, not reduced it. The goals of the Stability Program would have been met, had not the economic structure worsened at the same time. The reforms of Agenda 2010 will peter out in 2007, after which more adjustment will be

necessary to arrest the structural decline of public finances. Otherwise, further breaches of the Maastricht criterion are likely.

Changes in the Fiscal Balance
(in percent of GDP)

		1998–2002	2002–05
Overall balance	**(1+2+3+4)**	**-0.6**	**-1.0**
Structural balance	**(1+2)**	**-1.1**	**-0.3**
Economic structure	(1)	0.8	-1.7
Revenue		0.9	-1.8
Labor income taxes		0.9	-1.9
Consumption taxes		0.1	0.0
Expenditure		0.1	-0.2
Social security		0.5	0.3
Interest payments		-0.4	-0.5
Policy measures	(2)	-1.9	1.4
Temporary effects	**(3)+(4)**	**0.4**	**-0.8**
Economic cycle	(3)	0.9	-1.5
One-off items	(4)	-0.5	0.7

93. **Future fiscal adjustment should consider shifting revenue collection towards indirect tax bases, in addition to expenditure cuts.** To eliminate the structural fiscal deficit by 2010, the government would need to introduce adjustment measures totaling 2½ percent of GDP. While further entitlement reforms on the expenditure side (pensions and health) are widely discussed, more attention should be paid to reducing the tax burden on labor income. Consumption has been a more resilient tax base, and has fewer distortionary effects on the labor market.



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IV. The Performance of Germany's Nonfinancial Corporate Sector—An International Perspective[25]

94. **Expectations that the success of Germany's export sector would eventually jump-start domestic demand have persistently been disappointed.** Investment in machinery and equipment has remained lackluster this decade, notwithstanding Germany's ascent to the position of export champion of the world. This paper addresses an apparent puzzle: the dichotomy between Germany's much improved profitability and its anemic investment demand.[26]

95. **Although Germany's nonfinancial corporate sector has steadily improved its profit margins over the past decade**, **returns on investment are still low by international standards** (Sections A, B, and C). There is also a substantial performance gap between the more export-oriented manufacturing sector and the service sector, which is domestically oriented. In addition, corporate sector leverage remains relatively high—despite the efforts of balance sheet repair that followed the bursting of the equity bubble in 2000—underscoring the need for continued consolidation (Section D).

96. **These weaknesses of Germany's NFC sector are amplified in the Mittelstand, Germany's small and medium size enterprise (SME) sector.** Mittelstand companies underperform large enterprises across a range of standard financial indicators (Section E). Moreover, they are found to underperform their peers in ten out of twelve developed countries (Section F). In these conditions, investment demand may remain tepid in the short term, barring an unforeseen strengthening of domestic demand. Further policy action is required to redress Germany's structural problems and its adverse consequences for the business environment (Section G).

A. Profitability Developments

97. **National income accounts provide a bird's-eye perspective on the operations of the nonfinancial corporate sector.** In particular, the data of the operating surplus net of depreciation—that is a surplus before interest payments, taxes, and income from other activities—allow for a comprehensive assessment of profitability of the core activities of the nonfinancial corporate sector (NFC) sector. Additional insights on profitability can be gained by transforming national accounts data into a standard income statement, albeit simplified. Such a statement is shown in Table 1.

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[25] Prepared by Jürgen Odenius.

[26] This study relies on multiple data sources with varying coverage, including economy-wide data and sample data. The analysis is confined to the nonfinancial corporate sector, except in Section C, which broadens the analysis to all legal forms of nonfinancial enterprises, including proprietorships and partnerships. Comparisons are made across sectors in Germany and across countries.

98. **Major characteristics of Germany's NFC sector are as follows:**

- **Profit margins have been improving.** The ratio of profits before taxes to sales reached 11 percent in 2004, almost twice as high as in the early 1990s (Figure 1).

- **Nevertheless, investment expenditures have been lackluster.** Investment as a share of operating profits net of depreciation (net operating profits, or NOP) was merely 7½ percent in 2004, up only moderately from the 2002 slump (Table 2).

- **Profitability has increased largely due to cost cutting.** The wage bill has been declining in real terms since 2002—albeit at a moderate pace—reflecting a reduction in employment and more restrictive wage agreements. As a result of this decline and combined with moderate real output growth, profit before taxes increased by 6 percent in 2004 (Figure 2).

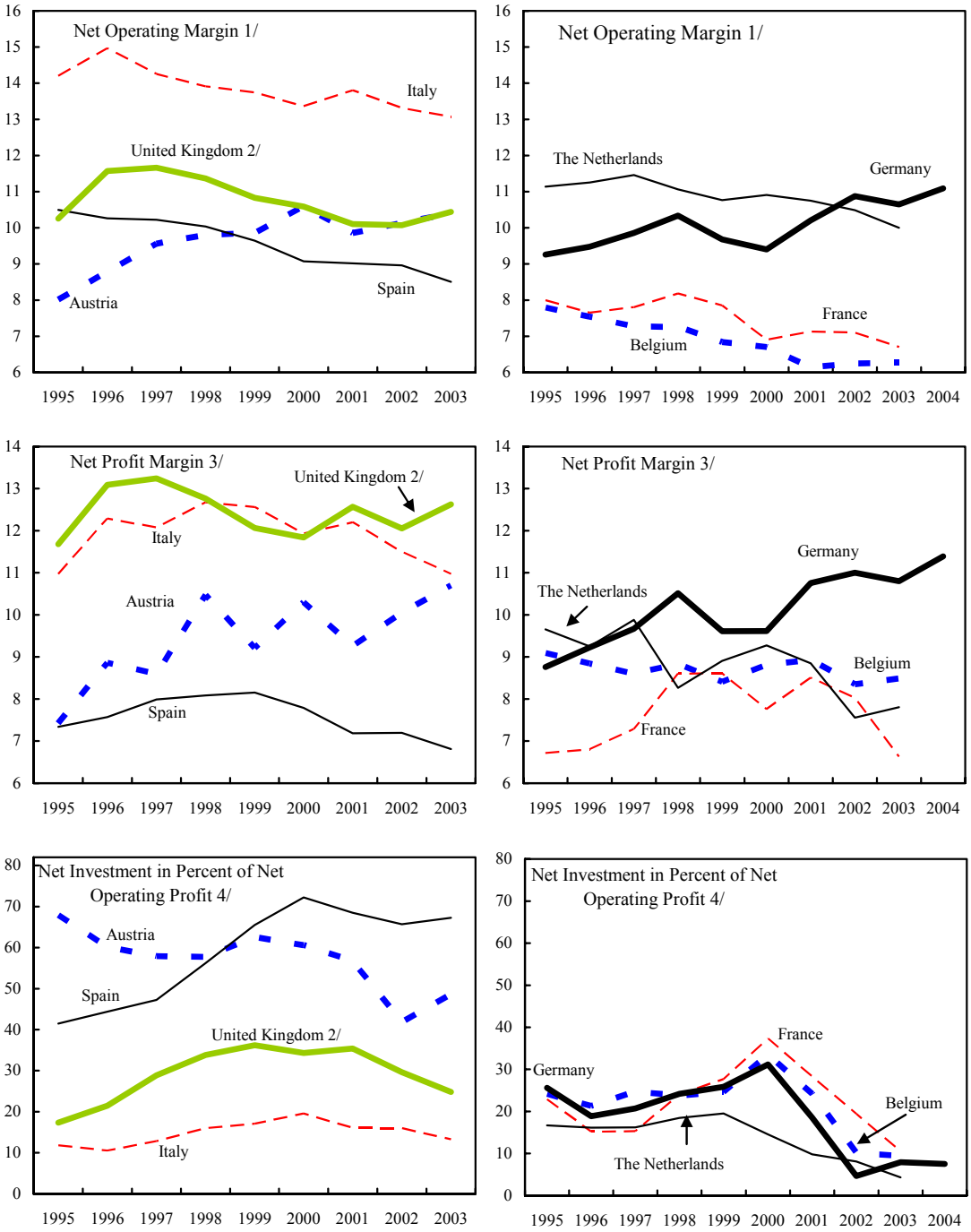
99. **Within a European context, German profit margins are relatively wide but investment is relatively weak.** Referring to 2003, given constraints on data availability, we find the following:

- German profit margins were narrower than in Finland, Italy, and the United Kingdom, but wider than elsewhere in Europe, including France, Spain, and the Netherlands. German profit margins thus exceeded the average of nine other European countries.

- German investment expenditures trailed activity in most countries—especially in Austria, Spain, Portugal, and the United Kingdom. Only the NFC sectors in Finland and the Netherlands recorded lower investment expenditures than in Germany.

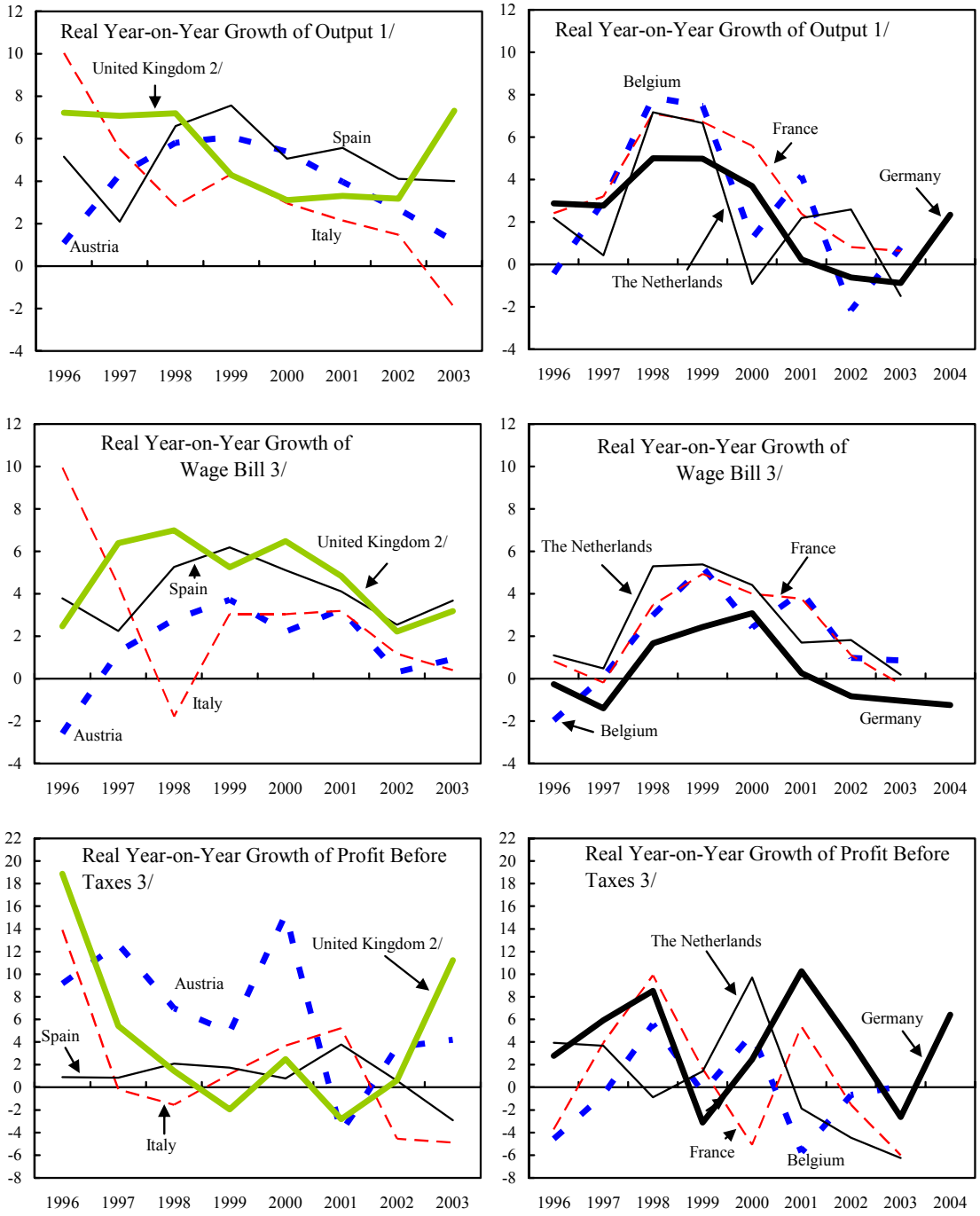
- Real wage costs fell more in Germany than elsewhere in recent years, although overall labor costs remained high given sizeable social security contributions.

Figure 1. Cross-Country Comparison of Selected Nonfinancial Corporate Sector Indicators 1995-2004
(In percent)



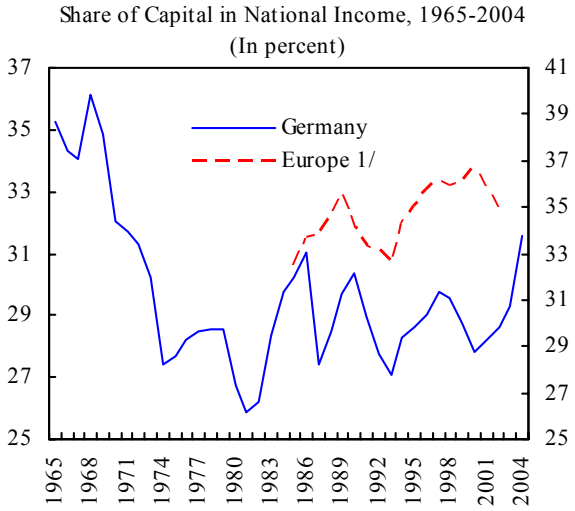
Sources: German Statistical Office; Eurostat; and IMF staff estimates.
1/ Operating profits net of depreciation in percent of sales revenue.
2/ 2003 estimates.
3/ Profits before taxes in percent of sales revenue.
4/ Operating profit net of depreciation.

Figure 2. Cross-Country Comparison of Selected Nonfinancial Corporate Sector Indicators 1996-2004
(In percent)



Sources: German Statistical Office; Eurostat; and IMF staff estimates.
1/ Deflated by PPI.
2/ 2003 estimates.
3/ Deflated by CPI.

100. **Reflecting improvements in profitability, the share of capital in national income has been recovering during the past decade.** Largely as a result of costly social welfare policies and rapid wage growth, the share of capital had fallen sharply throughout the 1970s, before oscillating in the 1980s. After having reached its post-unification low of 27 percent of GDP in 1993, the share of capital in national income rose to 33 percent in 2004. However, Germany's share of capital remains below the average in continental Europe.



1/ Weighted average of Belgium, Austria, Denmark, Finland, France, Italy, Luxembourg, the Netherlands, and Norway.

B. The Return on Invested Capital: Germany and Comparator Countries

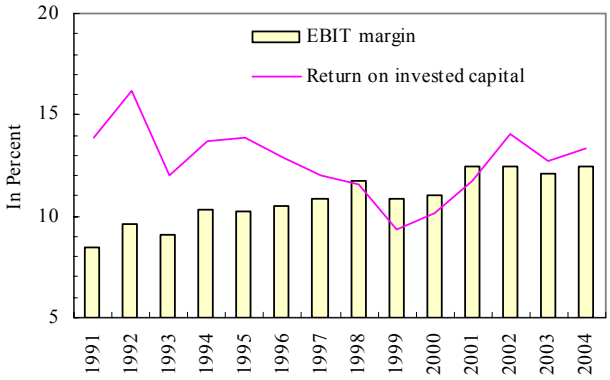
101. **Prima facie, the steady improvement in profit margins of Germany's NFC sector is difficult to reconcile with its subdued investment demand.** This raises the question whether returns for investors have risen to an internationally competitive level. While returns on investment have increased, this section finds that Germany's NFC sector nevertheless has underperformed Italy and the United Kingdom. The significance of this result, however, is limited by the small comparator base, given data constraints.

102. **As comprehensive financial ratios are not available, this section focuses on the return on invested capital in the NFC sector.** Invested capital (IC) is commonly defined as the sum of equity capital and long-term debt obligations, also referred to as enterprise value. This measure abstracts from firms' capital structure—the relative importance of debt and equity financing—and gauges long-term investment financing.

103. **IC has been subject to substantial fluctuations, especially during the 2000-02 equity market downturn (Table 3).** In accordance with the European Systems of Accounts (ESA) 1995 standards, IC is estimated on the basis of market value—rather than book value—of equity capital. The valuation of equity capital at market prices provides a measure of the opportunity cost of continuing a business rather than selling it at the prevailing market price.

104. **As a measure of the profitability of the NFC sector, the return on invested capital in Germany has risen in recent years.** The return on invested capital (ROIC) is calculated as the ratio of earnings to IC. To allow for comparisons of entities that rely to different degrees on debt and equity financing and follow varying strategies to optimize tax liabilities, interest costs and taxes are excluded from profits; earnings before interest and tax (EBIT) thus are used in this calculation. ROIC rose from its 1999 trough of just under 10 percent to an estimated 13 percent in 2004. This increase reflects the combined effect of improving earnings and declining IC.

Germany: Nonfinancial Corporate Sector Indicators
1991-2004



105. **Notwithstanding the improvement in ROIC, Germany's performance trails that of Italy and the United Kingdom** (Tables 4 and 5), as illustrated in the text table below. A decomposition of ROIC sheds light on the factors driving Germany's underperformance. Equation (1) suggests either EBIT margins are still too narrow, for any given turnover of capital, or the usage of capital is relatively inefficient.[27]

ROIC = EBIT margin * capital turnover/100 (1)

Capital turnover = sales/IC * 100 (2)

106. **This decomposition captures the trade-off between profitability and the utilization of capital.** All else equal, higher profit margins offset lower capital turnover and vice versa, where capital turnover measures sales revenue in percent of IC (equation 2). For instance, the ROIC in capital intensive-sectors—such as manufacturing—may exceed the ROIC in the more labor-intensive service industry, provided that profit margins in manufacturing are sufficiently large.

[27] See Anthony (1997) and Copeland, Koller, and Murrin (2000).

Nonfinancial Corporate Sector Performance, 1995-2002
(In percent)

	ROIC		EBIT Margin		Capital Turnover	
	1995-2002	1999-2002	1995-2002	1999-2002	1995-2002	1999-2002
Germany	12.0	11.3	11.3	11.7	106.2	96.9
Italy	...	13.1	...	16.3	...	80.5
U.K.	16.0	14.1	16.8	16.7	95.6	84.7

Sources: Eurostat; Bank of England; UK Office for National Statistics; Banca d'Italia; Bundesbank; and IMF staff estimates.

107. **Narrower profit margins were the primary reason for Germany underperforming Italy and the United Kingdom.** EBIT margins were wider in Italy and the UK during 1999–2002 and 1995–2002, respectively. In contrast, capital turnover was somewhat higher in Germany. In sum, although returns on investment have increased in Germany, there is partial evidence that they may still not be at an internationally competitive level.

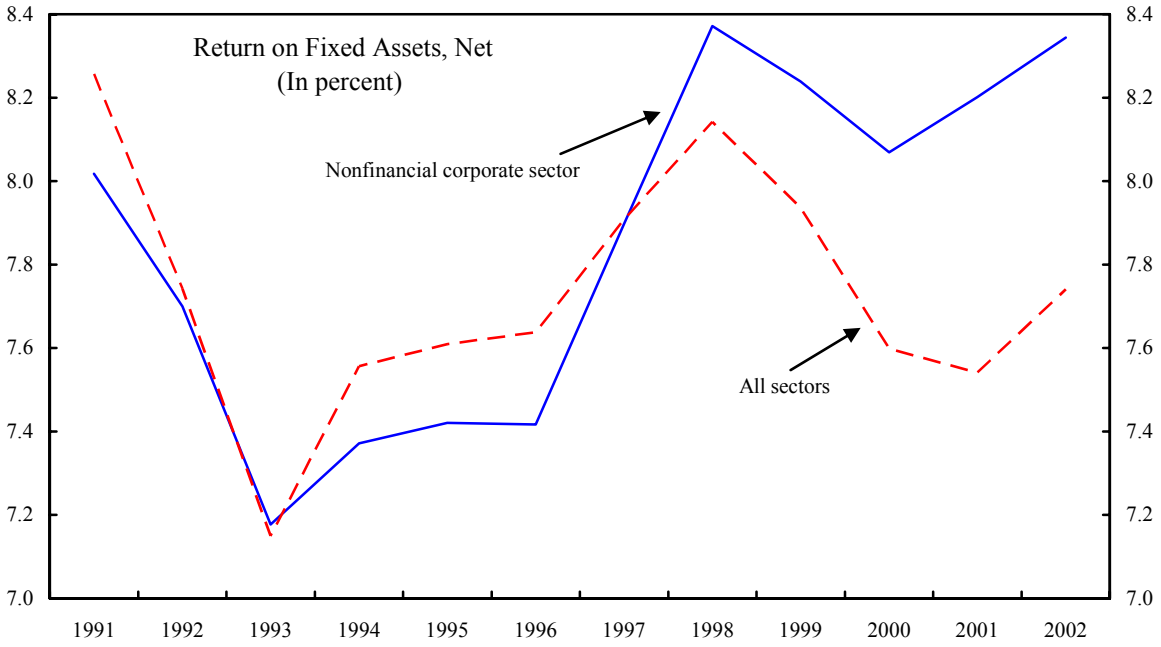
C. The Return on Physical Capital: Manufacturing versus Service Sectors

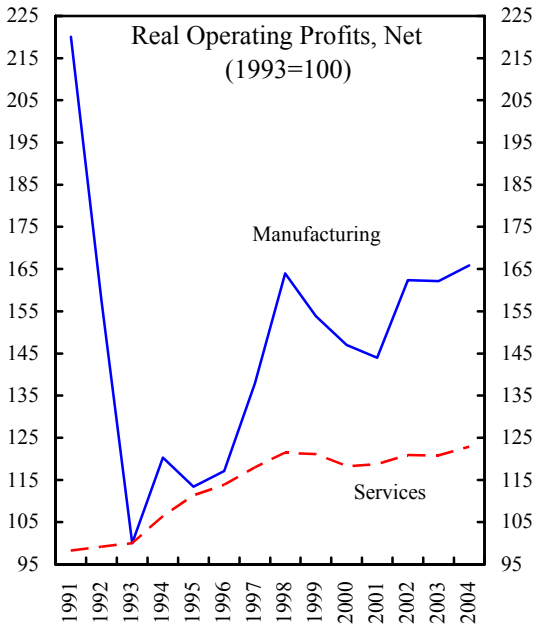
108. **This section compares the performance of the export-oriented manufacturing sector with the largely domestic service sector on the basis of returns on physical capital.** This measure of returns allows for a broader comparison across countries, in contrast to the difficulties involved in estimating IC across countries. The performance of Germany's service sector is found to be weak relative to both the manufacturing sector and international standards.

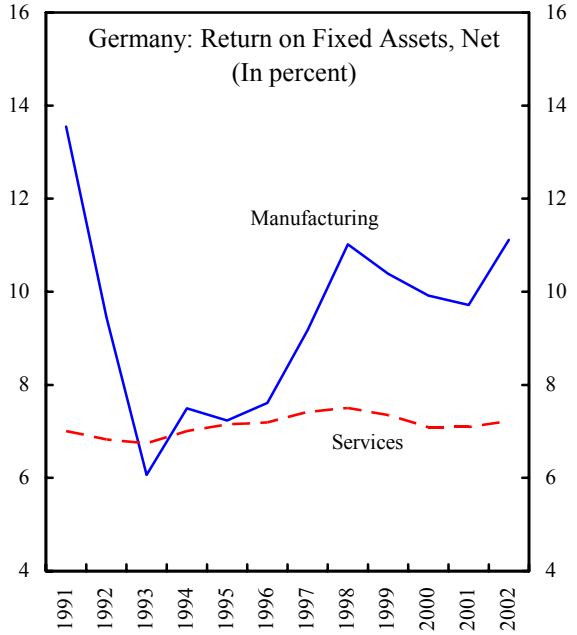
109. **Physical capital is measured by fixed assets at current replacement costs net of depreciation.** This approach facilitates the comparison of corporate sector profitability on an international level.[28]

[28] See Walton (2002). Fixed assets net of depreciation provide a measure for the replacement cost of capital. This approach is consistent with the valuation of equity capital at market prices, as discussed in Section B. The capital stock of the NFC sector is estimated on the basis of the simplifying assumption that both incorporated and unincorporated enterprises are equally capital intensive.

Figure 3. Germany: Corporate Sector Profitability, 1991-2004







Sources: Federal Statistical Office; IMF staff estimates.

110. **NOP is used as a metric for profitability, and the return on fixed assets is defined as NOP divided by fixed assets (Table 6).** Fixed assets are measured at current replacement costs net of depreciation. The exclusion of nonoperating activities from the calculation of profits facilitates comparisons across sectors and countries. Limitations on data for Germany's NOP surplus and capital stock, however, allow the calculation of return on fixed assets only until 2002.

