

## Germany: Selected Issues

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GERMANY

**Selected Issues**

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Approved by European Department

November 16, 2006

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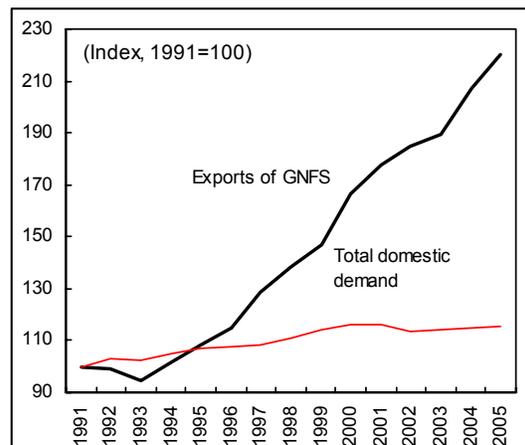
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## I. EXPORTS AND DOMESTIC DEMAND IN GERMANY: HAS THE NEXUS BEEN ALTERED BY GLOBALIZATION?<sup>1</sup>

*Strong German export performance has been slow to ignite domestic demand. This chapter examines the multifaceted reasons for this imbalance, synthesizing existing studies rather than presenting new research. In broad terms, the protracted weakness of domestic demand has been driven by necessary adjustments as Germany rebuilt its competitiveness through wage moderation and other efforts by companies and the government to improve efficiency and lower costs. These private and public sector adjustments have taken place against the backdrop of domestic rigidities together with intensifying competition in regional and global markets. Private sector adjustment was driven mainly by the export sector and relied heavily on labor shedding and shifting of production to lower-cost locations. The resulting pressure on wages, consumption and investment were compounded by public expenditure cuts, including of entitlement benefits. Moreover, labor market and other rigidities in the domestically-oriented sectors of the economy kept structural unemployment high. Translating its strength as an exporter to the internal economy by improving the flexibility of domestic markets would help further to broaden the recovery and make it more sustainable.*

### A. Introduction

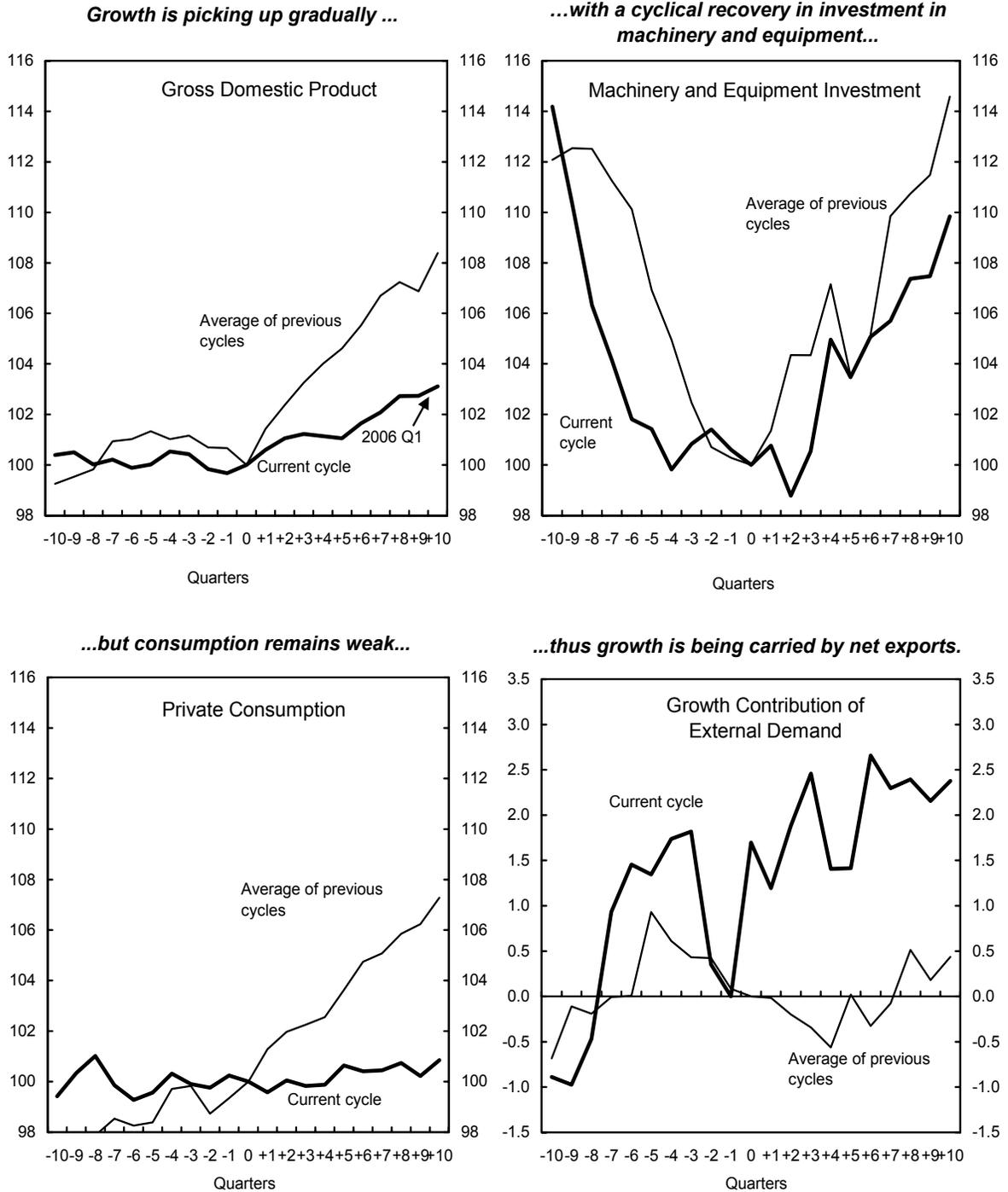
1. **For more than a decade, growth in Germany has been subdued and uneven.** The export sector's performance has been strong, but has been slow to ignite consumption and domestic demand (Figure 1).<sup>2</sup> By contrast, in previous cyclical recoveries, the external impulse has typically led to higher investment, employment, and finally consumption, with a lag of a few quarters. These links appear to be weaker in the current cycle, which reached a trough in late 2003. Encouragingly, the recovery is broadening and domestic demand, especially investment, has begun to firm in 2006.



<sup>1</sup> Prepared by Jürgen Odenius with contributions from Alina Carare, Stephan Danninger, and Bob Traa.

<sup>2</sup> OECD (2006).

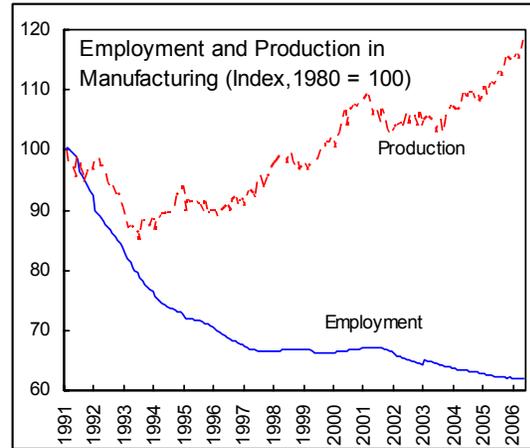
Figure 1. Germany: Comparison of Business Cycles, 1970-2005



Sources: Federal Statistical Office; and IMF staff calculations.

Note: All values are relative to trough equal to 100, except the contribution of external demand, where trough is equal to 0. The average of previous cycles is an unweighted average of troughs occurring in 1975, 1982, and 1994. The trough for the current cycle is assumed to be 2003 Q4.

2. **A variety of factors appear to have weakened the link between exports and domestic demand.** A loss of competitiveness in the early 1990s was followed by a prolonged period of labor shedding in the export sector, and coincided with a drawn-out contraction in the construction industry. Although these developments were accompanied by significant wage restraint in most of the economy, the released labor was not easily absorbed by domestically-oriented firms, especially in the services sector. At the same time, the public sector began to trim the social welfare system and exercise fiscal restraint to begin countering rising aging costs. This also held back domestic demand.



3. **The structure of this paper is as follows.** Section B introduces the stylized facts pertaining to the strength in exports, the weakness in domestic demand, and the surge in the current account. Section C discusses the adjustment undertaken in the private sector and its impact on exports and domestic demand. This is followed in section D by a discussion of fiscal and monetary policies and their macroeconomic impact. Section E discusses structural impediments, especially in the labor market, and their potential role in falling domestic investments, accelerating capital exports, and the rising current account surplus.