111. **Returns on fixed assets held by the NFC sector increased steadily over the past decade**—except for a temporary downturn in 1999 and 2000 (Figure 3)—mirroring the behavior of profit margins. The return on fixed assets increased to above 8 percent in 2002, the second-highest level since 1998. This increase reflects to a large extent improvements in the manufacturing sector. Following the recession in the early 1990s, profits in the manufacturing sector are estimated to have risen by almost 5 percent annually in real terms from 1993 to 2004.

112. **Profit growth in the manufacturing sector consistently outperformed the service sector over the past decade.** By international standards, the performance of Germany's service sector is lackluster (Box 1). Net operating profits grew an estimated 2 percent annually in real terms from 1993 to 2004, constrained by regulatory barriers to entry and other impediments, including the often small scale of businesses. The service sector yielded a return of 7 percent on physical capital in 2002, well below the returns of 11 percent in the more vibrant manufacturing sector. Real estate services, public services, and financial services, accounting for approximately three-fourths of the service sector in 2002 on the basis of capital stock, perform poorly. The returns for the remaining services on averaged approximately 13 percent in 2002—including wholesale and retail trade (27 percent) and post and telecommunication (26 percent)—which is in line with the overall performance of more service-oriented economies. The ramifications of this finding for the labor market are far-reaching, given the prominent role of service sectors in employment creation while manufacturing is shedding employment.

Box 1. An International Comparison of Germany's Profitability

The measurement of return on capital—a major yardstick for gauging the incentive to invest—is fraught with difficulties. While there are many measures available, constructing an economy-wide metric that facilitates comparisons across borders is cumbersome. The difficulty arises because of differences in the accounting of company profits and capital.

A study by Citron and Walton (2002) provides, to the extent possible, a uniform measure of return on physical capital across a large group of countries. This study relies on the NFC sector operating surplus as a return metric. The consistency of these data across countries is ensured by the accounting standards set out under 1995 ESA and the 1993 System of National Accounts. Measuring capital across borders is also challenging. Differences in accounting dilute the comparability of equity capital. The authors, therefore, base their analysis on physical capital, net of depreciation.

The below table highlights some of the study's findings. The performance of Germany's service sector lags behind on an international basis, while the performance of the manufacturing sector is broadly in line with the United Kingdom, Spain and the Netherlands, but trails that of Belgium, Finland, and the United States.

Nonfinancial Corporate Sector Net Operating Profit in Selected Countries, 1995-2001
(In percent of physical capital stock)

	Germany	Belgium	Finland	Netherlands	Spain	U.K.	U.S.A.
Service Sector							
1995	7.9	9.2	11.3	2.1	11.6	13.2	16.7
1996	6.8	9.0	13.2	2.1	12.2	13.7	18.6
1997	7.0	9.9	15.7	2.5	12.4	14.7	19.2
1998	7.2	10.5	17.4	2.4	14.8	16.2	23.3
1999	6.9	10.0	17.0	2.3	16.1	15.6	24.4
2000	...	8.8	16.8	1.9	14.8	14.0	19.3
2001	...	...	15.9	2.1	...	12.9	17.5
1995-99 average	7.2	9.7	14.9	2.3	13.4	14.7	20.4
Manufacturing Sector							
1995	10.1	17.7	14.1	11.9	10.9	10.0	22.2
1996	10.1	15.5	11.2	11.2	9.5	11.1	22.8
1997	10.3	19.1	13.9	11.9	11.7	11.9	25.2
1998	10.9	18.8	16.5	12.3	13.4	10.5	21.2
1999	12.2	17.3	15.7	11.6	13.3	9.3	22.7
2000	11.8	21.0	21.1	13.3	13.8	8.6	20.8
2001	...	...	18.9	12.0	...	3.6	4.4
1995-99 average	10.7	17.7	14.3	11.8	11.8	10.6	22.8

Sources: Citron and Walton (2002); and IMF staff calculations.

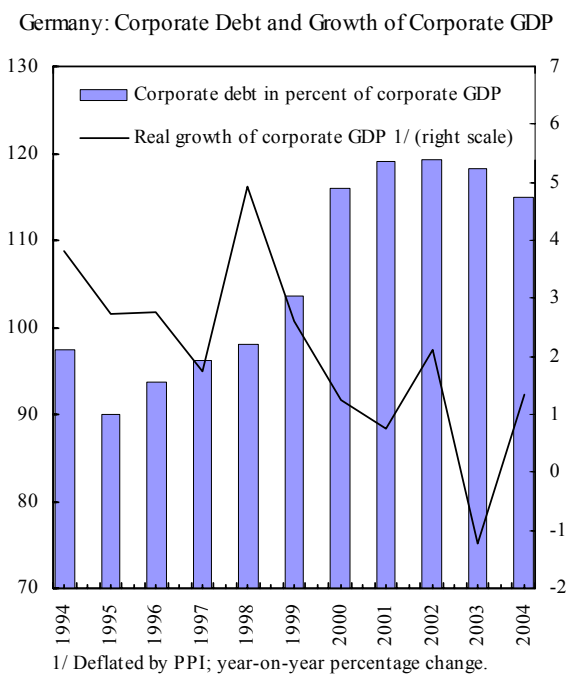
There are also persistent differences in economic returns across borders. This finding suggests that markets are not fully integrated—including in the euro area—and capital cannot move quickly across borders to equalize returns, contrary to the predictions of economic theory.

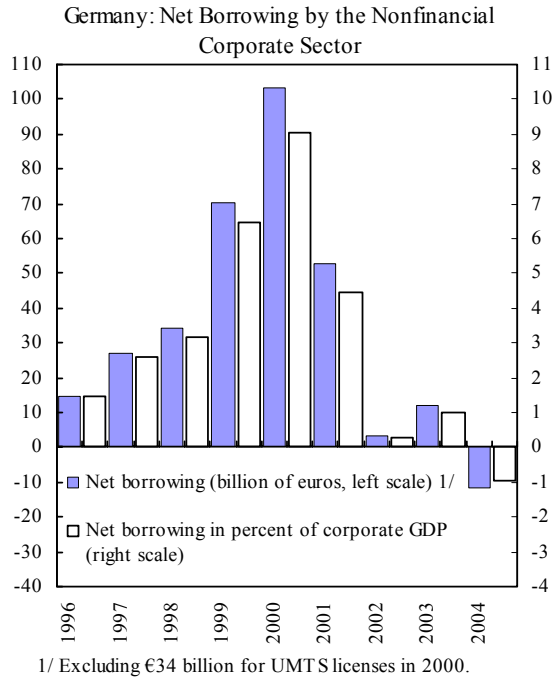
Similarly, returns across sectors within any given country are typically not equalized. The study finds continuous differences over time in returns between the manufacturing and service sector. In particular, the service sectors in the United Kingdom, and Spain are found to outperform the manufacturing sector. The authors suggest that the difficulty in measuring service sector capital in a meaningful way may be one explanation. In a broader sense, the performance of the service sector tends to thrive on intangible assets such as patents, copyrights, franchises, trademarks, goodwill, and human capital, all of which are excluded from Citron and Walton's metric of capital.

However, the better performance of the manufacturing sector in some countries—including in Germany—could be seen as a manifestation of a risk premium. The manufacturing sector is more exposed to external shocks, given, according to the study, the higher degree of dependence on export markets.

D. Balance Sheet Repair

113. **Besides relatively low returns on capital—at least in the services sector—the need for further balance sheet repair continues to dampen the investment outlook.** Following the excesses of the late 1990s and the bursting of the equity bubble in 2000, deleveraging has been a prevalent theme in corporate finance, but the repair of balance sheets remains incomplete and the debt–to-GDP ratio of the NFC sector remains elevated.





114. **Reflecting attempts to curtail leverage, expenditures by the NFC sector for net investment continued to slide last year for a fourth consecutive year.** In 2004, net investment (€22 billion) barely reached 40 percent of its level in 1999 and fell below the low of 1992. The NFC sector did not even utilize in full its internal resources for fixed asset formation. Instead, cash flow was aimed at improving the capital structure. As a result, the NFC sector became a moderate net lender in 2004, in a marked turnaround from most of the previous years, especially 2000.

115. **Notwithstanding the turnaround from net borrower to net lender, NFC sector leverage remains high—both by historical and international standards.** After having reached 119 percent in 2001, the corporate-debt-to-GDP ratio declined to an estimated 115 percent in 2004, 21 percentage points above the average level for 1991 to 1998, prior to the borrowing binge in 1999 and 2000.

E. The Mittelstand in Domestic Perspective

116. **This section focuses on the Mittelstand—Germany's small and medium-sized enterprises (SMEs)—the traditional backbone of employment.** This sector comprised approximately 2.8 million nonfinancial companies in 2000, which generated just under half of value added, accounted for half of investment, and employed nearly 70 percent of the workforce.[29] These enterprises are closely tied to domestic demand developments and have been disproportionately affected by the recent downturn.

117. **The introduction of Basel II—anticipated in 2007—heralds a major shift for Mittelstand financing.** Basel II is spurring lenders to base their loan decisions primarily on an assessment of credit risks, in a shift away from traditional relationship banking. As a result, lending terms are expected increasingly to reflect borrowers' financial standing. Consequently, stronger companies may experience an improvement in their financing terms, while weaker companies may find that their terms deteriorate, if not their access curtailed.

118. **Against this background, standard measures of creditworthiness of Mittelstand corporations in the manufacturing sector are reviewed and compared to financial ratios of large manufacturing corporations in Germany.** The next section follows up with a comparison of Mittelstand companies in Germany to SME manufacturers in 12 other countries. The major finding is that financial ratios of the Mittelstand are substantially weaker than those of large enterprises in Germany, as well as SMEs in most comparator countries.

Balance sheet

119. **Cash, inventory, and investment management is substantially more costly for Mittelstand corporations in the manufacturing sector than for large companies.** A balance sheet for Mittelstand companies in the manufacturing sector and large manufacturing enterprises in Germany is shown in Table 7. These data are collected by the Bundesbank as part of its annual sample of the enterprise sector.[30] The latest data are available for 2002. Companies with an annual turnover of €50 million or less are classified as Mittelstand companies, in line with common practice. Key findings are as follows:

- Inventories represented 26 percent of Mittelstand assets in 2002, almost twice as high as for large enterprises.

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[29] See Hommel and Schneider (2003).

[30] See Bundesbank (2004). The Bundesbank provides data for all major nonfinancial sectors. The discussion, however, is limited to the manufacturing sector given its dominant role in production and exports. Moreover, the analysis is limited to corporations. The quality of the data collected from proprietorships and partnerships was found to be generally poor (see Bundesbank (2003)).

- Mittelstand companies held 7 percent of their assets in cash in 2002, compared to 5 percent for large corporations.

- At the same time, investments—mostly securities they hold—as a share of assets were substantially smaller for Mittelstand firms than for large enterprises.

Income statement

120. **Profitability of Mittelstand corporations in manufacturing falls substantially short of the profitability of large manufacturing enterprises.** An income statement of German corporations is shown in Table 8. Key findings are as follows:

- Profit margins of the Mittelstand are well below those of large enterprises. Earnings-before-interest-and-tax, profit-before-tax, and profit-after-tax margins of large enterprises exceeded Mittelstand margins in 2001 and 2002.

- Net interest costs in relation to sales were higher for Mittelstand companies than for large enterprises in 2001 and 2002, while the "drag" from other income—that is income generated by activities other than operating activities—was significantly larger for the Mittelstand than large enterprises.

- The effective tax rate paid by the Mittelstand was negligible in 2001 and 2002, in contrast to larger companies.

Financial ratios

121. **Mittelstand companies in manufacturing trail large manufacturing enterprises in standard financial ratios**. The downturn of domestic demand in 2001 and 2002, however, is likely to have contributed to the Mittelstand's underperformance, as these companies rely to a greater extent on domestic demand than large and often export-oriented enterprises. The financial ratios—derived on the basis of the balance sheet and income statements—are shown in the text table below.

- The financial return generated by the Mittelstand is inferior to that of large enterprises. In particular, the ROIC generated by Mittelstand companies fell short of the returns generated by large enterprises in 2001 and 2002 by approximately one-third.

- Financial liquidity of the Mittelstand is lower than for large enterprises, notwithstanding higher cash holdings. The Mittelstand's quick ratio—measuring the relationship between short-term assets excluding inventories and short-term liabilities—at 29 percent in 2002 was 35 percentage points below the current ratio of large enterprises. This result reflects in part large inventory holdings by the Mittelstand.

Germany: Financial Ratios of Nonfinancial Manufacturing Corporations
(In percent)

	2001				2002			
	Mittelstand			Large Enterprises	Mittelstand			Large Enterprises
	Sales in € million		Total	Sales in € million	Sales in € million		Total	Sales in € million
	< 2.5	2.5 to 50		> 50	< 2.5	2.5 to 50		> 50
Return measures								
Return (before taxes) on assets	3.0	4.9	4.8	11.7	2.3	5.4	5.3	11.4
Return (before taxes) on invested capital	7.3	11.7	11.6	33.6	5.3	12.5	12.3	31.2
Return (before taxes) on equity	21.8	18.7	18.7	39.4	15.0	19.1	19.0	37.1
Profit margins								
Gross operating margin	22.9	20.0	20.1	19.8	23.1	20.6	20.7	20.0
Net operating margin	18.4	16.1	16.1	15.6	18.6	16.7	16.7	16.1
EBIT margin	3.2	3.8	3.8	9.2	2.9	4.2	4.2	9.8
Profit before tax margin	1.8	2.9	2.9	9.1	1.4	3.3	3.2	9.5
Profit after tax margin	1.7	2.7	2.7	4.2	1.3	3.1	3.0	4.1
Balance sheet measures								
Current ratio (ST assets in percent of ST liabilities)	86.5	86.7	86.7	96.2	88.3	90.5	90.5	101.1
Quick ratio (ST assets - inventories in percent of ST liabilities)	35.5	25.9	26.1	57.0	33.8	29.0	29.1	64.3
Debt ratio (LT debt in percent of permanent capital)	66.7	37.5	38.1	14.7	64.9	34.6	35.3	15.8

Sources: Bundesbank; and IMF staff estimates.

122. **Mittelstand companies in manufacturing also underperformed larger enterprises in terms of solvency, although leverage appears manageable.** The debt ratio shows the share of long-term debt in IC, that is, the sum of long-term debt financing and own funds. Long-term debt contributed 35 percent to the IC of the Mittelstand in 2002, more than twice as high as for large enterprises. This reflects the traditional reliance of Mittelstand companies on relationship banking and debt financing.

123. **Smaller Mittelstand companies—those with sales of less than €2.5 million—generally fare worse than larger Mittelstand corporations.** Most return measures of smaller companies were inferior in 2001 and 2002, while margins—including earnings-before-interest-and-tax, profit-before and profit-after-tax margins— were below those of Mittelstand enterprises with sales exceeding €2.5 million. In addition, the debt ratio of smaller Mittelstand companies exceeded substantially the debt ratio of their larger peers in 2001 and 2002.

124. **The results presented in this section for the manufacturing sector generalize to the Mittelstand.** Table 9 shows average financial ratios for Mittelstand companies across

seven major sectors.[31] These ratios are overall weaker than for the manufacturing sector, underscoring the weakness in various sectors, especially the construction sector.

F. The Mittelstand in International Perspective

125. **This section compares the financial health of the German Mittelstand manufacturing companies with SMEs in the manufacturing sector in 12 other countries.** The comparison relies on harmonized annual account statistics of a sample NFC enterprises in 11 European countries, Japan, and the United States. These data are provided as part of an umbrella project of the European Commission and national authorities. The delineation of SMEs in this database, however, deviates marginally from the Mittelstand definition applied by the Bundesbank.[32]

126. **A cardinal ranking of SMEs across countries is shown in the table below.** The ranking reflects the relative positions of each country for each of the 11 financial ratios discussed in the previous section (Table 10). To smooth out the impact of differences in business cycles across countries, an average is calculated for each indicator for the 1995–2001 period. The countries are ranked based on each indicator, from 1 (the most favorable financial indicator) to 13 (the least favorable indicator). Three composite rankings—returns, profit margins, and balance sheet measures—are calculated as arithmetic averages of the individual rankings. An overall country ranking is derived as an arithmetic average of the three composite rankings.

[31] These sectors are mining and quarrying, manufacturing, electricity, gas and water supply, construction, trade and transport. In terms of assets, the manufacturing sector represented two thirds of the surveyed companies in 2002.

[32] SMEs are defined as enterprises with turnover of less than €40 million in Europe, ¥1 trillion in Japan, and US$25 million in the United States.

Ranking of SMEs in Manufacturing, 1995-2001 1/

Rank	Overall	Return Measures	Profit Margins	Balance Sheet Measures
1	Finland	U.S.	Finland	U.S.
2	U.S.	Denmark	Denmark	France
3	Netherlands	Finland	Netherlands	Finland
4	Spain	Netherlands	Spain	Spain
5	Denmark	Sweden	Sweden	Netherlands
6	Sweden	Spain	U.S.	Sweden
7	France	Austria	Austria	Belgium
8	Austria	**Germany**	Italy	Italy
9	Italy	France	France	Portugal
10	Belgium	Belgium	Portugal	**Germany**
11	**Germany**	Italy	Belgium	Japan
12	Portugal	Portugal	Japan	Austria
13	Japan	Japan	**Germany**	Denmark

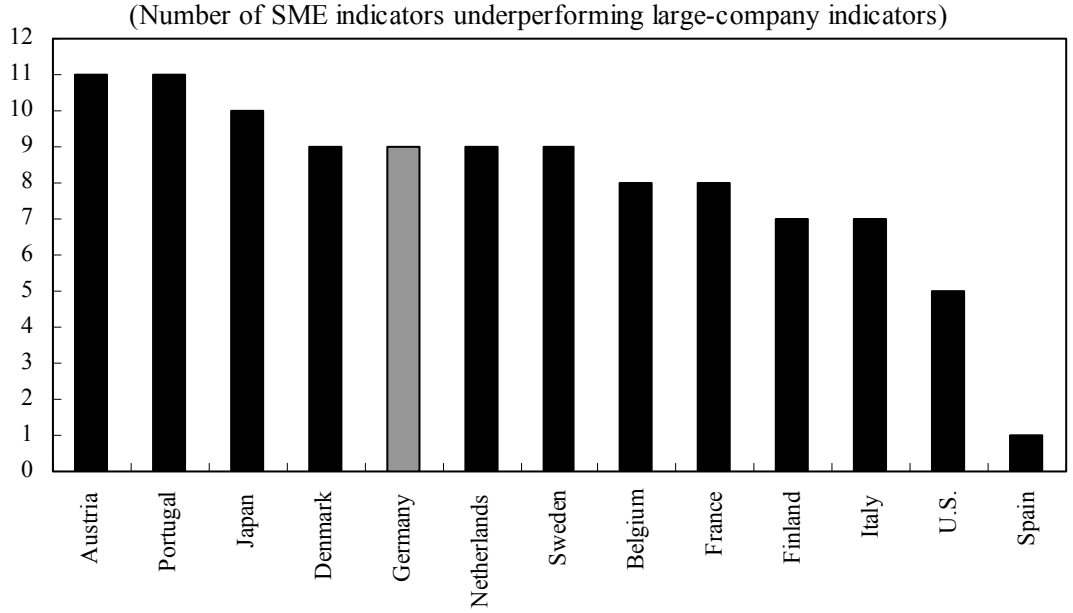
Sources: European Commission BACH database; and IMF staff calculations.
1/ The ordering is based on the rankings derived in Table 9.

127. **The financial situation of Germany's Mittelstand manufacturing companies is poorer than that of manufacturing SMEs in other industrial countries.** The Mittelstand is positioned third to last (rank 11), ahead only of SMEs in Portugal and Japan, in terms of its overall ranking. This result is driven by the Mittelstand's narrow profit margins (rank 13), and weak balance sheet measures (rank 10). These rankings are a reflection of the Mittelstand's overreliance on debt financing, which tilts downward solvency and liquidity ratios. Indeed, Germany and Japan—which also relies heavily on debt financing—are strikingly close in many rankings.

128. **The bottom ranking of Mittelstand profit margins (rank 13) is somewhat difficult to reconcile with the average ranking of its financial returns (rank 8).** Nevertheless, narrow profit margins typically reflect low-value-added creation. This suggests Germany's Mittelstand is reasonably profitable but mostly engaged in established production activities that are experiencing competitive pressures. In contrast, successful innovations tend to be characterized by wide profit margins during an initial period. In short, the Mittelstand does not appear on average to be at the "cutting edge." The average ranking of the Mittelstand in terms of its financial returns appears broadly consistent with the ranking of Germany's manufacturing sector, discussed in Box 1.

129. **That said, the ranking of Germany's Mittelstand is likely to have improved since 2001.** Profit margins, operating profits, and ROIC were all found to have improved for the NFC sector since 2001 (Sections A and B). These improvements are unlikely to have been generated only by large enterprises. Therefore, the international ranking of Mittelstand companies may have improved somewhat in recent years.

SMEs vs. Large Companies in Manufacturing, 1995-2001
(Number of SME indicators underperforming large-company indicators)



Sources: European Commission BACH database; and IMF staff calculations.

130. **Even though the weakness of the Mittelstand companies in manufacturing partly reflects the sluggish performance of the German economy, their financial health is substantially worse than that of large companies.** Mirroring the findings in section E, Mittelstand companies in the manufacturing sector underperform larger companies in 9 of 11 indicators, placing Germany's Mittelstand near the bottom end of the sample. This is likely to be due to a combination of factors, including the weakness in the Mittelstand's financial structure and overreliance on debt financing fostered by decades of relationship banking. In contrast to Germany, SMEs outperform large companies including not only those with high overall rankings, such as Spain (rank 4) and the United States (rank 2), but also similarly ranked countries, such as Italy (rank 9) and Belgium (rank 10).

G. Conclusions

131. **Notwithstanding substantial improvements in profit margins over the past decade, returns on investment in Germany's NFC sector remain low by international standards.** This holds true especially for Germany's service sector and the Mittelstand. In addition, leverage remains high by historical standards, pointing to the need for completing balance sheet repair.

132. **These findings suggest that investment activity may remain subdued in the near term.** Barring a strengthening of domestic demand, companies would have to widen further

their profit margins or curtail investment capital in order to produce more attractive returns, with the latter option implying a continued subdued investment outlook.

133. **That said, further improvements in profit margins may also pose macroeconomic challenges.** The widening of margins has increasingly relied on cost-cutting in recent years, with wage compression and lay-offs playing major roles in the adjustment. Ironically, the feedback effects from this adjustment—rising unemployment and falling disposable incomes—are forestalling a much needed recovery of domestic demand and especially investment.

134. **These considerations call for further policy action to address Germany's structural problems.** The framework within which Germany's corporate sector operates needs a substantial overhaul, especially the tax code, the labor market and the regulatory environment. High payroll taxes, rigid wage floors and wage bargaining, and limited wage dispersion all combine to curtail corporate sector profitability and, therefore, employment creation.

135. **Finally, the effective tax burden on the Mittelstand appears to be small,** contrary to common belief. While there are substantial benefits to streamlining Germany's complex tax system, providing special tax breaks for the Mittelstand appears unwarranted.

Table 1. Germany: Nonfinancial Corporate Sector Income Statement, 1991-2004
(In euro billion)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Sales	1,773	1,867	1,859	1,940	2,043	2,081	2,161	2,255	2,347	2,513	2,602	2,577	2,589	2,691
Cost of sales	(1,521)	(1,577)	(1,568)	(1,619)	(1,704)	(1,732)	(1,792)	(1,861)	(1,954)	(2,103)	(2,158)	(2,114)	(2,130)	(2,206)
Intermediate consumption	(937)	(972)	(956)	(999)	(1,064)	(1,082)	(1,136)	(1,188)	(1,260)	(1,377)	(1,415)	(1,366)	(1,382)	(1,450)
Compensation of employees	(561)	(601)	(608)	(620)	(643)	(651)	(654)	(671)	(691)	(723)	(739)	(743)	(743)	(746)
Taxes and subsidies related to production	(0)	(4)	(4)	0	2	1	(2)	(2)	(3)	(3)	(4)	(4)	(6)	(10)
Taxes	(23)	(25)	(24)	(25)	(24)	(26)	(27)	(28)	(30)	(30)	(28)	(27)	(27)	(31)
Subsidies	22	20	19	25	27	27	25	26	26	26	25	23	22	20
Gross operating surplus	**252**	**290**	**291**	**321**	**338**	**350**	**369**	**394**	**393**	**409**	**445**	**463**	**459**	**485**
Depreciation	(120)	(131)	(140)	(145)	(149)	(152)	(156)	(161)	(166)	(173)	(179)	(183)	(183)	(186)
Net operating surplus	**133**	**159**	**151**	**176**	**189**	**197**	**213**	**233**	**227**	**236**	**266**	**280**	**276**	**298**
Other income, net	18	20	18	24	20	22	22	31	27	42	57	41	37	38
Other income received	20	17	16	24	19	19	23	31	22	37	38	29	32	31
Distributed income of corporations	17	16	13	21	15	13	18	24	17	37	54	44	32	31
Property income attributed to insurance policy holders	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Reinvested earnings on direct foreign investment	2	0	1	1	2	5	3	5	4	(2)	(18)	(16)	(1)	(2)
Rents	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other income paid	(2)	3	2	0	1	3	(0)	(0)	4	5	20	12	5	7
Property income attributed to insurance policy holders	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reinvested earnings on direct foreign investment	(2)	4	3	1	2	3	0	1	5	6	21	13	5	8
Rents	(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Earnings before interest and taxes	**151**	**179**	**169**	**201**	**209**	**219**	**235**	**264**	**254**	**278**	**323**	**322**	**312**	**336**
Interest, net	(24)	(26)	(31)	(31)	(30)	(28)	(26)	(27)	(28)	(37)	(43)	(38)	(33)	(30)
Interest received	24	29	21	19	17	17	18	18	20	24	22	22	23	23
Interest paid	(48)	(55)	(52)	(49)	(47)	(44)	(44)	(45)	(48)	(61)	(65)	(60)	(55)	(53)
Earnings before taxes	**126**	**153**	**138**	**170**	**179**	**192**	**209**	**237**	**226**	**242**	**280**	**283**	**280**	**306**
Taxes	(14)	(14)	(13)	(10)	(7)	(12)	(13)	(9)	(19)	(27)	(9)	(9)	(11)	(14)
Earnings after taxes	**112**	**139**	**125**	**160**	**171**	**180**	**196**	**229**	**207**	**214**	**271**	**275**	**269**	**293**
Memorandum items:														
Output	1,779	1,866	1,856	1,939	2,046	2,079	2,162	2,261	2,349	2,517	2,597	2,566	2,587	2,692
Change in inventories	6	(1)	(3)	(1)	3	(2)	1	6	2	4	(5)	(11)	(2)	1
NFC sector gross value added	842	894	900	940	982	997	1,026	1,073	1,089	1,139	1,182	1,200	1,205	1,242
Income tax in percent of before tax profit	11.2	9.2	9.4	5.7	4.2	6.1	6.0	3.6	8.3	11.3	3.1	3.1	3.8	4.5
Real compensation of employees index (1991 = 100)	100.0	102.0	98.7	98.0	99.9	99.6	98.2	99.9	102.3	105.5	105.7	104.9	103.8	102.5
CPI p.a. (1991 = 100)	100.0	105.1	109.7	112.7	114.7	116.4	118.5	119.6	120.3	122.1	124.5	126.2	127.5	129.7

Sources: German Federal Statistical Office; and IMF staff estimates.

Table 2. Nonfinancial Corporate Sector: Selected Indicators, 1995-2004
(In percent)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria										
Net operating margin 1/	8.0	8.8	9.6	9.8	9.9	10.6	9.9	10.1	10.4	...
Net profit margin 2/	7.4	8.9	8.6	10.5	9.2	10.3	9.3	10.0	10.7	...
Net investment in percent of net operating profit 3/	67.9	60.2	57.9	57.7	62.6	60.6	56.7	41.8	48.6	...
Real y-o-y growth of output 4/	...	1.1	4.3	5.8	6.1	5.4	4.0	2.7	1.2	...
Real y-o-y growth of wage bill 5/	...	-2.6	1.2	2.8	3.7	2.2	3.3	0.3	0.9	...
Real y-o-y growth of profit before taxes 5/	...	9.2	12.6	7.0	4.9	15.3	-4.0	3.5	4.2	...
Belgium										
Net operating margin 1/	7.8	7.5	7.3	7.3	6.8	6.7	6.1	6.2	6.3	...
Net profit margin 2/	9.1	8.8	8.6	8.8	8.4	8.8	8.9	8.4	8.5	...
Net investment in percent of net operating profit 3/	24.2	21.3	24.7	23.8	24.6	33.5	24.2	10.2	9.4	...
Real y-o-y growth of output 4/	8.5	-0.4	3.0	7.9	7.5	1.2	4.2	-2.2	0.8	...
Real y-o-y growth of wage bill 5/	4.3	-2.0	0.1	3.0	5.2	2.4	4.1	1.0	0.9	...
Real y-o-y growth of profit before taxes 5/	10.7	-4.6	-0.7	5.6	-0.4	4.7	-5.7	-0.7	0.1	...
Finland										
Net operating margin 1/	10.3	10.5	11.0	12.2	11.6	11.8	11.5	11.3	11.4	...
Net profit margin 2/	7.8	9.0	10.4	11.8	12.3	12.6	12.9	12.0	11.5	...
Net investment in percent of net operating profit 3/	0.7	-7.7	5.3	13.6	6.5	14.8	17.7	10.1	3.7	...
Real y-o-y growth of output 4/	17.2	3.2	8.5	8.5	7.1	9.3	1.7	1.4	0.9	...
Real y-o-y growth of wage bill 5/	15.9	0.8	5.0	6.7	5.1	4.2	4.6	-0.1	0.4	...
Real y-o-y growth of profit before taxes 5/	46.7	4.3	12.2	17.1	0.3	12.6	-3.4	-2.9	0.3	...
France										
Net operating margin 1/	8.0	7.7	7.8	8.2	7.9	6.9	7.1	7.1	6.7	...
Net profit margin 2/	6.7	6.8	7.3	8.6	8.6	7.8	8.5	8.0	6.6	...
Net investment in percent of net operating profit 3/	22.9	15.2	15.3	24.0	27.7	37.4	28.3	19.4	10.5	...
Real y-o-y growth of output 4/	...	2.4	3.2	7.1	6.7	5.6	2.4	0.8	0.6	...
Real y-o-y growth of wage bill 5/	...	0.8	-0.2	3.5	4.9	4.0	3.8	1.1	-0.3	...
Real y-o-y growth of profit before taxes 5/	...	-3.7	3.9	9.9	1.6	-5.1	5.4	-1.5	-6.0	...
Italy										
Net operating margin 1/	14.2	15.0	14.3	13.9	13.7	13.4	13.8	13.3	13.1	...
Net profit margin 2/	11.0	12.3	12.1	12.7	12.6	11.9	12.2	11.5	11.0	...
Net investment in percent of net operating profit 3/	11.9	10.6	12.9	16.0	17.1	19.6	16.1	16.0	13.3	...
Real y-o-y growth of output 4/	-5.7	10.0	5.5	2.8	4.3	3.0	2.1	1.5	-2.0	...
Real y-o-y growth of wage bill 5/	-10.1	9.9	4.4	-1.8	3.0	3.0	3.2	1.2	0.4	...
Real y-o-y growth of profit before taxes 5/	-4.0	13.9	-0.2	-1.5	1.2	3.7	5.2	-4.5	-4.9	...
The Netherlands										
Net operating margin 1/	11.1	11.3	11.5	11.1	10.8	10.9	10.8	10.5	10.0	...
Net profit margin 2/	9.7	9.2	9.9	8.3	8.9	9.3	8.8	7.6	7.8	...
Net investment in percent of net operating profit 3/	16.7	16.1	16.2	18.5	19.5	14.6	9.8	8.1	4.3	...
Real y-o-y growth of output 4/	5.6	2.2	0.4	7.2	6.7	-0.9	2.2	2.6	-1.5	...
Real y-o-y growth of wage bill 5/	5.3	1.1	0.5	5.3	5.4	4.4	1.7	1.8	0.2	...
Real y-o-y growth of profit before taxes 5/	6.9	3.9	3.7	-0.9	1.4	9.7	-1.9	-4.4	-6.3	...
Portugal										
Net operating margin 1/	9.3	9.4	9.1	8.6	8.1	6.3	6.0	5.8	4.8	...
Net profit margin 2/	5.3	5.8	5.5	5.3	5.7	3.3	3.4	4.6	3.8	...
Net investment in percent of net operating profit 3/	24.5	22.3	35.7	52.3	58.0	73.9	67.4	50.4	44.8	...
Real y-o-y growth of output 4/	...	3.0	5.1	8.9	4.1	-5.5	3.2	0.7	-0.9	...
Real y-o-y growth of wage bill 5/	...	4.5	4.2	4.7	5.5	6.0	3.7	0.7	1.4	...
Real y-o-y growth of profit before taxes 5/	...	5.0	2.0	-2.5	-3.1	-16.1	-4.3	-5.1	-20.2	...
Spain										
Net operating margin 1/	10.5	10.3	10.2	10.0	9.6	9.1	9.0	9.0	8.5	...
Net profit margin 2/	7.3	7.6	8.0	8.1	8.2	7.8	7.2	7.2	6.8	...
Net investment in percent of net operating profit 3/	41.5	44.4	47.3	56.2	65.5	72.3	68.5	65.7	67.3	...
Real y-o-y growth of output 4/	...	5.2	2.1	6.6	7.6	5.1	5.6	4.1	4.0	...
Real y-o-y growth of wage bill 5/	...	3.8	2.3	5.3	6.2	5.1	4.1	2.5	3.7	...
Real y-o-y growth of profit before taxes 5/	...	0.9	0.9	2.1	1.7	0.8	3.8	0.6	-2.9	...
United Kingdom 6/										
Net operating margin 1/	10.3	11.6	11.7	11.4	10.8	10.6	10.1	10.1	10.4	...
Net profit margin 2/	11.7	13.1	13.2	12.8	12.1	11.8	12.6	12.1	12.6	...
Net investment in percent of net operating profit 3/	17.3	21.5	28.8	33.9	36.2	34.3	35.4	29.7	24.8	...
Real y-o-y growth of output 4/	...	7.2	7.1	7.2	4.3	3.1	3.3	3.2	7.3	...
Real y-o-y growth of wage bill 5/	...	2.5	6.4	7.0	5.2	6.5	4.8	2.2	3.2	...
Real y-o-y growth of profit before taxes 5/	...	18.9	5.4	1.5	-1.9	2.5	-2.8	0.6	11.2	...
Europe 7/										
Net operating margin 1/	10.3	10.7	10.7	10.6	10.3	9.9	9.8	9.7	9.5	...
Net profit margin 2/	9.1	9.8	10.2	10.5	10.3	9.9	10.2	9.7	9.4	...
Net investment in percent of net operating profit 3/	20.8	19.2	22.8	28.1	30.8	33.5	29.9	25.3	21.6	...
Real y-o-y growth of output 4/	...	5.5	4.7	6.2	5.7	4.6	2.9	2.1	1.9	...
Real y-o-y growth of wage bill 5/	...	2.9	2.7	3.8	5.0	4.9	4.1	1.9	1.7	...
Real y-o-y growth of profit before taxes 5/	...	8.2	3.0	2.8	0.6	2.7	1.6	-1.4	0.0	...
Germany										
Net operating margin 1/	9.3	9.5	9.9	10.3	9.7	9.4	10.2	10.9	10.6	11.1
Net profit margin 2/	8.8	9.2	9.7	10.5	9.6	9.6	10.8	11.0	10.8	11.4
Net investment in percent of net operating profit 3/	25.6	18.9	20.7	24.2	25.9	31.2	18.5	4.7	7.9	7.5
Real y-o-y growth of output 4/	3.7	2.9	2.8	5.0	5.0	3.7	0.2	-0.6	-0.9	2.3
Real y-o-y growth of wage bill 5/	2.0	-0.3	-1.4	1.7	2.4	3.1	0.3	-0.8	-1.0	-1.2
Real y-o-y growth of profit before taxes 5/	5.4	2.8	5.9	8.5	-3.1	2.5	10.3	4.1	-2.6	6.4

Sources: Eurostat; German Federal Statistical Office; UK Office for National Statistics; and IMF staff estimates.
1/ Operating profits net of depreciation divided by sales revenue.
2/ Profits before taxes divided by sales revenue.
3/ Operating profit net of depreciation.
4/ Deflated by PPI.
5/ Deflated by CPI.
6/ 2003 estimates.
7/ Europe includes: Austria, Belgium, Finland, France, Italy, the Netherlands, Portugal, Spain and the United Kingdom.
Weighted average of euro area countries and the United Kingdom.

Table 3. Germany: Nonfinancial Corporate Sector Indicators, 1991-2004
(In euro billion, unless otherwise indicated)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
EBIT (1)	150.7	179.2	169.2	200.6	208.8	219.5	235.4	264.2	253.9	278.2	323.1	321.6	312.4	336.2
EBIT margin, in percent (2)	8.5	9.6	9.1	10.3	10.2	10.5	10.9	11.7	10.8	11.1	12.4	12.5	12.1	12.5
Invested capital (3) = (4) + (5)	1084.9	1107.6	1404.1	1460.7	1500.7	1697.1	1963.4	2281.4	2713.0	2733.0	2753.4	2289.5	2477.6	2507.7
Total value of corporate shares (4)	572.0	554.5	788.9	841.4	896.5	1064.3	1288.8	1555.0	1955.6	1868.3	1811.1	1275.7	1469.7	1548.9
Market value of quoted shares	379.0	350.8	559.0	596.9	640.4	793.6	998.5	1243.3	1619.9	1395.7	1312.1	759.1	928.8	979.2
Non-quoted shares	193.0	203.7	229.9	244.5	256.1	270.7	290.3	311.7	335.7	472.6	499.0	516.6	540.9	569.7
Long-term debt (5)	512.9	553.1	615.2	619.3	604.2	632.8	674.6	726.4	757.4	864.7	942.3	1013.8	1007.9	958.8
Bonds 1/	48.1	51.9	57.8	66.5	28.4	26.1	24.2	23.1	21.9	26.3	31.4	35.5	49.5	51.7
Loans	464.7	501.2	557.4	552.8	575.8	606.7	650.4	703.3	735.5	838.4	910.9	978.3	958.4	907.1
Return on invested capital, in percent (6) = (1)/(3)*100	13.9	16.2	12.1	13.7	13.9	12.9	12.0	11.6	9.4	10.2	11.7	14.0	12.6	13.4
Capital turnover, in percent (7) = (6)/(2) * 100	163.4	168.6	132.4	132.8	136.1	122.6	110.1	98.9	86.5	91.9	94.5	112.5	104.5	107.3
Memorandum items:														
Total debt, in percent of corporate GDP	89.3	90.7	100.2	97.5	89.9	93.7	96.2	98.0	103.6	116.1	119.1	119.3	118.3	114.9
Total debt	752	811	902	917	883	934	987	1,051	1,128	1,323	1,408	1,432	1,427	1,427
Corporate sector GDP	842	894	900	940	982	997	1,026	1,073	1,089	1,139	1,182	1,200	1,205	1,242
Real EBIT growth, in percent y-o-y		13.2	-9.6	15.3	2.3	3.6	5.3	11.2	-4.4	8.0	13.9	-1.8	-3.9	5.8
Invested capital, real indices 1991 = 100	100.0	97.2	117.9	119.4	120.6	134.5	152.7	175.8	207.8	206.3	203.8	167.2	179.1	178.3
Corporate shares	100.0	92.3	125.7	130.5	136.7	159.9	190.1	227.2	284.1	267.5	254.3	176.7	201.5	208.8
Bonds	100.0	102.6	109.3	122.4	51.3	46.6	42.3	40.1	37.8	44.7	52.3	58.3	80.5	82.8
Long-term loans	100.0	102.6	109.3	105.5	108.0	112.2	118.1	126.5	131.5	147.8	157.4	166.8	161.7	150.5

Sources: Bundesbank; German Federal Statistical Office; and IMF staff estimates.

Table 4. Italy: Nonfinancial Corporate Sector Financial Indicators, 1999-2003
(In euro billions, unless otherwise indicated)

	1999	2000	2001	2002	2003
EBIT (1)	217.3	237.7	247.6	242.6	234.9
EBIT margin, in percent (2)	16.5	16.5	16.5	15.9	15.4
Invested capital (3) = (4) + (5)	2253.2	2647.7	1491.2	1401.9	1433.5
Market value of corporate shares (4)	1760.3	2103.3	1171.9	1038.7	1021.6
Long-term debt (5)	492.9	544.4	319.3	363.2	412.0
Bonds	29.8	34.2	28.9	35.6	41.6
Loans	463.1	510.2	290.4	327.6	370.4
Return on invested capital, in percent (6) = (1)/(3)*100	9.6	9.0	16.6	17.3	16.4
Capital turnover, in percent (7) = (6)/(2) * 100	58.6	54.5	100.9	109.0	106.1
Memorandum items:					
Total debt, in percent of corporate GDP	202.8	226.5	118.5	121.9	127.6
Total debt	1107.0	1307.8	721.6	759.6	805.8
Corporate sector GDP	545.8	577.3	609.0	623.1	631.5
Real EBIT growth, in percent y-o-y		6.6	1.8	-4.5	-5.8
Invested capital, real indices 1999 = 100	100.0	114.5	63.0	57.8	57.4
Corporate shares	100.0	116.5	63.4	54.8	52.4
Bonds	100.0	111.9	92.3	110.9	126.1
Long-term loans	100.0	107.4	59.7	65.7	72.2
CPI p.a. 1999 = 100	100.0	102.6	105.0	107.7	110.8

Source: Banca d'Italia; Eurostat; and IMF staff estimates.

Table 5. U.K.: Nonfinancial Corporate Sector Financial Indicators, 1995-2002
(In GDP billions, unless otherwise indicated)

	1995	1996	1997	1998	1999	2000	2001	2002
EBIT (1)	134.3	170.8	210.2	188.2	191.3	211.8	209.4	209.8
EBIT margin, in percent (2)	16.0	17.3	17.4	16.9	16.4	16.3	17.3	16.8
Invested capital (3) = (4) + (5)	796.7	852.1	1,048.6	1,260.3	1,627.3	1,778.1	1,537.9	1,090.7
Market value of corporate shares (4)	698.9	751.9	930.2	1,114.6	1,451.0	1,558.6	1,305.1	872.8
Long-term debt (5)	97.8	100.2	118.3	145.7	176.3	219.5	232.7	217.9
Bonds	59.7	61.6	75.4	97.9	123.3	166.8	172.7	166.0
Loans	38.1	38.6	43.0	47.8	53.0	52.6	60.1	51.9
Return on invested capital, in percent (6) = (1)/(3)*100	16.9	20.0	20.0	14.9	11.8	11.9	13.6	19.2
Capital turnover, in percent (7) = (6)/(2) * 100	105	116	115	88	72	73	79	115
Memorandum items:								
Total debt, in percent of corporate GDP	68.4	60.9	56.4	70.1	77.1	84.9	97.0	85.9
Total debt	267.3	277.8	317.6	366.7	423.8	520.9	560.7	514.8
Corporate sector GDP	391.0	455.8	563.2	523.3	549.7	613.4	578.1	599.1
Invested capital in 1999 prices	796.7	831.7	1,005.3	1,189.6	1,515.5	1,643.4	1,404.1	982.9
Corporate shares	698.9	733.9	891.9	1,052.1	1,351.3	1,440.5	1,191.6	786.5
Bonds	59.7	60.1	72.3	92.4	114.8	154.2	157.6	149.6
Long term loans	38.1	37.7	41.2	45.1	49.4	48.6	54.8	46.8
Real EBIT	134.3	166.7	201.5	177.6	178.1	195.7	191.2	189.0
Real EBIT index 1995 = 100	100.0	124.2	150.1	132.3	132.7	145.8	142.4	140.8
Real EBIT growth, in percent y-o-y	9.9	24.2	20.9	(11.9)	0.3	9.9	(2.3)	(1.1)
Invested capital, real indices 1999 = 100	100.0	104.4	126.2	149.3	190.2	206.3	176.2	123.4
Corporate shares	100.0	105.0	127.6	150.5	193.4	206.1	170.5	112.5
Bonds	100.0	100.6	121.0	154.8	192.3	258.3	264.0	250.5
Long -term loans	100.0	99.0	108.2	118.4	129.6	127.7	144.0	122.9
CPI p.a. 1995 = 100	100.0	102.5	104.3	105.9	107.4	108.2	109.5	111.0

Sources: Bank of England; UK Office for National Statistics; Eurostat; and IMF staff estimates.

Table 6: Germany: Return on Fixed Assets, 1998-2002 1/
(In percent)

	1998	1999	2000	2001	2002	1991-2002 Average
Agriculture, Forestry, Fishing	**5.4**	**5.0**	**5.5**	**6.4**	**5.1**	**5.1**
Industry, including energy and construction	**12.3**	**11.9**	**10.8**	**10.5**	**11.8**	**11.1**
Industry, including energy	9.5	8.7	7.8	7.5	8.8	7.9
Mining and quarrying	10.0	11.5	10.3	11.9	17.9	6.7
Manufacturing	11.0	10.4	9.9	9.7	11.1	9.2
Food products; beverages and tobacco	12.9	14.3	14.5	13.7	18.2	13.7
Textiles and textile products	6.3	4.9	6.6	4.7	2.4	6.9
Leather and leather products	4.5	5.8	4.2	3.8	4.6	6.0
Wood and wood products	27.8	27.8	28.1	20.3	22.6	25.2
Pulp, paper and paper products; publishing & printing	15.7	25.4	24.2	21.6	21.5	16.8
Coke, refined petroleum products and nuclear fuel	14.5	-4.0	20.5	42.0	16.2	1.3
Chemicals and chemical products	7.6	6.3	5.1	8.3	12.6	5.8
Rubber and plastic products	19.6	18.1	14.7	11.9	18.1	17.5
Other non-metallic mineral products	9.2	10.2	8.6	4.7	4.3	11.1
Basic metals and fabricated metal products	13.8	11.8	11.7	10.1	14.9	10.2
Machinery and equipment n.e.c.	16.7	10.5	13.2	14.0	19.5	8.9
Electrical and optical equipment	5.7	9.1	14.4	0.3	(1.6)	7.8
Transport equipment	4.7	0.9	(9.4)	2.3	0.5	1.0
Manufacturing n.e.c.	10.8	9.4	9.2	8.1	9.2	10.3
Electricity, gas and water supply	6.1	4.9	2.8	2.3	3.1	5.0
Construction	60.6	67.7	66.0	67.8	71.9	68.3
Service activities	**7.5**	**7.4**	**7.1**	**7.1**	**7.2**	**7.1**
Wholesale & retail trade, hotels & restaurants; transport & communications	11.8	11.1	11.3	12.4	12.9	9.9
Wholesale & retail trade; rep.of motor vehicles, motorcycles, & personal & household goods	26.2	23.1	23.2	25.7	27.0	24.3
Hotel and restaurant services	3.1	1.5	(1.7)	(2.7)	(4.4)	4.0
Transport, storage and communication	5.6	6.3	6.8	7.6	8.0	3.9
Land transport and transport via pipeline services	(3.4)	(2.8)	(3.3)	(3.1)	(3.3)	(2.9)
Post and telecommunication services	16.0	17.7	18.6	21.4	26.1	12.4
Financial, real-estate, renting & business activities	7.8	7.8	7.4	7.2	7.3	7.7
Financial intermediation	21.3	22.0	13.1	5.5	7.1	22.7
Real estate, renting and business activities	7.3	7.2	7.1	7.3	7.3	7.1
o/w real estate services	4.8	4.7	4.6	4.8	5.0	4.5
Other service activities	4.6	4.5	4.4	4.4	4.6	4.4
Public administration & defense services; compulsory social security services						
Education services	0.5	0.1	(0.5)	(0.4)	(0.2)	0.3
Health and social work services	8.2	8.0	7.4	7.2	8.0	8.9
Other community, social and personal service activities	11.1	11.1	11.6	11.8	11.8	10.2
Memorandum items:						
All sectors	8.1	7.9	7.6	7.5	7.7	7.8
Nonfinancial corporate sector	8.4	8.2	8.1	8.2	8.3	7.8
All sectors, excl. real estate services	11.1	10.9	10.2	10.1	10.4	9.9
Services, excl. real estate services	11.0	10.9	10.3	10.1	10.2	9.9

Sources: Germany Federal Statistical Office; and IMF staff estimates.
1/ Net operating profit divided by net stock of fixed assets.

Table 7. Germany: Aggregate Balance Sheet of Nonfinancial Manufacturing Corporations
(In billions of euros)

	2001				2002			
	Mittelstand			Large Enterprises	Mittelstand			Large Enterprises
	Sales in € million		Total	Sales in € million	Sales in € million		Total	Sales in € million
	< 2.5	2.5 to 50		> 50	< 2.5	2.5 to 50		> 50
Assets	**1.1**	**48.1**	**49.2**	**549.7**	**1.1**	**48.8**	**49.9**	**594.5**
Intangible assets	0.0	0.5	0.5	5.9	0.0	0.5	0.5	6.3
Tangible fixed assets	0.3	13.1	13.4	84.6	0.3	13.2	13.6	89.7
o/w: Land and buildings	0.1	5.7	5.9	26.6	0.1	5.9	6.0	28.0
Inventories	0.2	12.7	13.0	78.1	0.3	12.7	12.9	77.7
o/w: Finished products	0.1	4.3	4.4	29.6	0.1	4.3	4.4	28.8
Cash	0.1	3.3	3.4	22.3	0.1	3.4	3.5	27.4
Debtors	0.4	16.0	16.4	187.4	0.4	16.3	16.7	201.7
Short-term	0.3	14.8	15.2	169.5	0.3	15.2	15.6	186.0
of which:								
Trade debtors	0.2	8.9	9.1	46.4	0.2	8.7	8.9	45.0
Participating interests	0.1	4.2	4.3	108.1	0.1	4.7	4.8	122.4
Long-term	0.0	1.2	1.2	17.8	0.0	1.1	1.1	15.7
o/w: Participating interests	0.0	0.5	0.5	9.5	0.0	0.5	0.5	6.9
Investments	0.0	0.6	0.6	23.4	0.0	0.5	0.5	26.7
Participating interests	0.0	2.0	2.0	147.9	0.0	2.1	2.1	165.1
Liabilities	**1.1**	**48.1**	**49.2**	**549.7**	**1.1**	**48.8**	**49.9**	**594.5**
Own funds	0.1	12.5	12.6	163.3	0.2	13.7	13.8	182.4
Creditors	0.8	28.4	29.1	227.6	0.8	27.8	28.6	245.4
Short-term	0.5	20.9	21.4	199.4	0.5	20.6	21.1	211.1
of which:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Credit institutions	0.1	5.4	5.5	13.5	0.1	5.2	5.4	10.4
Trade creditors	0.1	5.5	5.6	35.7	0.1	5.3	5.4	35.7
Paricipating interests	0.1	4.4	4.4	95.1	0.1	4.7	4.8	111.7
Long-term	0.3	7.5	7.8	28.2	0.3	7.3	7.6	34.3
of which:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Credit institutions	0.2	5.0	5.2	13.2	0.2	4.8	5.1	11.7
Participating interests	0.1	1.8	1.9	6.4	0.1	1.7	1.8	10.1
Provisions	0.1	7.4	7.5	158.9	0.2	7.4	7.6	166.9
o/w: Pensions	0.1	2.9	2.9	79.3	0.1	3.0	3.1	83.9
Memorandum items:								
Inventories in percent of assets	23.4	26.4	26.4	14.2	24.1	25.9	25.9	13.1
Cash in percent of assets	8.5	6.8	6.9	4.1	8.7	7.0	7.0	4.6
Debtors in percent of assets	34.4	33.3	33.3	34.1	33.6	33.5	33.5	33.9
Investments (securities) in percent of cash	12.0	16.9	16.8	105.2	12.5	15.8	15.7	97.5
Own funds in percent of liabilities	13.7	25.9	25.7	29.7	15.0	28.0	27.7	30.7
Creditors in percent of liabilities	73.1	59.0	59.3	41.4	71.9	57.0	57.4	41.3
o/w short-term creditors	45.8	43.4	43.5	36.3	44.1	42.2	42.2	35.5
Provisions in percent of liabilities	13.8	15.3	15.3	28.9	13.8	15.2	15.1	28.1
Pensions	6.6	6.0	6.0	14.4	7.0	6.1	6.2	14.1
Other	7.2	9.3	9.3	14.5	6.8	9.0	9.0	14.0
Permanent capital (LT debt + own funds)	0	20	20	191	0	21	21	217

Sources: Bundesbank; and IMF staff estimates.

Table 8. Germany: Aggregate Income Statement of Nonfinancial Manufacturing Corporations
(In billions of euros)

	2001				2002			
	Mittelstand			Large Enterprises	Mittelstand			Large Enterprises
	Sales in € million		Total	Sales in € million	Sales in € million		Total	Sales in € million
	< 2.5	2.5 to 50		> 50	< 2.5	2.5 to 50		> 50
Sales	1.8	79.8	81.5	706.9	1.8	79.6	81.3	713.8
Cost of sales	1.4	63.8	65.1	567.2	1.4	63.2	64.5	571.3
Cost of materials	0.7	43.1	43.8	449.0	0.7	42.1	42.8	447.7
Labor cost	0.6	20.7	21.3	118.2	0.6	21.1	21.7	123.5
Gross operating profit	0.4	16.0	16.4	139.7	0.4	16.4	16.8	142.6
Depreciation	0.1	3.1	3.2	29.2	0.1	3.1	3.2	27.9
o/w: Tangible fixed assets	0.1	2.8	2.9	23.4	0.1	2.7	2.8	22.0
Net operating profit	0.3	12.8	13.2	110.5	0.3	13.3	13.6	114.6
Other income, net	(0.3)	(9.8)	(10.1)	(45.2)	(0.3)	(9.9)	(10.2)	(44.6)
Other income	0.1	2.9	3.0	56.4	0.1	3.3	3.3	58.7
o/w: Participating interests	0.0	0.2	0.2	11.8	0.0	0.2	0.2	10.6
Other costs	0.4	12.7	13.1	101.5	0.4	13.2	13.5	103.3
Earnings before interest and tax	0.1	3.1	3.1	65.3	0.1	3.3	3.4	70.0
Interest, net	(0.0)	(0.7)	(0.7)	(0.9)	(0.0)	(0.7)	(0.8)	(2.3)
Interest received	0.0	0.3	0.3	9.1	0.0	0.3	0.3	7.8
Interest paid	0.0	1.1	1.1	10.0	0.0	1.0	1.1	10.2
Profit before tax	0.0	2.3	2.4	64.4	0.0	2.6	2.6	67.7
Business tax	0.0	0.1	0.2	35.0	0.0	0.2	0.2	38.4
Profit after tax	0.0	2.2	2.2	29.4	0.0	2.5	2.5	29.3
Memorandum items:								
Net operating margin	18.4	16.1	16.1	15.6	18.6	16.7	16.7	16.1
Profit before tax margin	1.8	2.9	2.9	9.1	1.4	3.3	3.2	9.5
Net interest in percent of sales	-1.4	-0.9	-0.9	-0.1	-1.5	-0.9	-0.9	-0.3
Effective tax rate	0.1	0.2	0.2	4.9	0.1	0.2	0.2	5.4

Sources: Bundesbank; and IMF staff estimates.

Table 9. Germany: Financial Ratios of Nonfinancial Corporations 1/
(In percent)

	2001				2002			
	Mittelstand			Large Enterprises	Mittelstand			Large Enterprises
	Sales in € million		Total	Sales in € million	Sales in € million		Total	Sales in € million
	< 2.5	2.5 to 50		> 50	< 2.5	2.5 to 50		> 50
Return measures								
Return (after-tax) on assets	1.4	4.0	3.9	5.0	0.6	4.0	3.9	5.1
Return (after-tax) on invested capital	3.8	9.8	9.6	14.1	1.4	9.6	9.4	14.0
Return (after-tax) on equity	10.7	16.0	15.9	17.5	4.0	15.0	14.8	17.4
Profit margins								
Gross operating margin	21.7	16.5	16.6	17.0	22.0	16.7	16.9	17.4
Net operating margin	17.5	13.2	13.3	13.3	17.8	13.4	13.5	13.8
EBIT margin	2.3	3.2	3.2	7.2	1.9	3.2	3.2	7.8
Profit before tax margin	1.0	2.4	2.3	7.1	0.5	2.4	2.3	7.6
Profit after tax margin	0.8	2.2	2.2	3.6	0.3	2.2	2.2	4.0
Balance sheet measures								
Current ratio (ST assets/ST liabilities)	76.5	82.0	81.8	102.1	75.5	84.0	83.7	102.0
Quick ratio (ST assets - inventories/ST liabilitie	25.3	26.1	26.1	64.5	22.2	27.6	27.4	67.3
Debt ratio (LT debt/LT debt + equity)	65.0	38.9	39.6	19.5	63.4	35.7	36.5	19.4

Sources: Bundesbank; and IMF staff estimates.
1/ In mining and quarrying, manufacturing, electricity, gas and water supply, construction, trade and transport.

Table 10. International Ranking of SME Performance in Manufacturing
(1995-2001 average)

	Austria	Belgium	Denmark	Finland	France	**Germany**	Italy	Japan	Netherlands	Portugal	Spain	Sweden	U.S.
Overall ranking 1/	8.6	9.3	5.4	2.6	7.3	**9.4**	9.0	11.0	4.2	10.0	5.2	5.4	3.6
Return measures 2/	6.7	10.0	2.3	2.7	8.7	**8.0**	11.0	12.7	4.0	12.3	6.3	5.3	1.0
Return on assets 3/	7.0	10.0	3.0	2.0	8.0	**9.0**	11.0	13.0	4.0	12.0	5.0	6.0	1.0
Return on invested capital 3/	7.0	10.0	2.0	3.0	9.0	**8.0**	11.0	13.0	4.0	12.0	6.0	5.0	1.0
Return on equity 3/	6.0	10.0	2.0	3.0	9.0	**7.0**	11.0	12.0	4.0	13.0	8.0	5.0	1.0
Profit margins 2/	8.0	10.2	2.6	1.0	9.6	**11.6**	8.0	10.2	3.2	9.8	4.4	5.6	6.8
Gross operating margin	6.0	8.0	3.0	1.0	9.0	**13.0**	7.0	12.0	2.0	4.0	5.0	10.0	11.0
Net operating margin	9.0	13.0	2.0	1.0	10.0	**12.0**	7.0	8.0	4.0	11.0	3.0	6.0	5.0
EBIT margin	9.0	11.0	3.0	1.0	13.0	**12.0**	7.0	6.0	5.0	10.0	4.0	2.0	8.0
Profit before tax margin	9.0	10.0	3.0	1.0	8.0	**11.0**	7.0	12.0	2.0	13.0	4.0	5.0	6.0
Profit after tax margin	7.0	9.0	2.0	1.0	8.0	**10.0**	12.0	13.0	3.0	11.0	6.0	5.0	4.0
Balance sheet measures 2/	11.0	7.7	11.3	4.0	3.7	**8.7**	8.0	10.0	5.3	8.0	5.0	5.3	3.0
Current ratio 4/	9.0	10.0	13.0	1.0	4.0	**6.0**	12.0	11.0	5.0	8.0	7.0	3.0	2.0
Quick ratio 5/	12.0	8.0	13.0	1.0	5.0	**11.0**	9.0	6.0	4.0	10.0	7.0	2.0	3.0
Equity ratio 6/	12.0	5.0	8.0	10.0	2.0	**9.0**	3.0	13.0	7.0	6.0	1.0	11.0	4.0

Source: BACH database; and IMF staff calculations.

1/ Arithmetical average of the rankings for "return measures", "profit margins" and "balance sheet measures."

2/ Arithmetical average of the rankings in this category. Individual rankings are from 1 (best) to 13 (worst).

3/ After-tax.

4/ Current assets to short-term liabilities.

5/ Current assets minus inventories to short-term liabilities.

6/ Equity to long-term debt plus equity.

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VI. THE GERMAN BANKING SECTOR: CREDIT DECLINE, SOUNDNESS, AND EFFICIENCY[33]

A. Introduction

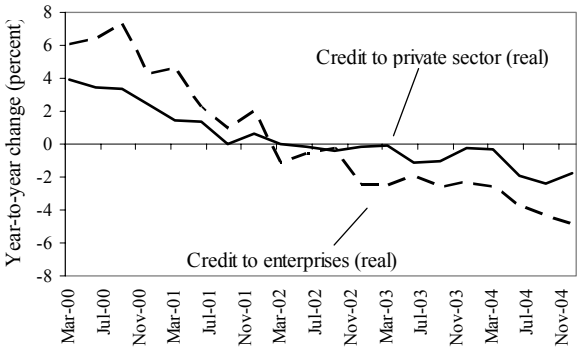
136. **This chapter analyzes the link between bank credit and macroeconomic performance.** The growth of bank credit to the private sector in Germany has been slowing down in real terms since the late 1990s, and turned negative since 2002. The reasons for the credit decline have been subject to analytical attention and public debate. The main question in this debate is whether the shrinking credit reflects the overall slack in the economy, or whether it has been amplified by weaknesses in the banking sector. The question was analyzed, with inconclusive results, in the 2002 Selected Issues paper (IMF, 2002). This chapter starts by revisiting the issue, using additional data and new analytical techniques. It then sets the credit decline against the broader background of developments in financial sector soundness and efficiency and their impact on macroeconomic growth. This analysis follows up on the 2003 FSAP (IMF, 2002) and Brunner and others (2004).

137. **The structure of the chapter is as follows.** Section B provides explanations of the credit weakness, based on bank lending surveys and an econometric analysis of aggregate data using a disequilibrium model. Section C uses an analysis of bank-by-bank data to draw conclusions about links between credit developments, soundness, and efficiency. Appendix I discusses recent changes in the banking environment and their likely impact on credit demand and supply. Appendix II explains distance to default, which is increasingly used as a measure of bank soundness, and enters into the estimates presented here. Appendix III summarizes the methods of measuring bank efficiency used in this paper.

B. Aggregate Data and Explanations of the Ongoing Credit Slowdown

138. **Credit growth in Germany has been negative in real terms** (Figure 1). Total private sector credit has been declining since 2002, after a slowdown that started in 1998.[34] The decline was particularly pronounced for credit to enterprises. Looking across the peer groups of banks (Table 1), the slowdown and decline in 2001–04 was the deepest for credits by the big four banks and regional institutions of credit cooperatives. Landesbanken recorded a positive credit

Figure 1. Germany: Credit Developments



Source: Deutsche Bundesbank; and author's calculations.

[33] Prepared by Martin Čihák.

[34] The average annual credit growth rate in 1980–2004 was about 3.3 percent (adjusting for inflation and for the unification-related credit boom), as compared with -1.2 percent in 2002–2004.

growth in 2001–02, which turned into a decline in 2003–04, reflecting their preparation for withdrawal of state guarantees. The biggest growth was recorded by foreign banks, which increased their lending by 35 percent in real terms between 2000 and 2004, albeit from a low base.

Table 1. Germany: Credit Developments by Peer Groups of Banks, 2001–04

	2001	2002	2003	2004
	(Change in percent from previous year, deflated by consumer price index)			
All banks	1.1	-0.4	-0.9	-2.3
Commercial banks	0.6	-2.5	-3.0	-3.6
Big banks	-2.9	-6.2	-7.6	-4.5
Regional banks	4.1	3.4	3.2	-2.3
Landesbanken	3.5	1.3	-0.8	-4.7
Savings banks	1.6	1.1	0.0	-1.8
Regional institutions of credit cooperatives	-7.7	-13.0	-11.9	-16.1
Credit cooperatives	0.0	0.1	-0.5	-0.5
Mortgage banks	1.7	-0.2	0.6	-3.4
Special purpose banks	-1.8	-0.5	2.4	11.0
Foreign banks	11.9	11.6	6.8	1.4
Building and loan associations	1.7	1.4	1.9	-1.9
	(Percent of all lending to non-banks)			
All banks	100.0	100.0	100.0	100.0
Commercial banks	27.3	26.8	26.2	25.8
Big banks	15.1	14.2	13.3	13.0
Regional banks	10.8	11.3	11.7	11.7
Landesbanken	12.2	12.4	12.4	12.1
Savings banks	25.0	25.4	25.6	25.8
Regional institutions of credit cooperatives	1.5	1.3	1.1	1.0
Credit cooperatives	14.8	14.9	15.0	15.2
Mortgage banks	11.1	11.1	11.3	11.2
Special purpose banks	3.5	3.5	3.6	4.1
Foreign banks	3.3	3.7	4.0	4.2
Building and loan associations	4.6	4.7	4.8	4.8

Source: Deutsche Bundesbank; and author's calculations.

139. **The credit slowdown, and in particular the role of credit supply, is a phenomenon that has been subject to debate and analytical work**. In particular, the discussion has focused on the relative roles played by weak demand and by supply squeeze. Previous Fund staff work found that the phenomenon cannot be fully explained by simple models: the credit weakness goes beyond what could be explained by demand factors, but efforts to pinpoint supply-side factors provided mixed results (IMF, 2002). Academic research on the subject has also been inconclusive, with some studies concluding that the decline is mostly demand-driven, while others pointing to evidence to supply-side effects.[35] A recent study by the Deutsche Bundesbank, using a VAR model based on aggregate credit and macroeconomic data, suggested that the credit slowdown is a purely credit demand phenomenon, reflecting the overall slowdown in the economy. It did not find evidence that the economic downturn in Germany has been accelerated by a credit supply restriction (Deutsche Bundesbank (2005)).

140. **Estimating the factors behind the credit slowdown is complicated by the interplay of cyclical and long-term factors that influence both the demand and the supply side.** These include:

- **On the credit demand side,** the adjustment is likely a combination of cyclical developments and structural shifts. Economic growth has been sluggish (Chapter I). Some companies, especially those in Germany's export sector, are thriving and have ample internal cash flow. However, many others are struggling to adjust in industries such as retail or construction, which are subject to weak domestic demand. On the structural side, the analysis in Chapter V suggests that the balance sheet repair in the NFC sector has led to some deleveraging, which is likely to continue for some time.

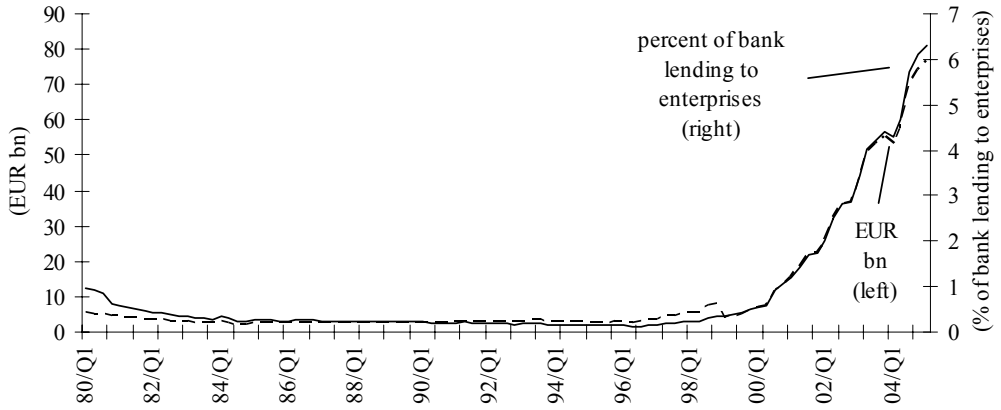
- **On the credit supply side,** the impact of the economic downturn on financial markets and the financial situation of the banks seems to have influenced their lending. Partial supporting evidence can be found in the peer group data: the big domestic banks, the group that was hit the most by the downturn in the financial markets, recorded a substantial decline in lending (Table 1).[36] Moreover, relationship banking—a key element of the German corporate sector, and in particular Mittelstand operations—seems to be eroding under a combination of regulatory pressures (in particular, preparations for the implementation of Basel II) that are likely to fundamentally alter the pricing and monitoring of loans. Some of these changes may have shifted the whole supply schedule for credit; others may have made credit supply more risk sensitive, which would be a favorable development (Appendix I).

[35] E.g., Polleit (2004) and Nehls and Schmidt (2003).

[36] Such observations are only illustrative and cannot prove or disprove that the credit decline was caused by credit supply. The empirical estimates in this chapter provide a more robust—albeit partial—answer.

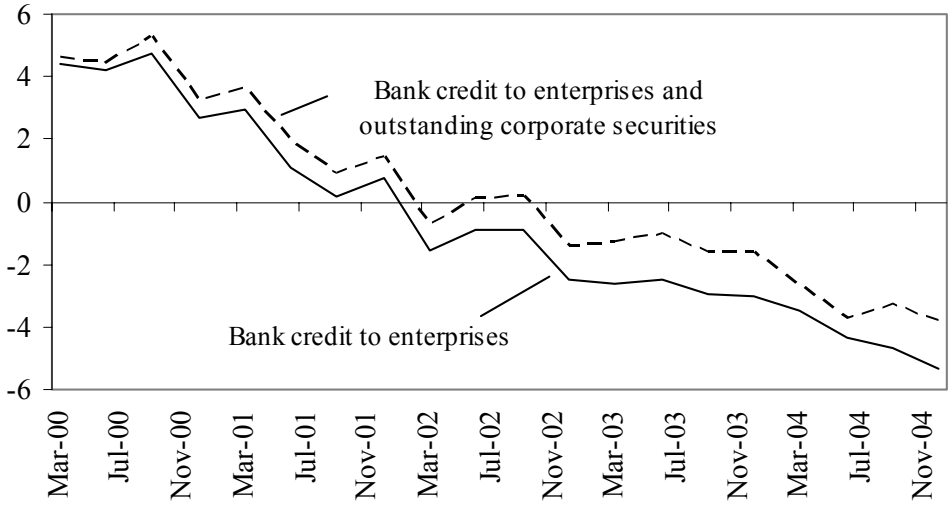
141. **In a related development, corporate securities issuance has been taking off since the late 1990s.** As a percentage of bank loans to the corporate sector, the outstanding value of corporate sector securities increased from an average of 0.3 percent in the 1980s–1990s to 6.3 percent as of Q1/2005 (Figure 2). If the volume of credit to enterprises were adjusted for the corporate issuance, the series would show a less substantial slowdown (Figure 3). The increased securities issuance indeed partly acted as a substitute for bank credit, especially for large enterprises. However, the bulk of German enterprises, including most SMEs, do not yet use the capital market.

Figure 2. Germany: Corporate Issuance, 1980–2004



Source: Deutsche Bundesbank; and author's calculations.

Figure 3. Germany: Corporate Issuance and Bank Credit, 2000–04



Source: Deutsche Bundesbank; and author's calculations.

142. **Bank lending surveys provide a rough tool for distinguishing credit supply and demand factors.** The surveys, organized by the European System of Central Banks (ESCB) since 2003, summarize responses of senior loan officers regarding loan demand and changes in their bank's lending policy in the previous quarter. The changes in demand conditions and credit standards in a preceding quarter are summarized by a difference between positive and negative responses, in percent of all responses ("net percentage").[37] When interpreting the results of the survey, one needs to take into account the qualitative, subjective nature of the survey data. In particular, experience from similar surveys suggests that bankers' responses may be biased towards tightening, and therefore a zero net percentage may in fact mean a slight easing. With that in mind, the net percentages from 2003 onwards are summed into a "cumulative balance," to provide an overview of credit and demand developments. A positive (negative) cumulative balance means an easing (tightening) relative to Q1/2003.

143. **Bank lending surveys suggest that the credit slowdown reflects a combination of credit supply squeeze and demand weakness; the role of supply was relatively bigger in household lending.** Between early 2003 and early 2005, the demand slowdown was much more pronounced in enterprise credit than in household credit (Figure 4, upper panel). Credit supply was also squeezed more for enterprises, moving largely hand in hand with the demand, except for late 2004 and early 2005, when credit supply was a constraining factor. In the household sector, credit supply was below demand since early 2003.

144. **In corporate lending, the small and medium-sized enterprises (SMEs) were affected by the credit squeeze more intensively than large enterprises.** Banks tightened credit standards for both SMEs and large enterprises to roughly the same extent, but credit demand declined much more rapidly in large enterprises than in SMEs, reflecting the fact that large companies have been increasingly able to obtain financing from abroad or through the securities market. Supply of credit therefore appeared to be a constraining factor for SMEs, but not for large enterprises (Figure 4, bottom panel).

145. **The three most important factors listed by banks when explaining changes in credit standards were those related to the perception of risk**. Namely, these were "expectations regarding general economic activity," "industry or firm-specific outlook," and "risk on collateral demanded." The survey results suggest that tightening of credit standards was mostly carried out through increasing margins on riskier loans, other methods included increasing non-interest rate charges and cutting typical loan size. Empirically, there is a positive correlation coefficient between on one hand the quarter-to-quarter growth of real GDP and on the other hand the net percentage balance on the demand side (0.41) and on the supply side (0.43), respectively. This suggests that both the loan demand and lending standards are procyclical.[38]

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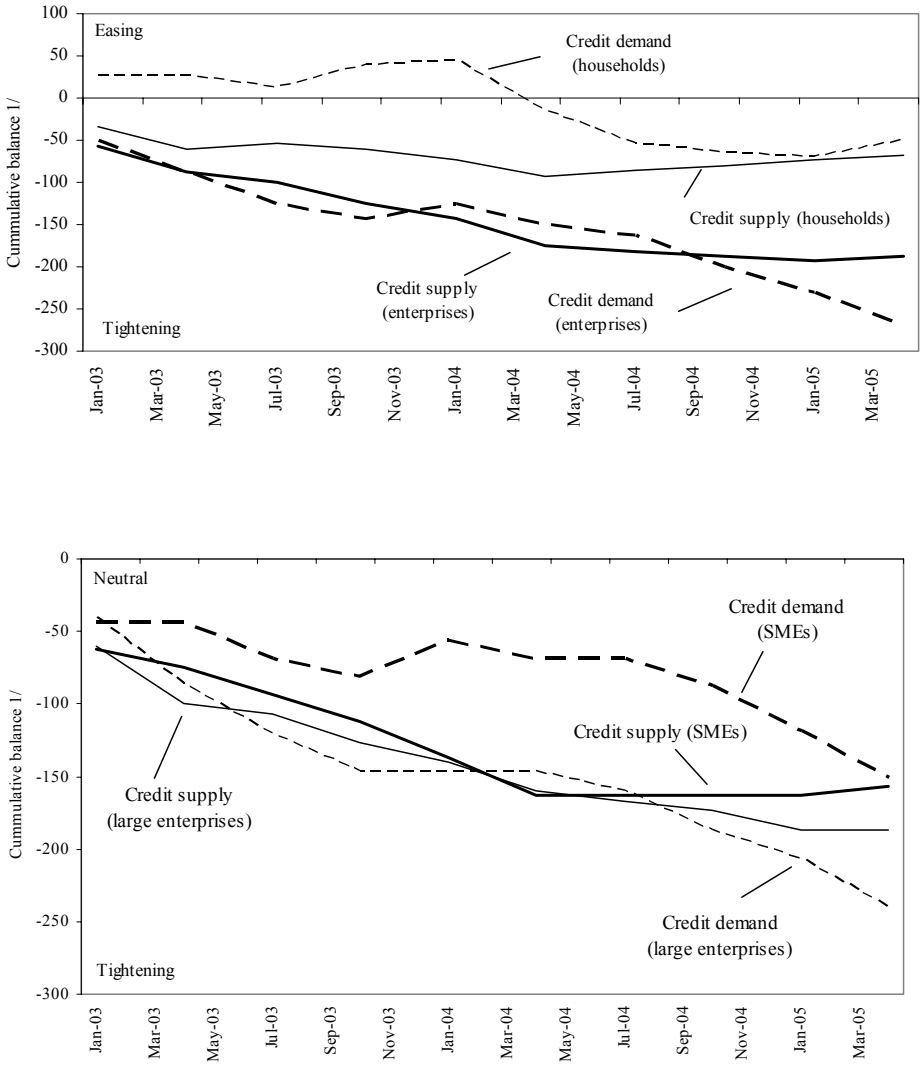
[37] See Berg and others (2005) for an overview of the methodology of the surveys.

[38] The time series of lending surveys are too short to allow for a more elaborate analysis or to test for breaks in the correlations that could be linked to the preparations for Basel II or other factors.

Figure 4. Germany: Bank Lending Surveys, 2003–05

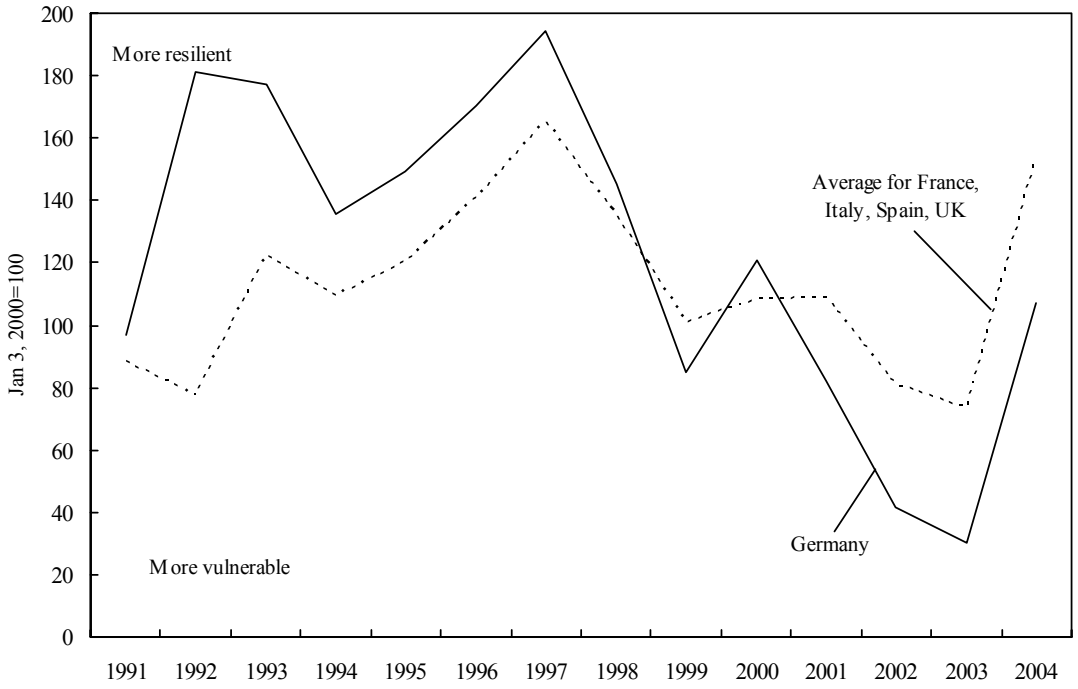


Sources: Deutsche Bundesbank; and author's calculations.

1/ Cumulative balance is the sum of per-period net percentages since Q1/2003. The per-period net percentage is the difference between responses that indicate easing and those that indicate tightening, as percentage of all responses in that period (i.e., the per-period net percentage can have values from -100 to +100 percent). A positive value of the cumulative balance means easing relative to Q1/2003, and a negative value means tightening relative to Q1/2003.

146. **Evidence for the role of credit supply factors can be found at the aggregate level.** In a preliminary step, a series of pairwise Granger causality tests was run to assess the relationships between real credit growth, real output growth, and banking sector vulnerability. The distance to default was used to approximate banking sector vulnerability as a possible source of credit supply strain.[39] Figure 5 shows that the distance to default in Germany, which was relatively high compared to other large EU economies throughout most of the 1990s, declined substantially in 1999 and reached a low in 2003. The results of the exercise suggest that banking sector vulnerability, measured by distance to default, is influenced by real GDP and real credit in the horizon of 6–12 months. The distance to default influences real credit, but not GDP, with a lag of 18 months (Table 2).[40]

Figure 5. Germany and Other Large EU Countries: Banking Fragility, 1991-2005 1/
(Distance to default, January 3, 2000=100)



Source: Staff calculations based on data from DataStream.
1/ For a definition of the distance to default, see Appendix II. Annual averages based on daily data.

[39] The distance to default attempts to capture vulnerability of the system in one number, derived from accounting and market-based data. As such, it complements the key financial soundness indicators, such as the capital asset ratio and the NPL ratio. The advantage of the distance to default is that it produces high frequency data. Its disadvantage is the fact that it is based only on data for listed banks (see Appendix II for details).

[40] GDP is a proxy for loan demand. The cubic spline method was used to approximate monthly data from quarterly figures.

Table 2. Germany: GDP versus Distance to Default, 1992–2004
(Results of Granger causality tests)

	6 months		12 months		18 months	
Null Hypothesis	F-stat.	p-value	F-stat.	p-val.	F-stat.	p-value
Real credit does not Granger cause D-to-D	4.86	**0.00**	2.39	**0.01**	1.27	0.25
D-to-D does not Granger cause real credit	0.55	0.77	1.73	**0.08**	1.85	**0.05**
GDP does not Granger cause D-to-D	2.37	**0.04**	1.60	0.11	1.22	0.28
D-to-D does not Granger cause GDP	0.68	0.67	0.42	0.95	0.34	0.99
Real credit does not Granger cause GDP	0.84	0.54	0.93	0.52	0.81	0.68
GDP does not Granger cause real credit	0.89	0.51	0.88	0.57	2.39	**0.01**

Source: Author's calculations based on data from Deutsche Bundesbank.

147. **This evidence is corroborated further by a supply-demand disequilibrium model, which finds credit supply shortages in 2003–04.** Equilibrium approaches, such as VEC/VAR models or single-equation estimates can provide only a limited answer to the causes of credit slowdown, because they do not address the question whether the demand or supply function determines the credit. Following the examples of Pazarbasioglu (1997), Ghosh and Ghosh (1999), Barajas and Steiner (2002), and Nehls and Schmidt (2002), a credit demand- and a credit supply-function are estimated under the restriction that the minimum of the two determines the credit.[41] This strategy avoids the identification problem of equilibrium models, and allows to making a statement on the existence of a credit crunch. A simple version of the disequilibrium model was estimated, using the maximum likelihood method. The specification of the demand side follows Deutsche Bundesbank (2002). The specification of the supply side is close to Pazarbasioglu (1997) and Nehls and Schmidt (2003); we add the distance to default among the supply-side variables, with an expected positive sign (i.e., more resilient banks can increase their lending faster). The estimated equations are presented in Table 3. The coefficients have the expected signs, and are generally in line with the previous research, in particular Deutsche Bundesbank (2002) on the demand side and Nehls and Schmidt (2003) on both sides. Several observations are worth noting:

- The breakdown into big banks and other banks suggests that ***the supply side played a much larger role in lending by big banks*****:** the statistical characteristics of the demand equation for big banks' lending are very weak, reflecting that the declining lending by big banks largely reflects supply side factors. One possible explanation is that the big banks have been hit hardest by the financial market downturn; another possible explanation is that the credit supply adjustment may just reflect risk management practices (credit risk is higher in economic downturns), which are presumably more developed in big banks.

[41] This restriction is the key difference from the 2002 Selected Issues paper, which was based on an equilibrium model using interest rates to match demand and supply.

- ***There have been periods in 2003 and 2004 with statistically significant excess demand for loans.*** This is illustrated in Figure 6, which shows the results of the model in terms of the excess demand for (or excess supply of) corporate loans by all banks. In the above periods, a credit squeeze may have played an important role.

- ***The credit shortage may have some short-term macroeconomic impact.*** The excess demand indicator derived from this model is correlated with the difference between supply and demand derived from the bank lending surveys in Figure4: the correlation coefficient is 0.31 for the period since 2003 for which the survey results are available. Granger causality runs from credit shortage to real GDP growth (Table 4).

Table 3. Germany: Demand and Supply in the Disequilibrium Model, 1992–2004 1/
(Dependent variable: lending to enterprises and self-employed persons, total)

Explanatory variables	All Banks	Big Banks	Other Banks
Demand			
Constant	- 10.24	5.23	-5.54
	(0.48)	(0.72)	(0.78)
Long-term interest rate	-0.03	-0.01	-0.03
	(0.01)	(0.01)	(0.01)
Real GDP	2.31	0.28	2.42
	(0.09)	(0.13)	(0.14)
Supply			
Constant	-8.32	5.68	2.91
	(2.31)	(0.35)	(0.82)
Lending rate	0.09	0.13	0.05
	(0.05)	(0.05)	(0.03)
Real deposits	0.97	0.18	0.91
	(0.08)	(0.07)	(0.09)
Distance to default	0.03	0.05	0.02
	(0.01)	(0.01)	(0.01)
Share price index	0.08	0.15	0.11
	(0.04)	(0.03)	(0.03)
Interest rate spread	-0.09	-0.20	-0.08
	(0.05)	(0.04)	(0.04)
Log likelihood	132.28	131.56	137.90

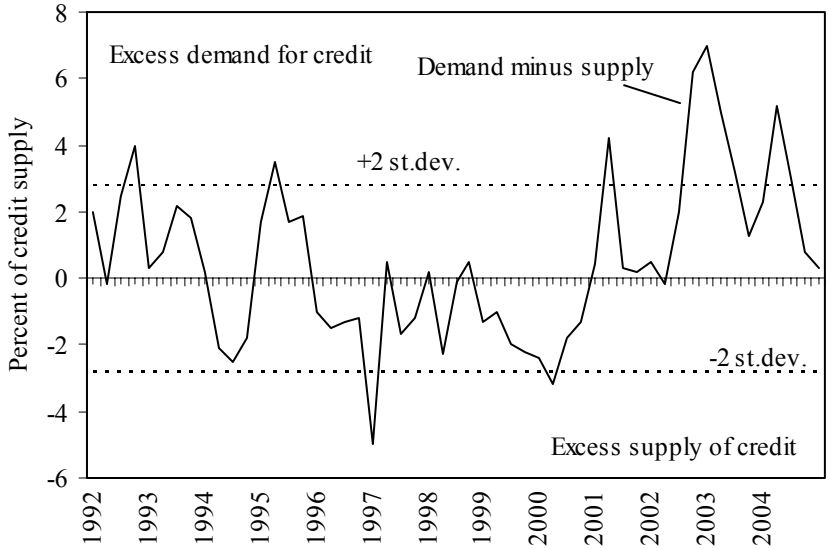
Source: Author's calculations based on data from Deutsche Bundesbank and DataStream.
1/ Maximum likelihood estimation. Standard errors in parentheses below the coefficient estimates.

Table 4. Germany: Excess Credit Demand and Real GDP Growth, 1992–2004
(Results of Granger causality tests)

	2 quarters		4 quarters	
Null Hypothesis	F-stat.	p-value	F-stat.	p-val.
Excess demand does not Granger cause real GDP	5.94	**0.01**	3.37	**0.02**
Real GDP does not Granger cause excess demand	1.17	0.32	1.54	0.21

Source: Author's calculations based on data from Deutsche Bundesbank and DataStream.

Figure 6. Germany: Excess Demand for Credit, 1992–2004



Sources: Author's calculations based on data from Deutsche Bundesbank and the DataStream.

C. Credit Developments and Efficiency of the Banking System

148. **The credit decline took place against the backdrop of improvements in banks' efficiency.** Basic indicators, such as assets per employee or loans per employee, have improved (Table 5). To confirm this improvement using more sophisticated methods, cost efficiency, and revenue efficiency of large German banks was estimated by the data envelopment analysis (DEA) of 452 large banks in Germany, France, Italy, and the Unitedc Kingdom.[42] We find that the average cost-efficiency score of German banks in 1997–2004

[42] Simple profitability or cost ratios are only rough measures of efficiency, since they are affected by various factors outside of banks' control, such as the business cycle. Efficiency is analyzed more rigorously by estimating production functions in banks, and measuring the distance of banks from that production function. Efficiency is defined here as a relative concept, i.e. the distance of a bank from the best performers. The DEA and other methodologies used for efficiency measurement in banking are summarized in Appendix III.

was 0.54, that is, the sample banks could on average have produced the same output quantities with only 54 percent of the observed costs. The estimate shows an improvement in cost efficiency over time (Table 6). The average estimate is broadly in line with previous results, even though comparability of results across studies is usually hampered by different samples, input and output definitions, and estimation methodologies. Previous bank efficiency studies on Germany did not find German banking system to be substantially less efficient in terms of costs. However, the studies that looked at revenue efficiency found that banks are weak in generating recurrent revenues (Table 7).

Table 5. Germany and EU-15: Basic Structural and Efficiency Indicators, 1997–2003

	1997	1998	1999	2000	2001	2002	2003
Bank assets (% of GDP)							
EU15	244	245	257	263	275	272	281
Germany	256	277	286	299	302	302	300
Other EU-15	240	234	247	253	267	263	275
Bank loans to non-banks (% of GDP)							
EU15	106	107	112	115	119	119	121
Germany	137	142	142	145	147	143	142
Other EU-15	96	95	102	106	111	112	115
Assets per employee (EUR mil)							
EU15	...	...	7.3	8.0	8.5	8.9	9.4
Germany	6.2	6.9	7.3	7.8	8.1	8.4	8.8
Other EU-15	...	...	7.3	8.1	8.7	9.0	9.6
Loans per employee (EUR mil)							
EU15	...	...	3.2	3.5	3.7	3.9	4.1
Germany	3.3	3.5	3.6	3.8	4.0	4.0	4.2
Other EU-15	...	...	3.0	3.4	3.6	3.8	4.0

Source: European Central Bank; and author's calculations.

Table 6. Germany: Banking Sector Cost Efficiency: Summary of Results 1/
(Mean efficiency score, 1.00=maximum efficiency)

Year	1997	1998	1999	2000	2001	2002	2003	2004	Average
Germany	0.53	0.55	0.52	0.53	0.51	0.55	0.54	0.57	0.54
France, Italy, UK	0.49	0.51	0.54	0.51	0.52	0.50	0.53	0.53	0.52

Source: Author's calculations based on BankScope by Bureau van Dijk.
1/ The number for France, Italy, and the UK is an average of individual data for all banks in these countries.

Table 7. Germany: Review of Recent Results on Banking Sector Efficiency

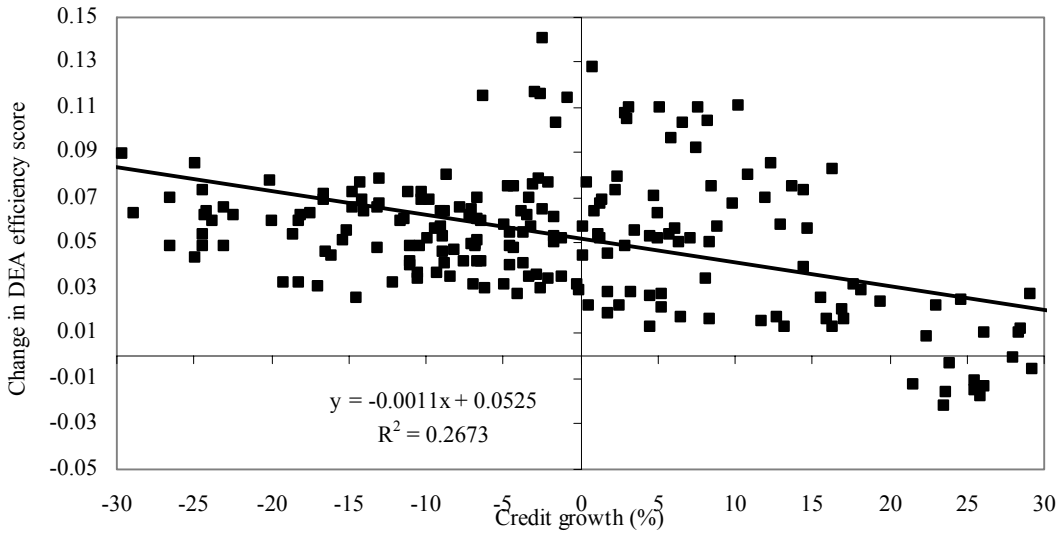
Study	Method used	Data coverage	Conclusions
Altunbas, Evans, and Molyneux (2001)	Several techniques, cost and profit efficiency	Germany only; 1,195 private banks.	Little evidence that private banks are more efficient than mutual and public-sector banks. All three groups face large economies of scale. Public and mutual banks have slight cost and profit advantage.
Lozano-Vivas, Pastor, Hasan (2001)	DEA	612 commercial banks from 10 EU countries (incl. 203 German), 1993 data. Efficiency scores control for environment (capital requirements, income per branch, salary per capita, deposits per sq km).	Germany ranks 4th of the 10 countries in the unadjusted efficiency. It ranks 7th in terms of the adjusted banking efficiency, followed by the Netherlands, France, and Italy. This is because Germany has above-average deposit density and lower capital ratios, both of which improve the (unadjusted) efficiency.
Hauner (2004)	DEA	97 large German and Austrian banks, 1995–1999.	German banks more efficient than Austrian. State-owned banks more efficient than private banks (likely due to cheaper funds). Increasing economies of scale but decreasing economies of scope. Interbank and capital market funding more cost efficient than deposits.
Brunner and others (2004)	SFA	Some 5,260 banks from Germany, France, Italy, Spain, and the United Kingdom (1997, 1999, 2001).	The differences in cost efficiency across countries and across pillars are small. German banks (especially cooperatives and savings bank) have low revenue efficiency. Higher competition and higher share of banks with objectives other than profit maximization explains only a part of German banks' low profitability. The rest is due to other factors, such as underpricing of risks and less innovative market.
Koetter (2005)	SFA	German banks only, 1993–2003.	Small cooperative banks in large western states are top performers; large banks and those in eastern states rank lowest.

Source: Studies quoted in the table.
Notes: SFA: stochastic frontier approach (parametric approach); DEA: data envelopment analysis (nonparametric approach). The above list is not a comprehensive review of the literature. For other related studies, see also Vennet (2002) and Pastor (2002).

149. **At the individual bank level, a link can be established between bank performance (efficiency and soundness) and credit growth.** Weaker banks were more likely to restrain their credit, as were banks that were in the process of improving their efficiency.

- A simple plot of credit growth versus change in efficiency (Figure 7) suggests that banks with higher increase in the DEA-estimated cost efficiency (as calculated above) tended to record a bigger decline in (or slower growth of) credit than other banks.

Figure 7. Germany: Changes in Credit and Cost Efficiency, 2000–04 1/



Source: Author's calculations based on the BankScope database by Bureau van Dijk.
1/ The individual points represent banks.

- To investigate this relationship more formally, a panel data model was estimated trying to explain at the individual bank level the factors contributing to credit developments in German banks in 1997–2004 (Table 8). The model tries to explain year-on-year real growth rates of customer loans as a function of a bank's capital adequacy (with an expected positive sign), net interest margin (expected positive sign), change in cost efficiency measured by the DEA (expected negative sign),[43] bank size approximated by total value of loans (expected negative sign given the declines in big banks), and real GDP growth rate as a proxy for overall economic activity (positive sign). The estimate (Table 8, specification 1) confirms that improvements in cost efficiency have a negative short-term relationship to credit

[43] The regression was estimated for German banks. However, given that the DEA measures only relative efficiency of banks within the sample, the sample for the efficiency frontier calculation included also banks from France, Italy, and the UK, as described in Appendix III.

growth. It also finds that weaker banks (those with lower capital adequacy) record lower credit growth rates. When the adjustment for the bank size is removed (specification 2), improvements in efficiency are still negatively correlated with credit growth; however, the capital adequacy variable changes signs. This is explained by the fact that the big banks, which are much more exposed to foreign competition, have been making more aggressive adjustments than the other banks, despite their relatively higher capital adequacy ratios than the rest of the system.

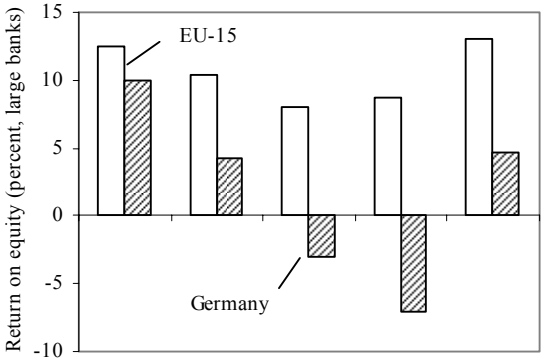
Table 8. Germany: Bank-by-Bank Estimates on Credit Growth, 1997–2004 1/
(Dependent variable: year-on-year growth rate of customer loans, deflated by CPI inflation)

Explanatory variables	Specification (1)	Specification (2)
Bank specific		
Capital adequacy (t-1)	0.067	-0.013
	(0.058)	(0.042)
Net interest margin	0.045	0.032
	(0.028)	(0.014)
Change in cost efficiency	-26.312	-14.993
	(10.292)	(8.428)
Total loans in EUR mil. (t-1)	-0.003	...
	(0.001)	
Economy-wide		
Real GDP growth rate	0.168	0.152
	(0.089)	(0.053)
Constant	-0.076	-0.065
	(0.131)	(0.093)
R-Sq (unweighted)	0.36	0.33
R-Sq (weighted)	0.86	0.79

Source: Author's calculations based on data from BankScope by Bureau van Dijk (bank-by-bank) and from Deutsche Bundesbank (economy-wide). N=185. Estimation method: GLS.
1/ Variables in percent, unless specified otherwise. Standard errors in parentheses.

150. **The improved cost efficiency helped to improve profitability, but—as far as large banks are concerned—it remains lower than in comparable banks abroad.** Preliminary data for 2004 suggest that after two years of losses, banks have been able to turn around their profitability, despite the declining loan portfolio discussed in the previous section. Nonetheless, key return indicators for German banks remain well

Figure 8. Bank Profitability in Germany and EU-15



Sources Deutsche Bundesbank; and author's calculations.

below their EU peers (Figure 8). The disparity between cost efficiency (in which German banks are close to or even above their peers, see Table 6) and profitability (in which large banks are below their peers) mainly reflects the fact that in 2001–2004, large German banks had to make considerable provisions.

151. **Going forward, the main challenge for banks is to find ways to boost revenue and profits without taking excessive risks.** As illustrated in the previous estimates, the adjustment in the recent years focused on improving cost efficiency. Cost efficiency is already comparable with the peer countries, which suggests that increasing profitability to peer country levels will require a stronger dynamism in the banking sector to generate sufficient revenue. Therefore, although additional economies can be achieved through mergers and acquisitions, further improvements in profitability will be difficult to achieve without boosting revenues.

152. **Banks' attempts to boost revenues have so far been limited and much less successful than their effort to curb costs.** Some banks have been trying to offset the declining income on domestic credits by, for example, expanding abroad,[44] offering their clients mezzanine financing and other innovative financial instruments,[45] and increasing fee income in general, but these attempts have so far been limited and had varying degrees of success. Banks also see growth potential in products that previously were provided exclusively by the public sector (e.g., pensions, tuition fees, health insurance), but this potential has so far not materialized. Allowing consolidation across pillars and opening the door to private capital, particularly in the Landesbanken and Sparkassen, would enable more flexible responses to stress and create a bigger push for innovation.

D. Conclusion

153. **This paper finds that the credit slowdown in recent years is due to a combination of supply and demand factors, i.e. it cannot be simplified into a purely demand phenomenon.** Credit demand has been pulled down by a combination of weak economic activity (which in turn has a cyclical and a structural component, as discussed in Chapter I) and a medium-term deleveraging of non-financial corporate (NFC) sector balance sheets (Chapter V). Credit supply also declined, due to a combination of weaknesses in the banking system and regulatory changes that encouraged banks to tighten their credit policies. While there are no signs of an unambiguous credit crunch, credit supply factors played a role in slowing down credit. For most of the time, demand and supply have declined hand in hand, but in some periods and some segments of the market, supply was a constraining factor. Credit supply declined particularly sharply in the big banks.

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[44] With the exception of the big banks, most German banks' activities abroad have largely been limited to supporting the foreign activities of their clients. This contrasts with, for example, Austrian banks, which expanded rapidly to the Central and Eastern European (CEE) countries and generate about 38 percent of operating profits in that region. While German banks' lending to CEE countries has increased recently (Bundesbank, 2004), the scope for acquisitions in CEE countries has become much more limited.

[45] For a discussion of the various mezzanine products offered by German banks, see Eyerman and others (2005).

154. **The credit squeeze seems to have negative short-term output effects; however, its medium-term impact may well be positive.** From the short term perspective, credit tightening appears to have contributed negatively to output growth in periods when credit supply contracted faster than credit demand. However, from the medium-term perspective, the credit decline is a product of adjustments that are likely to improve efficiency in the economy. On the demand side, the main medium-term factor seems to be strengthening of corporate sector balance sheets and the related deleveraging (Chapter V). Also, as in other countries, capital market instruments start to play an increasing role, even though they are still small compared to traditional lending in Germany. On the supply side, the key question is whether the decline reflects better credit risk management. It is early to provide a full assessment; the preliminary findings of the chapter provides evidence that the recent period was associated with some improvements in efficiency. However, profitability improved only partly and remains below peer levels.

155. **Reduction in legal and other barriers is needed to promote market-based consolidation and restructuring.** Some authors argued that while conventional commercial banking has been declining in the US and other countries, the dominance of German banks is unlikely to erode (e.g., Hackethal, 2003). The present paper suggests that (i) such adjustment is already taking place to some extent; (ii) it is likely to continue; and (iii) it might actually be a side-effect of some positive developments. The challenge for banks and policymakers is how to retain the beneficial features of the German banking system, while embracing more financial market-oriented solutions. Specifically, efficiency calculations suggest that there is some scope for further cost reductions through mergers and acquisitions, but more importantly, German banks need to generate new revenue streams that would replace the declining interest income on credits, without taking on excessive risks. So far, banks' attempts to boost revenues through financial innovations or expansion abroad have been less successful than their effort to curb costs. Allowing consolidation across pillars and opening the door to private capital, particularly in the Landesbanken and Sparkassen, would enable more space for financial innovation and flexible responses to developments in the economy.

RECENT CHANGES IN THE BANKING ENVIRONMENT

156. The new minimum capital requirements for credit institutions **(Basel II)**, published in June 2004 and to be introduced in 2007, are likely to affect banks and the economy as a whole. The main benefits are increased incentives for banks to adopt more elaborate risk management systems, which should improve the pricing of risk and lead to a more efficient use of capital and more risk-appropriate lending conditions. This is expected to entail efficiency gains in the banking system, which will further improve the stability of the financial system. Over time, this should have beneficial consequences for the economy as a whole, with a more efficient allocation of savings and risks.

157. Basel II has already begun to have an **impact on German banks' risk management practices.** According to recent estimates, a significant number of German credit institutions are planning to implement an internal ratings-based approach (Deutsche Bundesbank, 2004). This means that risk weights applied to assets will be able to reflect their relative riskiness in much more detail. Mittelstand (SME) companies may be disproportionately affected by the shift to risk weighting, given their historically strong reliance on relationship banking and large public sector involvement.

158. One of the often-discussed issues in implementing Basel II is its **potential for pro-cyclicality:** if new capital rules are more sensitive to risk measurement, they will measure more accurately increased risk during economic downturns. In response, banks may be encouraged to reduce lending just at the time that the economy as a whole is in recession and when borrowers appear more risky. This is more likely to affect SMEs than larger corporate borrowers that are better diversified across a number of markets. However, recent studies suggest that the pro-cyclical effects of Basel II are likely to be moderate (Blommestein, 2005).

159. The adoption of performance-based **International Financial Reporting Standards** (IFRS, formerly IAS) for all EU entities with quoted equity (2005) and bond issues (2007) is also likely to have a substantial impact. German borrowers, especially in the Mittelstand, have so far avoided equity and international credit products, because it would typically demand too much transparency or dilution of control for family owners, intent on independence. They have instead relied on less restrictive domestic products, many of which reflect German accounting treatment that allows domestic hybrid debt instruments to be classified as equity, while the EU-adopted IFRS accounting standards would treat them as debt. Moreover, new products pool credit exposures in a securitized portfolio, which is in turn sold to institutional investors on the basis that the underlying borrowers are "investment-grade." However, many of these underlying ratings rely on arranging banks' internal assessments or third-party quantitative models, which may not reflect international rating agency methodologies and, therefore, may not gain acceptance in international markets or among banking regulators. The danger for many small and medium-size borrowers is that equity levels continue to remain low on the basis of IFRS and rating agency treatment.

160. The loss of **public support mechanisms** impacts the behavior of banks in the public bank sector. The regulatory environment has changed in a way that requires public sector banks behave more like private sector banks.

161. The new "**Pfandbriefe Law**," coming into force in July 2005, will allow the issuance of secured bank debt instruments to all commercial banks, subject to certain requirements. This is likely to have a substantial impact on mortgage banks, which will be able to broaden the scope of their business activities, but will also face an erosion of their competitive funding advantages derived from the issuance of Pfandbriefe. The likely implications of the law include divestiture of some mortgage subsidiaries, and an increased merger activity among mortgage players trying to protect their respective franchise.

162. Banks and their clients are learning to live in an environment with a **more active credit market**. In addition to the rapidly growing corporate debt issuance (Figure 1), the secondary market for corporate debt is becoming more active. Since early 2004, German banks have been increasingly selling non-performing loans (NPLs) to international private equity investors and investment banks, notwithstanding considerable restrictions to selling corporate credit exposure to a third party in Germany. Selling of individual NPLs or packages of NPLs has taken place in several large companies in construction, retail, and manufacturing. International hedge funds and distressed debt funds have taken substantial positions in German corporate debt. As profitability concerns, consolidation pressures and the costly treatment of risky credit exposures under the forthcoming Basel II and EU capital adequacy regimes compel banks to reduce their exposure to deteriorating credit quality, private equity investors have been buying Mittelstand debt (Eyerman and others, 2005). Overall, the estimated turnover in this secondary NPL market in 2004 is about EUR 10 billion, which corresponds to about 9 percent of the gross NPL stock, and about 40 percent of the decline in risk-weighted assets in 2004.

163. The domestic supply of credit may have also been influenced by German banks' **growing credit abroad.** In search for higher profit margins, banks (including some public sector banks) have been increasing their market share of credit to abroad instead of allocating it domestically.

DISTANCE TO DEFAULT AS A MEASURE OF BANK SOUNDNESS

164. Banking soundness can be gauged by distance-to-default (DD) measures derived from the information contained in bank equity prices. In a standard valuation model, the distance to default is determined by: (i) the market value of a firm's assets, V_A, a measure of the present value of the future cash flows produced by the firm's assets; (ii) the uncertainty or volatility of the asset value (risk), σ_A; and (iii) the degree of leverage or the extent of the firm's contractual liabilities, measured as the book value of liabilities at time t, D_t (with maturity T), relative to the market value of assets.

165. Distance to default measure is computed as the sum of the ratio of the estimated current value of assets to debt and the return on the market value of assets, divided by the volatility of assets. The formula is given by:

$$DD_t = \frac{\ln(V_{A,t}/D_t)+(\mu-\frac{1}{2}\sigma_A^2)T}{\sigma_A\sqrt{T}}$$

Where μ measures the mean growth of V_A.

166. Using market data of equity and annual accounting data, the market value V_A and the volatility of assets σ_A are typically estimated using Black and Scholes (1973) and Merton (1974) options pricing model. A higher distance to default indicates an improvement in financial soundness, although the measure is sensitive to underlying assumptions. In this exercise, the value of assets is for simplicity estimated to be equal to the sum of the market value of equity and the book value of debt.

167. The distance-to-default has originally been developed in the context of individual institutions. However, with the increased focused on macroprudential surveillance in recent years, the concept of distance to default has been increasingly used also in the context of the banking (or financial) sector. In this paper, we use the distance to default measures both at the level of individual banks and at the level of the sector. The distance to default measures at the banking sector level are calculated for a *portfolio* of systemically important banks, making up for the majority of the country's banking system equity.

168. The distance to default indicators are calculated on a daily basis. The values are then indexed, with the first day of year 2000 as the base. In the regressions that use monthly data, monthly averages of the distance to default indicator are calculated from the daily data.

MEASURING EFFICIENCY: METHODOLOGY, MODEL, AND DATA

169. Literature on banking efficiency has ballooned in recent years (for reviews, see Berger and Humphrey, 1997, Hauner, 2004). Most of the literature covers U.S. banks, but the number of studies on other major countries, including Germany, has been growing rapidly (see Table 7 for a review of empirical studies on Germany).

170. This study, similarly to most studies on the subject, measures what is known as technical efficiency, namely the ability of a bank to produce a given set of outputs with minimal inputs. To calculate the efficiency scores, an empirical frontier is estimated. A bank is technically efficient if it lies on the frontier. Otherwise, an efficient projection point on the frontier is calculated as a linear combination of the efficient production sets of benchmark banks with output quantities of similar size as the ones of the inefficient bank.

171. Two main groups of approaches have developed in the literature to establish the efficiency frontiers: parametric approaches and non-parametric approaches. The most common parametric approaches are the stochastic frontier approach (SFA), the thick frontier approach (TFA), and the distribution-free approach (DFA). The main non-parametric approach is the data envelopment analysis (DEA) and extensions thereof.

172. The main trade-off between parametric and non-parametric approaches concerns their assumptions on random errors and the functional form of the cost frontier. Linear programming-based DEA constructs a piecewise linear surface that connect the set of the best-practice producers, yielding a convex production possibilities set. The advantage of DEA is that it does not presume a particular form of the frontier. Also, it is geared towards describing frontiers instead of central tendencies. Its disadvantage is that it fails to distinguish between inefficiency and random errors. As a result, it may be overly sensitive to outliers. The advantage of parametric approaches, such as the SFA, is that they distinguish between random errors and inefficiency. The disadvantage is that this is based on somewhat arbitrary assumptions about the distributions of the errors and requires imposing a particular functional form, which, if mis-specified, risks overstating inefficiency. In practice, bank efficiency studies have used nonparametric and parametric methods with similar frequency (Berger and Humphrey, 1997).

173. There are two main approaches to measuring a bank's production. The *production approach* models banks as using labor and physical capital to produce services for account holders, approximated by the number of transactions. This approach, however, fails to capture the role of a bank as financial intermediary and does not include interest expense, the largest portion of total costs. Therefore, this study—as most others—uses the *intermediation approach*, and models financial institutions as intermediating funds between savers and investors. As flow data are usually not available, the flows are typically assumed to be proportional to the respective stocks in the balance sheet.

174. Here, the production process of a bank is modeled as follows: Banks use deposits, loans, and contingent liabilities as inputs which they intermediate into deposit holdings,

securities, and loans as outputs. On the liability side, loans and contingent liabilities are lumped together to save degrees of freedom.

175. Two inputs that are used in several other studies are explicitly not included here. First, physical capital, because no economically reasonable input price could be calculated from the available data. Second, equity, because it increases via retained profit, and more profitable banks would thus be less cost-efficient if equity were included as an input—a rather counter-intuitive line of causality.

176. The input data for the efficiency calculation are from Bureau van Dijk's BankScope database for 1997–2004. The sample covered 452 banks from Germany, France, Italy, and the United Kingdom. All panel data are in end-2004 prices, deflated by the consumer price index.

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VII. Does Excessive Regulation Impede Growth in Germany?[46]

A. Introduction

177. **Excessive regulation is often cited as one reason behind the lackluster performance of the German economy since the 1990s.** On average, German GDP grew by 1.3 percent in real terms, compared to 1.8 percent in Euro area countries and more than 2½ percent in the UK and the US (Table 1). Much of this disappointing performance was reflected in a lack of employment growth, where Germany fell on average one half percentage points behind its European peers: precisely the difference in GDP growth. The persistence of this performance gap has raised questions whether institutional differences can explain these discrepancies.

Table 1. Germany: Stylized Facts, 1992-2004

(Average annualized growth rates)

	Germany	France	United Kingdom	United States	Euro Area
GDP real growth	1.3	1.8	2.7	3.3	1.8
of which:					
Employment total (persons)	0.1	0.6	0.5	1.3	0.6
Service sector 1/	10.9	13.0	11.6	16.4	...
Manufacturing 1/	-6.8	-2.3	-3.2	-0.7	...

Source: WEO, OECD STAN.
1/ 1991-2002.

178. **The role of institutions and, more specifically, barriers to competition in product and labor markets have recently received new attention among academics and policy makers.** While sectoral regulations may not appear excessive when viewed in isolation, in combination and applied over long periods of time, they may have become a growth trap resulting in low potential growth and high unemployment. Regulation is a particularly topical issue for Germany in light of recent government initiatives to implement significant supply-side reforms ("Hartz") and the intensive discussion of a new EU directive aimed at deregulating the service sector.

179. **It is important to note that a certain degree of regulation is a prerequisite for growth and, more generally, economic welfare**. Regulatory activities such as establishing property rights, safeguarding competition, and managing natural monopolies are a precondition for efficient economic activity rather than an obstacle to it. Thus, up to a certain level, regulation should bolster efficiency and real economic activity. In fact, efficient capital

[46] Prepared by Helge Berger and Stephan Danninger.

and labor market regulation were an integral part of the "German model" that helped sustain the high growth rates of the post-war period (Carlin 1996).

180. **From a theoretical point of view it is often unclear when regulation becomes detrimental to economic activity.** Consider the example of labor market regulation. While certain basic rules will be conducive for an efficiently operating labor market (e.g., health requirements, safety standards, or basic contract enforcement), further government intervention might hamper both efficiency and employment creation. Similar arguments can be made with regard to product market regulation or other fields of regulatory activity, which may create monopolistic rents in some areas while they support the functioning of natural monopolies in others (Jean and Nicoletti 2004). Ultimately, it is an empirical question whether regulation has efficiency costs.

181. **The tenor of the empirical research so far is that current levels of regulation are at least partly responsible for the divergences in economic performance among industrial countries.** A host of new data on regulatory activity has allowed a fresh look at regulatory activity across sectors, countries, and over time. One of the facts emerging from this analysis is that excessive regulation has a measurable negative effect on economic activity, and the intensity of regulation appears highly correlated across different markets. This suggests that any empirical analysis examining the impact of regulation on economic activity must also take a broad view, incorporating, for instance, both labor and product market regulation (Berger and Danninger 2005). Another result worth highlighting is that the impact of regulation often hinges on the implementation of legal norms, including, for instance, the role of labor courts.

182. **So does excessive regulation impede growth in Germany?** The paper tries to answer this question in two ways. Section B summarizes evidence on barriers to competition by comparing regulatory activity in Germany with its peers. The basic insight is that at an aggregate level product market regulations in Germany do not appear excessive. However there is some indication that administrative restrictions in the service sector are high. Labor market regulations mirror these findings. Procedural complexities are significant, and easy access to labor courts in the case of employment conflicts have raised the cost of employment. Section C takes up this latter theme and assesses whether the implementation of labor market regulations through labor courts have contributed to Germany's rise in unemployment. The answer is affirmative.

B. Stylized Facts on German Regulation

183. **Measurement of market regulation in OECD countries has improved markedly in recent years.** Spearheaded by the OECD and the EU commission, several new data sets quantify the regulatory environment. These new indicators rely both on "objective" information, such as the legal framework, and on "subjective" evaluation derived from expert surveys or interviews with business people. Despite the methodological differences in data collection, Nicoletti and Pryor (2001) found that the results from different data sets are significantly correlated. An important feature of the indicators is the breadth of coverage.

The measures are often based on specific information at disaggregated levels, which is then aggregated along a variety of economically relevant dimensions. Based on this new data a number of negative linkages between macro-economic performance and market regulation have been established (Box 1).

184. **This section describes Germany's comparative position and dynamics of market regulation in three different areas.** We first discuss the overall level of product market regulation, drawing on an OECD data set covering the years 1998 and 2003. The data include a comprehensive summary index distilled from 16 dimensions of product market regulation. Next we turn to market restrictiveness in the service sector. The data sources are two studies commissioned by the EU commission.[47] The final part explores the degree of labor market regulation. The information draws on the OECD employment protection database (OECD 2004b). Data sources and transformations into comparable indices are described in Box 2.

General Findings

185. **At an aggregated level Germany's regulation of product markets appears average.** Figure 1 compares Germany's regulation indices for three different areas with the EU 15 average, which has been normalized to zero. Each index is broken up into subindices with weights depending on the data sources. The first observation is that overall product market regulation (top observation) is on par with the EU15 average. This relative ranking is based on 2003 data, but it also applies to the 1998 observation in the OECD data set. Other countries with a similar "middle-of the-road" score are the Nordic countries and a number of small continental European countries. France and Italy have a somewhat higher score, while the UK has a less regulated environment (see further below).

[47] Copenhagen Economics (2005) and Institute for Advanced Studies (2003).

Box 1. The Economic Effects of Regulation in Literature		
Labor market regulation	Product market regulation	Interaction between labor and product market regulation
The net effect of employment protection on unemployment is empirically ambiguous (OECD 2004b, Table 2.3) By lowering both inflows into and outflows from unemployment, employment protection legislation has no clear overall impact on unemployment. **However, negative effects of EPL have been found for specific labor market groups or in interaction with economic shocks.** For some labor market sub-groups, employment protection has unfavorable labor market outcomes. In particular, employment of the young, women, and low skilled are negatively affected by protective legislation. This may also be the reason for the increase of temporary employment arrangements for these groups which tend to be less regulated (OECD 2004b). Blanchard and Wolfers (2000) also show that EPL increases unemployment if macroeconomic shocks are large. This finding is confirmed by Bertola (2002).	**Regulation of product markets has a large negative effect on investment** (Alesina, et al 2003). The most costly component of regulation appears to be barriers to market entry. On the other hand, the presence of a large (non-financial) public sector does not seem to lower investment, perhaps because relatively soft budget constraints in publicly owned firms might foster the (over-)accumulation of capital. The findings are based on a panel of 21 OECD countries covering the period 1975–1996. Results are robust to different time and fixed effect specifications and the inclusion of other economic variables. **Higher multi-factor productivity (MTFP) is linked to greater competition and a strengthening of corporate governance in product markets.** Using an aggregate country index of product market regulation in a panel of OECD countries, Nicoletti and Scarpetta (2003) find that deregulation facilitates a catch-up process of countries with low MTFP growth to leaders. There is also some indication of cross-sectoral spillovers of productivity gains through deregulation. This suggests that regulation can get in the way of transmission of new technologies and productivity gains between sectors (i.e., from service to manufacturing). **In inter-industry comparisons high product market regulation is associated with positive wage premia.** This result is derived by Jean and Nicoletti (2004) in a panel of 12 industrial countries with sectoral information on the level of market regulation. Anticompetitive policies tend to raise wage premia particularly in non-manufacturing industries. However the relationship between regulation and wage premia is non-monotonic: at very high levels of regulation wage premia cease to exist. This result is explained by the moderating effect of very high regulation in natural monopolies.	**Deregulation of product markets has positive spillovers on labor markets. Output and real wages increase, but the net effect on unemployment is unclear.** Blanchard and Giavazzi (2001) show that competitive barriers in product markets spill over into labor markets as they provide incentives to extract rents. Deregulation should result in less labor market regulations as rents for expropriation decline. Ebell and Haefke (2004) quantify these equilibrium effects of product and labor market de-regulation in a calibrated model for Europe and the US. They find that deregulation indeed implies an increase in output, productivity and real wages. However, the level of employment and thus the unemployment rate does not change. They attribute this result to the possibility that part of the monopoly rent obtained by labor is being used for overhiring. This employment overhang prevents the unemployment rate from falling as deregulation leads to output expansion. **Competitiveness in product markets is important for successful labor market deregulation.** Kugler and Pica (2003) show that the effects from changes in employment protection in Italy differed between regulated and unregulated industries. The dependence of labor market regulation on competitive conditions in product markets may explain why similar overall effects were not found in other micro studies. **Wage moderation is more effective in countries with less regulated product markets.** In more regulated product markets, weak competition allows incumbent firms to appropriate part of the improved labor supply conditions through higher rents (Estevao 2005).

Box 2. Sources and Construction of Regulation Indices

The empirical section relies on **four data sources**: (i) economy wide indices of product market regulation for 1998 and 2003 (OECD 2005); (ii) measures of market restrictiveness in the service sector in 2002 (Copenhagen Economics 2005); (iii) a regulation index of liberal professions in 2002 (Institute for Advanced Studies, 2003); and (iv) employment protection indices for the years 1988, 1998, and 2002 (OECD 2004b). Figure 1 depicts Germany's comparative score of the most recent regulation data on a **standardized scale** (i.e. adjusted for the EU15 average and divided by the standard deviation).

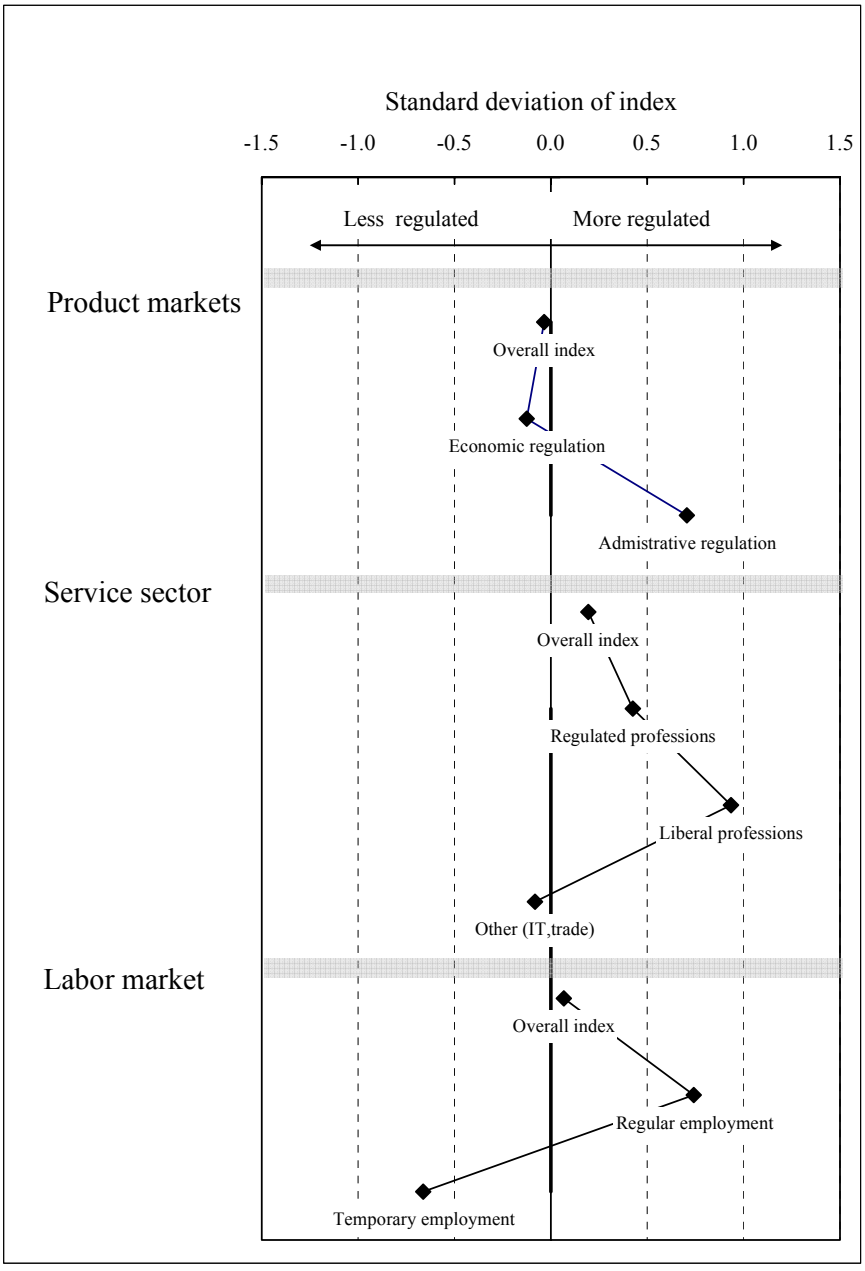
Data sources and transformations prior to standardization are as follows:

(i) The **index for product market regulation** was designed to measure economy wide restrictions to competition and private governance. Data were derived from detailed questionnaires submitted by governments. Data items were transformed onto a common (0–6) scale increasing in the degree of restriction and then grouped into 16 regulatory dimensions. Aggregate indices (i.e. the overall level of regulation and administrative and economic regulation) were constructed based on a robust weighting scheme. For a detailed discussion see Conway, Janod and Nicoletti (2005). All data used in this study prior to standardization reflect published values.

(ii) and (iii) **Service sector indices** were derived from detailed questionnaires sent to governments and relevant public bodies. The restrictiveness measures (Copenhagen Economics 2005) covers four service sector industries with separate assessments for domestic and foreign firms. The index of regulation for liberal professions (Institute for Advanced Studies 2003) covers six professions and distinguishes between market entry and market conduct restrictions. All data used in the middle panel of Figure 1 reflect published values with two exceptions. The indices of regulation for regulated professions and other sectors show the average value for domestic and foreign firms. The overall index for the service sector is computed as the arithmetic average of the standardized sectoral scores from Copenhagen Economics (2005) and Institute for Advanced Studies (2003).

(iv) The **employment protection data** reflect legislative restrictions on temporary and regular employment arrangements as assessed in OECD (2004b). Indicators for restrictiveness on temporary and regular employment are averages of sub-indicators measuring various aspect of employment such as layoff restrictions, notification requirement, procedural complexity and other aspects. All data reported prior to standardization reflect published values.

Figure 1. Market Regulation: Germany Relative to the EU-15 1/



Sources: OECD, Copenhagen economics (2005), Institute of Advanced Studies (2003).
1/ EU-15 average normalized to zero.

186. **The overall product market index masks some important differences**. The index represents the weighted average of economic and administrative regulatory burdens (depicted below the overall index), where the respective weights are based on evaluations by OECD-experts.[48] For the economic index—which refers to aspects of government control (public ownership) and direct regulation (price or quantity ceilings) and the tariff or trade barriers—Germany's score is somewhat below average. But for the administrative index a less favorable image emerges. The administrative index synthesizes (again using weighted-average techniques) transparency aspects and the complexity of administrative processes which can be especially costly for small enterprises. Germany's higher score in this category is due to the complexity of its administrative system which puts a comparatively high burden on new entries.

187. **Germany's high administrative regulation is also visible in the high regulation scores for the service sector.** Measures of the restrictiveness of competition in the service sector show a comparative weakness in some sub-areas. While sectors such as distributive trade (wholesale and retail) and IT services are on par with EU 15 average, Germany's regulatory system for regulated professions is more restrictive. Remnants of the guild system with its extensive licensing procedures and qualification requirements may be one factor explaining this difference. The general finding for the service sector is confirmed by another study which focuses exclusively on regulations in the liberal professions. Again, this study shows that Germany's index for product market regulation is more restrictive than the EU average (discussed further below).

188. **Turning to the labor market, the measure of employment protection legislation (EPL) is close to the EU average.** This is perhaps surprising, since it is commonly believed that Germany's labor market regulation is comparatively strict. One explanation is that the average score is the results of two offsetting measures: loose regulations in temporary arrangements (where employment is increasing) and stringent rules for regular employment (where employment is declining). Since the bulk of employment falls under regular employment contracts, the perceived strictness is consistent with the data.

189. **However, measuring the tightness of labor market regulation is not straightforward**. Actual EPL can differ from what has been written into the regulations along two dimensions. The first issue is completeness. The regular employment indicators depicted in the graph pertain to procedural complexity and restrictions on dismissal practices. The index on temporary employment measures the relative ease and scope to establish contracts, and the permitted duration and renewal of temporary contracts. What is missing, however, are other important institutional restrictions such as the collective wage bargaining system. Another factor not captured by the EPL indices is enforcement. As discussed further

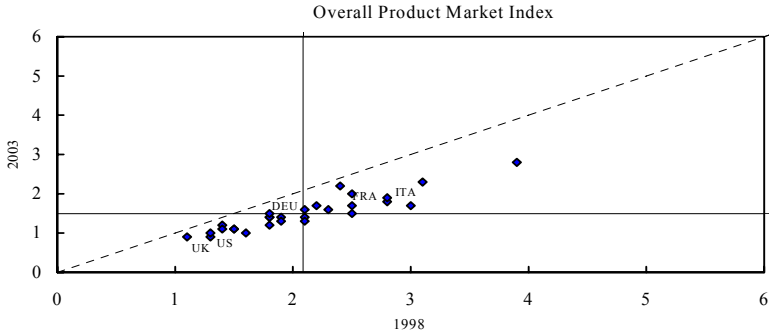
[48] The components of the economic index have a greater weight within the overall index, since they account for eleven out of the sixteen sub-indices. Sensitivity tests show that relative country rankings are robust to marginal changes in the distribution of subindices along administrative and economic dimensions (Conway, Janod, and Nicoletti 2005).

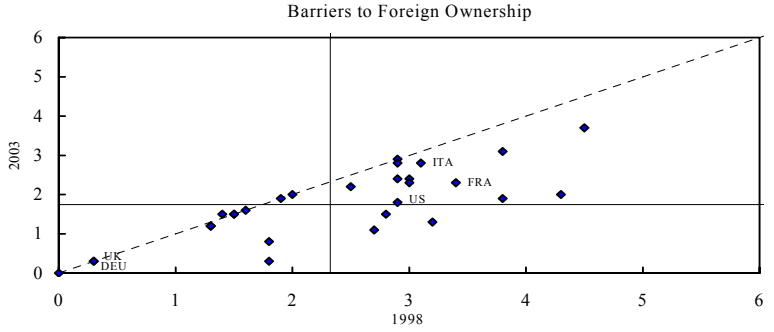
below, much of German EPL is implemented through German labor courts, which have significant leeway in interpreting the underlying legal norms. As a consequence, a tighter application of EPL by the courts may have also led to a tighter system than picked-up by the OECD indicators.

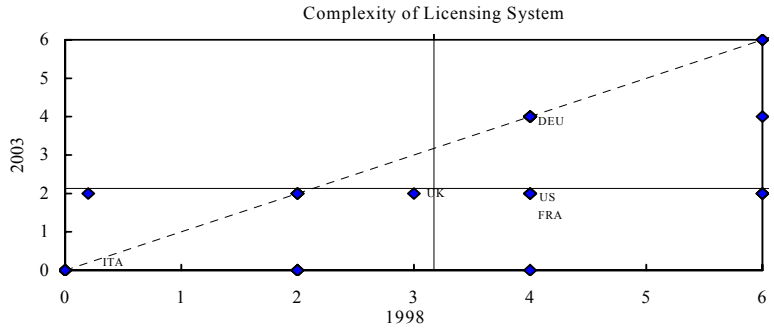
Product markets: Areas of High Regulation and Scope for Improvement

190. **The level of product market regulation (PMR) in Germany is average and has decreased in recent years**.[49] The scatter plot shows the level of overall product market regulation in 1998 and 2003 on a scale between zero and six, with six implying most restrictive. The vertical and horizontal lines indicate the OECD average in the respective year. Values below (above) the diagonal indicate a shift towards less (more) regulation between 1998 and 2003. As already highlighted above, Germany lies in the middle of the distribution. Moreover, like all other countries in the sample, PMR levels have decreased since the late 1990s.

191. **A more nuanced picture of product market regulation emerges from the various sub-indicators**. The overall PMR index is made up of sixteen subcomponents. The first eleven sub indices relate to economic dimensions such as the degree of state control, legal barriers to entrepreneurship, and the regulation of trade and investment. The remainders describe administrative aspects of regulation.[50]







Source: Copenhagen economics.

[49] Regulation indices here as well as in the following sections have not been transformed and thus are identical to published data.

[50] A detailed discussion of the different variables is given in Conway, Janod, Nicoletti (2005).

192. **In many legal aspects of economic regulation, Germany has a relatively liberal environment.** Variables pertaining to the level of state control (e.g. control over price or enterprises) are at or below the OECD average. Similarly, legal barriers to entrepreneurship, or rules pertaining to antitrust legislation, are comparatively less restrictive. There is also little evidence of excessive protective measures creating disincentives for inward-FDI: discriminatory procedures and barriers to foreign ownership appear lower than in most OECD countries (see figure) and thus should not create disincentives or cost disadvantages.

193. **Germany measures up less favorably on administrative features of regulation with potentially negative repercussions for entrepreneurship**. The main areas where Germany has higher scores compared to its peers are complexity of administrative procedures and transparency of information. License and permit systems are comparatively complex. These results imply an opaque system of regulations and procedures, which makes entering markets difficult and costly. With a large share of economic activity conducted by small and medium-sized enterprises ("Mittelstand"), such barriers to entry can have significant costs in terms of constrained economic dynamism and limited output and employment growth. In the area of crafts, entry requirements still apply to 90 percent of all businesses, despite some easing of licensing requirements through a selective waiver of "master" certification (OECD 2004a). This sector employs about 5½ million people and generates more than 10 percent of value added (Siebert 2005).

194. **Using the top-three country average as a benchmark, Germany shows the largest scope for improvement in licensing procedures and permit systems** (Table 2). While Germany has increased competition—measured by a decline of the PMR index—since 1998, it did so in parallel with other countries leaving its relative ranking unchanged. Underlying this effort was considerable progress in removing administrative constraints. Simplifications of rules, improvements in communication, and the lowering of administrative burdens for small enterprises have progressed faster than in peer countries. The overall gap to lead countries has however not narrowed. The largest discrepancies and, thus, the greatest scope for improvement still remains in the area of administrative regulations and within this category licensing and permit systems. Compared to these areas, discrepancies in the area of public sector size and scope, while significant, would seem somewhat less stark. Here Germany's weaker relative position is influenced, to some extent, by privatization programs in some of the new member EU countries, which have reduced public ownership to a minimal amount.

Table 2. Germany: Scope for Improvement in Product Market Regulation

	Actual improvement		Scope for improvement		
	DEU	EU15	Deu-Top3	Deu-Top3	Deu-Top3
	(difference '03-88')		2003	/Std	/mean
Product markets					
Comprehensive index	0.5	0.6	0.5	1.0	0.3
Economic regulation	0.4	0.7	0.8	1.5	0.4
Administrative regulation	0.6	0.6	1.0	1.8	0.7
Subindices					
Scope of public enterprise sector	0.2	0.3	2.3	2.1	0.7
Size of public enterprise sector	0.2	0.4	3.2	2.4	1.2
Direct control over business enterprise	0.0	0.5	2.2	1.8	1.1
Use of command & control regulation	1.5	0.6	1.7	1.3	0.7
Price controls	2.0	1.3	0.5	0.6	0.7
Licence and permits system	0.0	1.0	4.0	2.2	2.0
Communication and simplification of rules and procedures	0.7	0.4	0.3	0.6	0.6
Administrative burdens for corporations	0.0	0.3	1.7	1.9	0.9
Administrative burdens for sole proprietor firms	2.0	0.2	1.1	1.1	0.6
Sector- specific administrative burdens	0.7	0.4	1.2	1.1	0.8
Legal barriers	-0.3	0.5	1.2	2.0	0.9
Antitrust exemptions	0.0	0.3	0.0	0.0	0.0
Ownership barriers	0.0	0.4	0.1	0.1	0.1
Discriminatory procedures	0.2	0.3	0.7	1.4	1.9
Tariffs	1.0	1.0	0.1	0.1	0.1
Regulatory barriers	0.0	0.2	0.7	1.5	6.5

Source: OECD, Copenhagen Economics, Institute for Advanced Studies.

195. **Focusing on the service sector, regulation of liberal professions appears particularly restrictive**.[51] A 2003 study initiated by the EU provides indicators of services regulation in a number of sub-sectors in EU countries (Copenhagen Economics 2005). The regulatory indicators show that the overall level of restrictiveness in the distributive trades and the IT sector are low across EU countries, while regulatory constraints are somewhat higher in the accounting sector—with Germany being no exception.[52] The index for Germany lies in the middle range for the less constrained areas and above average for the accounting profession.

[51] Liberal professions are generally defined as occupations requiring special training in the arts or sciences, including lawyers, notaries, accountants, architects, engineers or pharmacists.

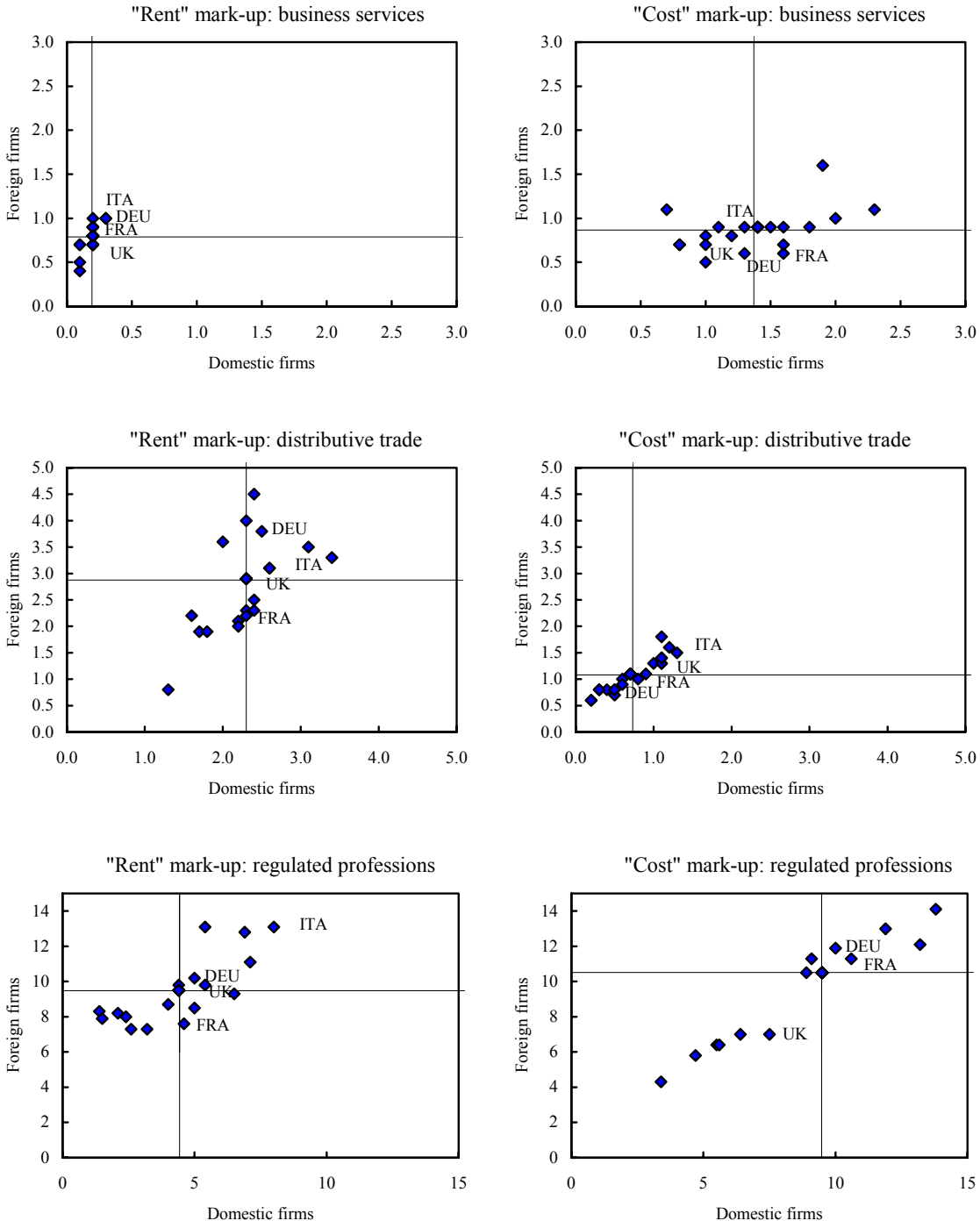
[52] See Box 1 above for a discussion. The panel describes the results for the restrictiveness indicators. All findings distinguish between domestic and foreign firms. A higher value on the index means a more restrictive environment.

196. **Going a step further than the OECD studies discussed so far, Copenhagen Economics also provides information of the economic relevance of these indicators.** The study estimates the regulation-induced cost or price (rent) mark-up in enterprise profitability equations from a large enterprise data set. Results were produced for three service sector industries: business services, distributive trades, and regulated professions, and distinguished between domestic and foreign firms.[53] Estimates of the implied cost and price mark-up at the sectoral level are shown in Figure 2 below.

197. **The estimated economic effects of regulation broadly match the findings above**. The most competitive areas are business services with mark-ups of 1–2 percent and distributive trades with mark-ups around 1–4 percent. In contrast, costs of market restrictiveness in the regulated professions are quite significant. The average mark-up is around 10 percent on average. The estimates for Germany broadly follow this overall pattern. In other words, not all service sector areas appear to have competitive barriers and by implication higher costs. Germany, like most other European countries, faces the largest costs and economic losses in the area of regulated professions, which are typically important in the value chain of all businesses in an economy.

[53] The sectoral groupings are derived from a data matching process between the sectoral data from the regulation index and the sectoral information contained in the enterprise level data.

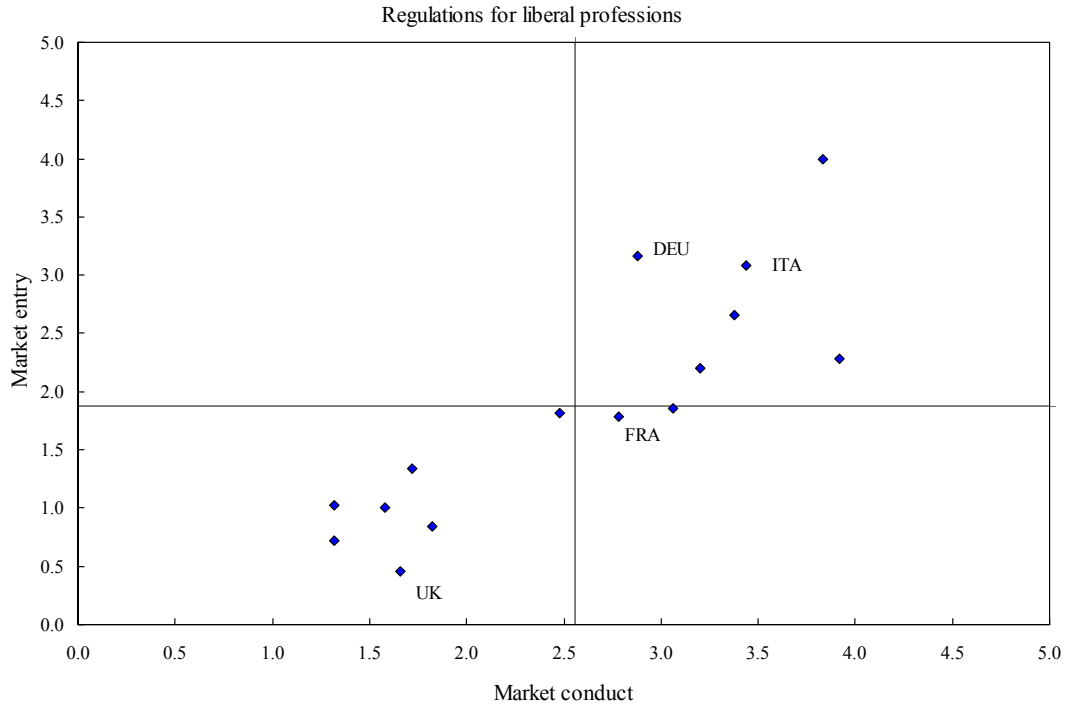
Figure 2. EU: Estimated Cost and Rent Mark-Up Due to Market Restrictiveness 1/
(In percent, 2002)



Source: Copenhagen Economics.

1/ The terms “Rent” (surplus accruing to the firm’s owners) and “Cost” (surplus to the inputs) mark-up refers to the estimated percentage price or cost increase in high relative to low regulated industries in a cross-country sample.

198. **Higher regulation in service sector professions is confirmed by another recent study showing higher barriers to market entry and constraints on market conduct.** A 2003 report on the economic impact of regulation in the liberal professions finds that in comparison to the EU15, Germany has a rather restrictive regulatory environment.[54] The text figure depicts measures of restrictiveness for two different aspects of regulation: market entry (e.g., licensing and qualification systems) and market conduct (e.g. restrictions on pricing, location, diversification, and advertisement). The vertical and horizontal lines indicate average scores. Compulsory membership in professional bodies and binding pricing prescription appear to be some factors responsible for the comparatively high score in Germany.



Labor Market Regulation

199. **Indicators of labor market regulation aim to capture the legal environment of employment relations.** They are thus only one element of a broader set of labor market institutions such as, wage setting institutions, unionization, and the unemployment benefit system. The standard measures of labor market regulation—used in this study—focus on different aspects of employment protection. They include measures of the permissiveness of temporary employment contracts (e.g. duration and renewal), constraints and procedures for layoffs, and special requirements for collective dismissals. Data for these dimensions are available since the late 1980s and thus allow some longer-term comparison.

[54] The surveyed fields include accounting, legal and pharmaceutical professions, engineering, and architecture.

International comparison

200. **As reported above, cross-country data do not identify Germany as a particular outlier when it comes to labor market regulation.** The overall employment protection index shows Germany at the EU15 average in 2002 (text table). Germany's present position is the result of a gradual deregulation process since the late 1980s. While all EU countries have loosened their labor market regulations over time, Germany has done so at a faster pace. More recently, as part of the Agenda 2010, the government amended the existing employment protection legislation in January 2004 with the aim to loosen existing rules. The revisions eased restrictions on temporary employment and also clarified the criteria for legal dismissals.[55] The impact of the new regulations is currently unclear, and a mandatory review of the effects of the revised EPL is due in 2007.

Index of Employment Protection

	Actual scores					
	Late 1980s		Late 1990s		2002-2003	
	Germany	EU 15	Germany	EU 15	Germany	EU 15
Comprehensive index	3.2	2.7	2.5	2.3	2.2	2.1
Temporary employment	3.8	3.0	2.3	2.2	1.8	2.0
Regular employment	2.6	2.5	2.7	2.3	2.7	2.3
Collective dismissals	...	...	3.5	3.4	3.8	3.4

Source: OECD and staff estimates

201. **This overall achievement masks deficits in certain areas**. Progress was limited to the area of temporary employment, which has become less regulated than in most EU countries. Germany removed time limits on the duration of temporary work contracts, eased regulations on fixed term contracts, and loosened rules for temporary work agencies (Table 3). On the other hand, levels of employment protection in regular work arrangements have slightly increased since the 1980s, and regulations for collective dismissals have tightened since the 1990s (by increasing the mandatory waiting period). To the extent that temporary work is a substitute for regular work arrangements, deregulation of temporary work has the potential to increase overall labor market efficiency. However, substitutability might be limited, and so the lack of reform concerning regular contracts remains a reason for concern.

[55] The main changes were (i) an extended duration of temporary contracts in newly founded enterprises (up to four years), (ii) the use of severance pay in exchange for waiving appeal to labor courts, (iii) greater exemptions from EPL for small firms, (iv) and an exact definition of the social criteria that can be considered in a disputed dismissal case.

Table 3. Germany: Scope for Improvement in Labor Market Regulation

	Actual improvement		Scope for improvement		
	DEU	EU15	Deu-Top3	Deu-Top3	Deu-Top3
	(difference '03-88')		2003	/Std	/mean
Comprehensive index	1.0	0.6	1.2	1.8	0.6
Temporary employment	2.0	0.9	1.8	1.7	0.9
Regular employment	-0.1	0.2	1.9	2.2	0.8
Procedural inconveniences	0.0	0.5	3.0	3.1	1.3
Notice and severance pay	-0.3	0.1	1.0	0.8	0.5
Difficulty of dismissal	0.0	0.0	2.2	2.4	0.8
Collective dismissals 1/	-0.3	0.0	2.5	3.1	0.8

Source: OECD and staff estimates.

1/ Actual improvement refers to the period 1998 to 2003.

202. **Assessing the scope of improvement shows several areas for potential catch-up to leaders.** Using the top-three country average as a benchmark shows that even temporary employment is still regulated more tightly than in lead countries. The largest improvement score is found for procedural inconveniences of regular employment. This variable essentially measures permissible steps of appeal against dismissals. In 2003 workers with regular jobs have retained essentially the same rights of legal recourse to layoffs as in 1988. Labor courts can easily be invoked in a dispute creating a comparatively high procedural burden. Similarly, difficulty of dismissals of regular employment has remained high reflected by a relatively limited number of permissible causes for dismissal. Also, regulation of collective dismissal processes is quite stringent when compared to the top three liberal regimes.

203. **Recent research hints at weaknesses in these indicators**. Working with a panel of OECD countries, Nickell, Ochel, and Nunziata (2005) find that institutional factors explain about 55 percent of the rise in unemployment rate between 1960–2000. Of this part, the largest contributions come from changes in the benefits system, higher labor taxes, and shifts in union density. Only about 14 percent is attributable to changes in employment protection legislation—i.e., the regulation of labor markets in a narrow sense.[56] This finding is somewhat puzzling as it contradicts the common belief that labor market regulations have contributed to the rise in unemployment.

Implementation of EPL

204. **Differences in implementation can explain why differences in regulatory norms do not map into differences in economic performance**. Many indicators focus on formal regulatory norms—not least because they are most easily measured—thereby ignoring differences, both across countries and time, in informal regulatory practice and

[56] Studies measuring directly the effect of dismissal protection legislation on German micro data also find little evidence of a significant impact (Bauer et al 2004).

implementation. This issue might be particularly pervasive regarding labor market regulation, were labor courts play a major role in implementing existing rules. The employment protection indicators discussed above are an important example. While these measures incorporate some aspects of judicial practices, the role of labor courts "is likely to be somewhat understated in the information presented…" (OECD 2004b, p. 66).

205. **Labor courts are likely to play a crucial role in the translation of labor market rules into effective regulation—in particular when it comes to the regulation of firing costs**.[57] Courts interpret existing law, translating employment protection rules into monetary or non-monetary firing (e.g. by temporarily extending a work contract intended to end) costs for firms. Labor court activity in this respect is likely to influence firing costs both directly and indirectly. If employees had reason to believe that courts increased potential transfers in case of dismissal compared to what their severance package might include, they would be more inclined to involve labor courts when dismissed, leading to an increase in case load and, ultimately, higher actual firing cost. This direct action is likely to have an additional indirect influence by informing private negotiations between employees and employers, as both sides will internalize any change in court policy when discussing the conditions for a dismissal.

206. **Recent studies support the notion that courts have important influence on the intensity of effective employment protection**.[58] The available cross-country evidence, while scarce and not always allowing generalization, suggests that the direct impact of labor courts on EPL is often amplified through the "threat" of ruling—that is, relatively few cases may actually reach courts (OECD 2004b, Table 2.1).[59] In recent work on the US, Autor and others (2004a, 2004b) describe in some detail how changes in US labor courts decision-making influenced firing costs and, ultimately, employment across states. They stress that some of the impact of innovations in court policies precede the publication of a fully elaborated decision behind a new common-law doctrine, as employers may already have responded to the initial precedent-setting. All this suggests that any evaluation of the true—or implemented—extent of employment protection in a country needs to take into account its ongoing interpretation by labor courts.

207. **There might be a temptation for labor courts to use their discretionary power to pursue employment protection policies of their own**. There are, for instance, indications that labor courts' activity might not be neutral with regard to labor market conditions. Ichino and others (2002) show that Italian labor courts do not base decisions on the characteristics of employee's (alleged) misconduct alone: the same behavior might be considered sufficient for terminating an ongoing conduct in a booming labor market but insufficient otherwise.

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[57] This section, in part, draws on Berger (1998).

[58] See, for instance, Bertola and others (1999), and OECD (2004b).

[59] See also the survey in Young (2003).

This implies that higher unemployment could endogenously lead to higher firing costs, with possible repercussions for higher unemployment. Bertola and others (1999) discuss evidence for other OECD countries pointing in the same direction.

208. **German labor courts, much like their counterparts elsewhere, enjoy significant leeway in their interpretation of existing laws**. Contrary to other legal fields, the basic German Protection Against Dismissal Law of 1951 ("Kündigungsschutzgesetz") places only mild restrictions on court behavior. Dismissals are considered illegal, if they are "socially unjustified" and lack an "important" reason, but the specific meaning of either term is a matter of interpretation. As a consequence, it is mostly labor courts that determine the size of actual firing costs (Richardi and Wlotzke 1992). Courts rule on a case-by-case basis and ask, as a matter of principle, whether a dismissal was indeed the "ultima ratio" or could have been avoided—in other words, the presumption is that the work contract should be continued—with the burden of proof whether a dismissal was justified placed solely on the employers.[60]

209. **Labor courts may have their strongest impact on actual firing costs—not least because of the uncertainty surrounding their interpretation of the underlying laws**. The German Sachverständigenrat (2003, p. 385) argues that the interpretative freedom given to labor courts in this respect renders the outcome of judicial action all but "unpredictable", thereby severely reducing the transparency of employment protection even for the legal expert. This uncertainty is of quantitative relevance. According to the Sachverständigenrat (2003, p. 386), in 2001 the ratio of decided labor court cases to the number dismissed employees was about 27 percent suggesting a relatively high probability of court involvement.[61]

C. Regulation and Labor Market Outcomes

210. **This section examines the impact of labor market regulation on unemployment**. It builds on the discussion of the importance of labor courts for the interpretation and implementation of labor market regulation, in particular EPL. In addition to shedding some light on the issues raised in the previous section, the focus on labor courts has the advantage of allowing the use of straightforward time-series techniques in the econometric analysis of the effects of regulation—a feat more difficult to achieve with more traditional regulation indicators.

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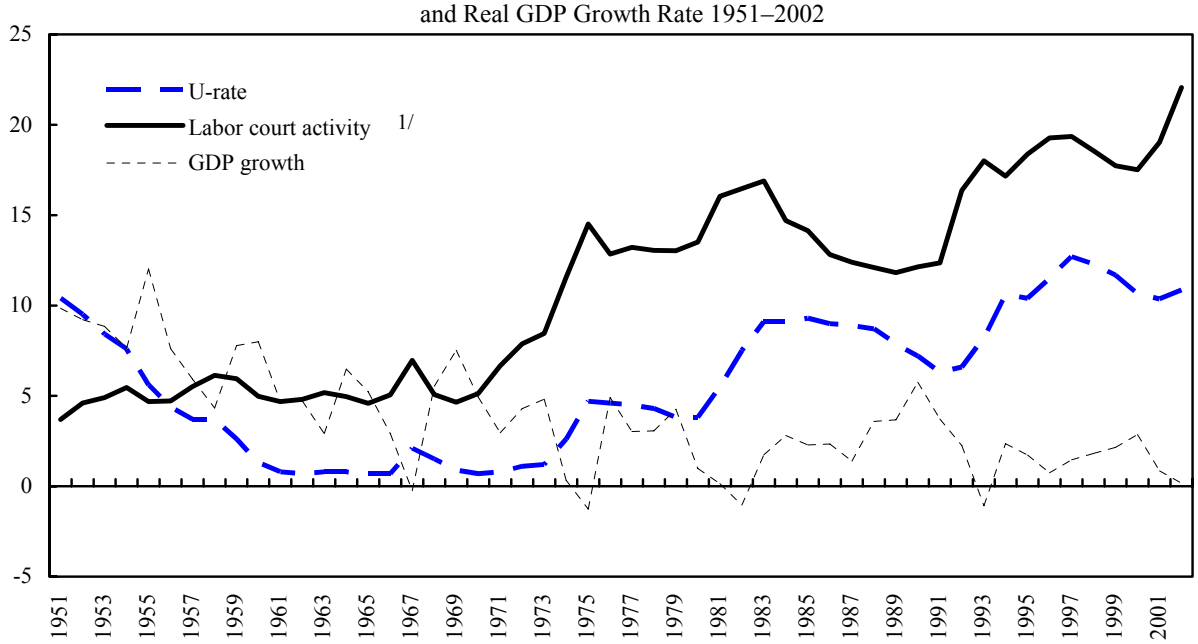
[60] Since 1999 a change in leadership at the supreme labor court led to a gradual shift away from case-by case jurisdiction in favor of a more standardized interpretation of legal compliance.

[61] Survey data indicate that during the years 1991–1998 roughly one third of dismissed employees received some form of transfer from their former employers. This figure might be a lower bound. Especially smaller firms, which probably are less willing to pay for the legal fees and other costs associated with going to labor court will be inclined to settle outside court (Sachverständigenrat 2003). Thus, with about one third of all dismissed going to court, the actual ratio of those receiving some sort of transfer to the number of dismissed could well be higher. Another relevant stylized fact emerging from surveys is that currently about one third of all exits from labor contracts is due to dismissal by firms.

A Look at the Role of Labor Courts

211. **Labor court activity in Germany shows significant changes over time**. Figure 3 reports labor court activity in percent of regular civil court activity over the post-war period. For reference, the unemployment rate and real GDP growth (all in percent) are also shown. Ideally, the role of German labor courts in employment protection would be described not only along the dimension of their actual involvement in labor market regulation (i.e., court activity), but also with regard to the quality of their decisions (i.e., changes in court interpretation of existing laws). Unfortunately, such data are not available. Bertola and others (1999, p.21) argue, however, that higher court activity may be indicative of more employee-friendly rulings. Based on expert surveys for a number of OECD countries they conclude that countries where courts are more often involved in disputes over the termination of work contracts tend also to be "those to have the highest percentage cases favorable to employees."

Figure 3. Germany: Labor Court Activity, Unemployment Rate, and Real GDP Growth Rate 1951–2002



Source: Berger (1998); Statistisches Bundesamt (various issues); and own calculations.

1/ Labor court activity is measured as firing-related court decisions in percent of regular civil court decisions ("Amtsgerichte"; "gewöhnliche Prozesse"). Both series include the New Länder as of 1995. Real GDP growth has been corrected for changes in the area included (1960, 1991).

212. **The striking time-pattern of labor court activity seems to reflect both demand and supply factors**.[62] Labor court activity in the post-war period as described by Figure 3 was hardly constant: from a stationary holding-pattern in the 1950s and 1960s, court activity suddenly tripled in the early 1970s, receded somewhat in the 1980s, only to continue its increase during the 1990s. The visible jump in the early 1970s hints at demand factors, as it coincides with the—equally dramatic—jump in unemployment following the first oil shock. On the other hand, this does not explain the fact that numbers of court cases remained high afterwards, pointing at supply-side factors.

213. **According to anecdotal evidence, an important reason for the permanent upward shift in labor court activity was the labor courts themselves.** Franz (1994) reports that, sometime in the late 1960s, a new generation of judges seems to have drifted towards a more employee-friendly interpretation of existing labor laws, giving priority to safeguarding existing work contracts over the interest of job-seekers ("*Bestandsschutz*").[63] Since accessibility of labor courts in Germany is high for employees, firms found it decidedly more difficult to dismiss workers, which, in turn, led to a sharp increase in actual firing costs (Soltwedel (1984).[64] Interestingly, the temporary reduction in court activity in the mid 1980s coincides with the enactment of the 1985 Employment Security Act ("Beschäftigungssicherungsgesetz"), an effort by the new conservative government to curtail the discretionary power of labor judges.[65] In addition, the law liberalized temporary work contracts, which were highly restricted in their use both by legislative and labor court regulation, thereby allowing firms to hire without facing restrictions when discontinuing (or not renewing) the work contract. The renewed upward-movement during the 1990s is a little harder to interpret.[66] In part, demand factors—that is, the further increase in unemployment—will have played a role. There is also evidence, however, that the frequency

[62] Note that the denominator of the labor court activity series shown in Figure 3 excludes labor court cases. Moreover, the number of new dismissal cases arriving at the courts behaves similar to the number of finished cases. Therefore, the observed time pattern of labor court activity should mostly be due to changes in the nominator and be broadly independent of court capacity. See the discussion in Soltwedel (1984).

[63] The Sachverständigenrat (2003) also provides a discussion of the development of the *Bestandsschutz*-idea by the courts.

[64] Court fees are low, employees can call upon trade unions for legal advice before the courts, and the defeated party is not charged with the legal costs of the opposition.

[65] More specifically, the law reduced the obligation of new firms to provide social plans for employees following larger-scale lay-offs. More generally, it constrained court decisions on the applicability of social plans: instead of being determined solely by the judges, applicability was made a predictable function of firm size and the number of employees affected.

[66] This is not an artifact of unification. As the notes to Figure 3 point out, up to 1994, the labor court activity indicator refers to the Old Länder only. Thus, while unification might have influenced the second half of the 1990s, the steep increase before must have different reasons.

with which dismissed employees went to court increased during this period (Sachverständigenrat 2003), which points toward supply-side factors as well.

214. **To learn more about the effects of labor court activity on unemployment, it is worthwhile to take a closer look at the time-series behavior of the series depicted in Figure 3.** A first observation is that there is obvious co-movement in unemployment and labor court activity levels. Moreover, as one would expect, the level of the unemployment rate and real GDP growth also seem related. In fact, a formal test points toward two co-integration relationships among the three variables. A second observation relates to the dynamics underlying the series. At first glance, changes in labor court activity seem to pre-date changes in the unemployment rate.

Table 4. Germany: Test of Granger-Causality between Labor Court Activity and Changes in Unemployment Rate 1/

Null Hypothesis:	F-Statistic	Probability
Changes in labor court activity do not Granger-cause changes in the unemployment rate	3.310	0.046
Changes in the unemployment rate do not Granger-cause changes in labor court activity	1.879	0.165

Source: Own calculations.

1/ Sample 1952–2002. The lag length has been set to 2. The F-statistic allows rejection of the hypothesis that changes in unemployment are independent of changes in labor court activity—but not the other way around—at the 5 percent-level.

215. **Table 4 shows that court activity seems to play a more important role in the explanation of the dynamics of unemployment than vice versa.** As with co-integration, this result need not necessarily imply economic causality, however. For instance, it could be argued that increases in the unemployment rate are pre-dated by higher labor market turnover, which, in turn, could increase labor court activity ahead of visible shifts in the unemployment rate.

216. **To gauge the size of the implied effect of court activity a Vector Error Correction model was estimated and is discussed in the annex.** The main message stemming from this exercise is that labor court decisions have a clear positive impact on the unemployment rate—even after controlling for the possible endogeneity of the latter with regard to real activity. The effect builds up over about 5 years and shows surprising rigidity suggesting an almost permanent effect. There is, in addition, a smaller negative impact of labor court activity on real GDP growth. Higher unemployment has only a short-lived positive impact on courts and there is almost no reaction of court activity on real GDP growth shocks.

217. **It is important to note the limitations of the above result:** lacking all but the simplest of economic structure, the model is ill-suited for going beyond the qualitative assessment discussed. Further analysis would be required to ensure that the aggregate relationship holds up against micro evidence, that is, whether the court's use of their discretionary powers indeed have negative repercussions for the labor market at the individual level. But, at the very least, the evidence appears to support the idea that any attempt to influence effective employment protection in Germany must take into account—and perhaps limit—the autonomy of labor courts.[67]

D. Conclusions and Policy Implications

218. **Market regulation is a candidate in explaining growth discrepancies between industrialized countries**. Policy makers and academics alike are increasingly interested in pursuing this link between institutions and economic activity.

219. **It is important to note, however, that the theoretical implications of regulation per se are ambiguous.** A basic regulatory framework is a requirement for growth, and only empirical analysis can show whether regulation overall, or in a particular sector of economic activity, is excessive. As others have argued, a leaner, more growth-oriented regulatory framework helped Germany's "Wirtschaftswunder" during the earlier post-war period (Carlin 1996).

220. **Recently a host of new data on regulation has become available.** While a number of problems remain—for instance, with regard to measurement of implementation or the possible endogeneity of regulatory indicators—the data allow comparison of regulatory regimes across countries and (to a lesser degree) across time.

221. **Empirical studies find that excessive product and labor market regulation have a measurable negative impact on economic activity.** Among the findings is the result that employment protection can magnify the effects of economic shocks and increase unemployment of disadvantaged groups on the labor market (such as the young, women, or unskilled workers). Product market regulation may reduce productivity and, thus, potential growth, and also tends to increase labor costs. Finally, there is evidence that regulatory activity in different sectors is cascading. For instance, the effect of employment protection in a particular sector depends in part, on product market regulation in this sector.

222. **Germany's overall level of market regulation appears average in OECD countries.** However there is some indication of higher barriers to competition in the service sector, especially in the area of regulated professions. Administrative burdens tend to be relatively high. Complex permit and licensing requirements further dampen entrepreneurship and economic activity compared to the best practice in the EU15. The picture emerging from

[67] The Sachverständigenrat (2003, p. 389) demands more specific legal norms to curtail the courts' discretionary leeway and to decrease uncertainty regarding the effective level of employment protection in Germany.

a comparative look at German labor market regulations is similar in many ways. While the overall level of German labor market regulation does not stand out as such, there is ample scope for improvement when it comes to specific areas. In particular, employment protection for regular employment is high due to procedural complexities which can be traced back, among other things, to ease of access to labor courts.

223. **One area sometimes ignored—but of particular relevance in the German case—is the role of labor courts.** In Germany and elsewhere, labor courts play a key role in implementing and interpreting employment protection. There is (so far mostly anecdotal) evidence pointing toward a surprisingly independent role of German courts, which may have added to employment and firing costs for firms. Our analysis provides some empirical support for the hypothesis that labor court activity had a detrimental effect on employment.

224. **Summing up, there is reason to believe that targeted reforms could help Germany's regulatory environment to become as conducive for growth as it once was.** Tasks identified from comparisons with best practices within the EU15 include reducing administrative burdens and licensing restrictions in the services sector and the easing the protection of regular employment contracts. The independent role of German labor courts poses a particular challenge related to reducing employment and firing costs.

A Vector Error Correction Model of Labor Court Activity and Unemployment

A simple econometric exercise provides further insights, while controlling for the possible endogeneity of court activity. To better gauge the impact of changes in labor court activity on unemployment, while taking into account repercussions of developments in unemployment and real growth on court activity itself, we estimate a simple Vector Error Correction (VEC) model allowing for two co-integration relationships over the 1954–2002 period (49 observations with annual data).

Formally, we estimate

$$D(\mathbf{x}_t) = \alpha + \beta_{u,lc}\left(\alpha_{u,lc} + u_{t-1} + \gamma_{u,lc} lc_{t-1}\right) + \beta_{y,lc}\left(\alpha_{y,lc} + y_{t-1} + \gamma_{y,lc} lc_{t-1}\right) + \sum_{i=1}^{n} \boldsymbol{\beta}_i D(\mathbf{x}_{t-i}) + \boldsymbol{\varepsilon}_t, \quad (1)$$

where the vector $\mathbf{x}_t=(u_t, y_t, lc_t)'$ contains the observations on the unemployment rate, the rate of real GDP growth, and labor court activity in period t, D is the difference operator, and the coefficients $\alpha, \beta_{u,lc}, \alpha_{u,lc}, \gamma_{u,lc}, \beta_{y,lc}, \alpha_{y,lc}, \gamma_{y,lc}$, and $\boldsymbol{\beta}_i$ are to be estimated. The index $i=1,..,n$ captures the lag structure of the VAR, with $n=2$ in the estimated model.[68] $\boldsymbol{\varepsilon}_t$ is a vector of residuals assumed to follow standard assumptions. In short, the VEC-model combines the notion of co-movement in the levels of all three variables (thought as representing long-run equilibrium relations) with a standard VAR in first differences, allowing a relatively rich description of their short-run interactions.[69]

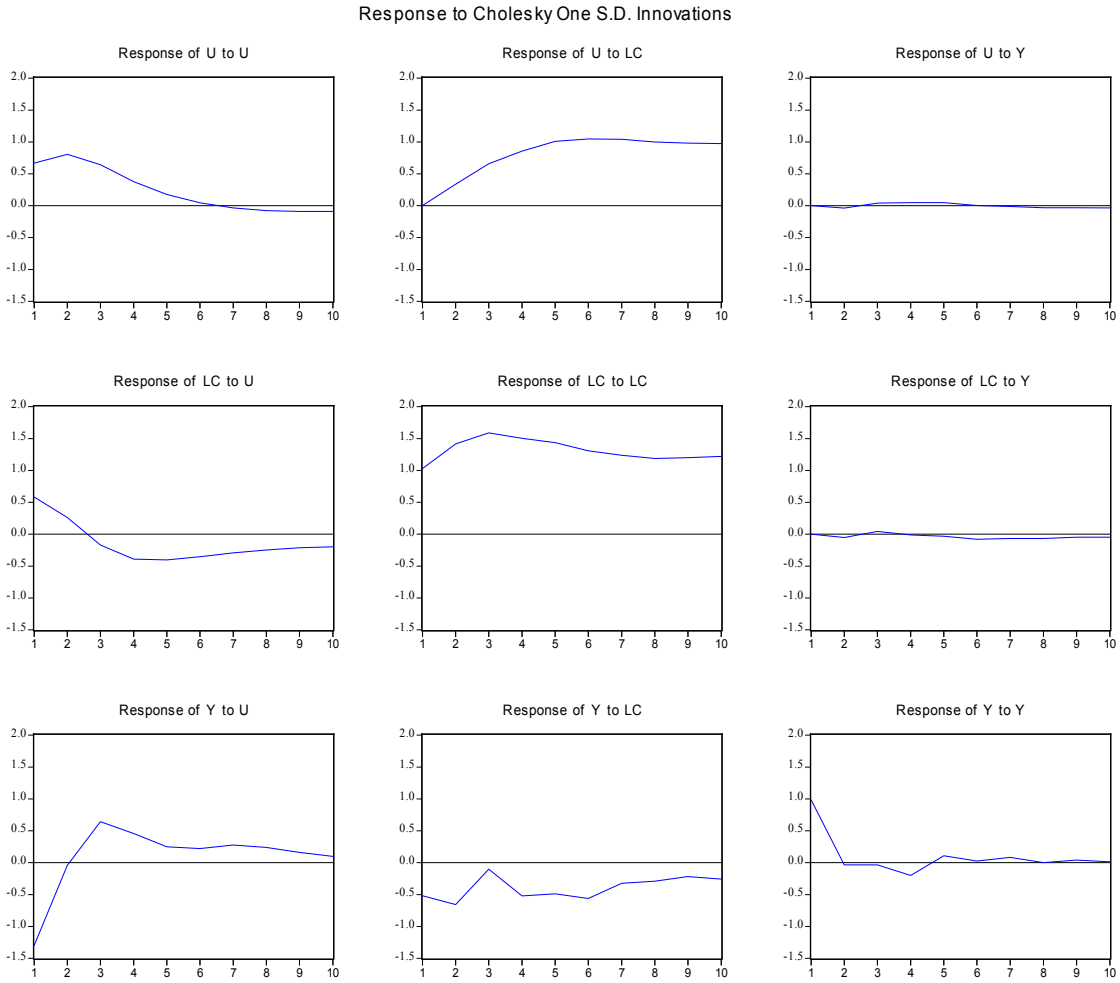
The figure below illustrates the results using impulse response functions. The various graphs show the reaction of the three variables included in the model to a "shock" in the variable itself (indicating the degree of inertia) as well as in the two other variables over a simulated ten-year period.

The main message stemming from the figure is that labor court decisions matter for unemployment. There is a clear positive impact of higher labor court activity on the unemployment rate—even after controlling for the possible endogeneity of the latter with

[68] The lag length selection was based on standard criteria. Introducing a linear trend in the cointegration (i.e., error-correction) part of the model or altering the lag length in the VAR part does not alter the result much. All three series are non-stationary based on standard criteria.

[69] Theoretically, the demand for labor court action should be positively correlated with changes of unemployment or deviations from its trend, i.e. the flow of people dismissed not the stock of people out of work. As a matter of fact, the annual number of dismissals decreased as German unemployment rates rose (Soltwedel et al. 1990).

Figure. Germany: Impulse Response Functions from a simple VEC Model



Source: Own computation.

Notes: The graphs show the reaction to a one-standard deviation shock in the respective residuals based on the Cholesky procedure using the order real GDP growth (Y), unemployment (U), labor court activity (LC) with sample degrees of freedom correction. The model assumes that real-growth shocks influence all other variables contemporaneously, while unemployment shocks only influence labor court activity within the period, and there is no contemporaneous impact of labor court activity on the other variables.

regard to real activity. The effect builds up over about 5 years and shows surprising rigidity even beyond the period shown in the figure, suggesting an almost permanent effect. There is, in addition, a smaller negative impact of labor court activity on real GDP growth.[70] At the same time, higher unemployment has only a short-lived positive impact on courts (even turning negative after about 2 years) and there almost no reaction of court activity on real GDP growth shocks.

[70] Berger (1998), based on an endogenous growth model and using a somewhat shorter sample period, also reports a small negative impact of labor court activity on real GDP growth. A one standard-deviation of labor court activity (based on the change of the raw series in logs) leads to a growth loss of about .14 percentage points. The result is based on a two-stage IV-approach in which labor market regulation enters lagged one period instrumented by past regulatory activity, past growth, and past values of other likely determinants of regulatory activity.

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