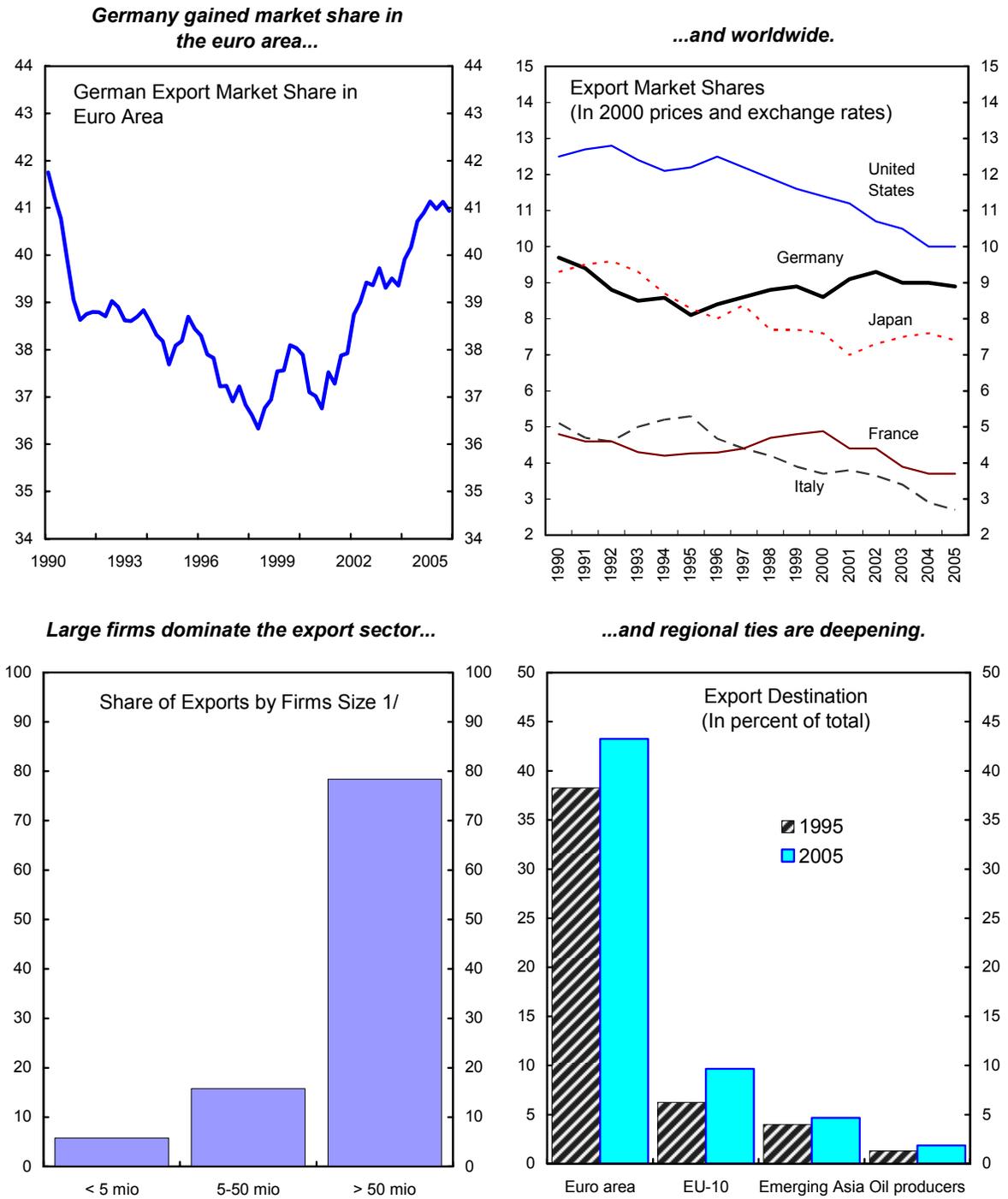
## B. Stylized Facts

### Flourishing Exports...

4. Improving competitiveness, rising external demand, and favorable trade linkages helped exporters to rebuild market share (Figure 2). Exports of goods rose by more than 50 percent in real terms since euro inception in 1999, reflecting in part close trade ties with regions experiencing rapid growth, including the new EU countries in central and eastern Europe (CEE) and emerging markets.<sup>3</sup> Capital goods represent nearly half of exports,

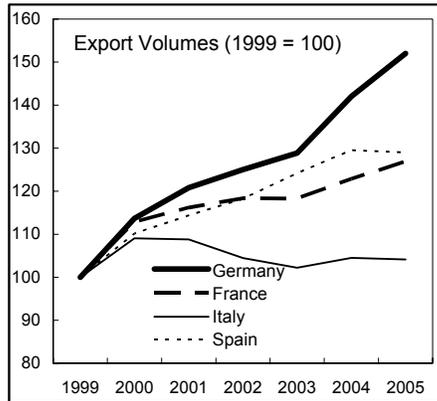
<sup>3</sup> Allard and others (2005).

Figure 2. Export Sector Developments



Source: Bundesbank, Federal Statistical Office and IMF staff calculations.  
1/ Turnover in euro million.

and this favorable product mix positioned the export sector to benefit from surging investment demand, especially since the onset of the global recovery in 2002.<sup>4</sup> The adjustment of the export sector and resulting gains in competitiveness are discussed in detail in section C.



|                                 | France | Germany | Italy | U.K  |
|---------------------------------|--------|---------|-------|------|
| Exports to new EU members       | 3.5    | 8.6     | 5.8   | 2.2  |
| Exports to the United Kingdom   | 8.3    | 7.9     | 6.4   | ...  |
| Exports to the United States    | 7.2    | 8.8     | 8.1   | 15.1 |
| Exports to Asia excluding Japan | 6.7    | 7.0     | 5.8   | 8.2  |

5. **German firms have taken full advantage of regional integration to lower costs.** Competitive factor markets in CEE allowed production chains to be extended and resulted in increased trade flows, especially of labor-intensive intermediate goods. The share of foreign inputs in exports, therefore, grew from 31 to 42 percent of value added between 1995 and 2005. At the same time, foreign direct investment from Germany to the new EU member countries grew strongly, and led to complementary increases in both imports and exports to the CEE countries.<sup>5</sup>

6. **Large exporters were central to the boom.** Large enterprises generated nearly four fifths of exports in 2004. Small-and-medium-sized enterprises (SMEs) remained mostly focused on the domestic market.<sup>6</sup> This asymmetry underscores that the domestic economy responded sluggishly to the jump in global competition.

<sup>4</sup> Research suggests that increasing foreign growth has been an even more important factor than cost reduction in boosting German exports. See Stahn (2006) and Danninger and Joutz (2006).

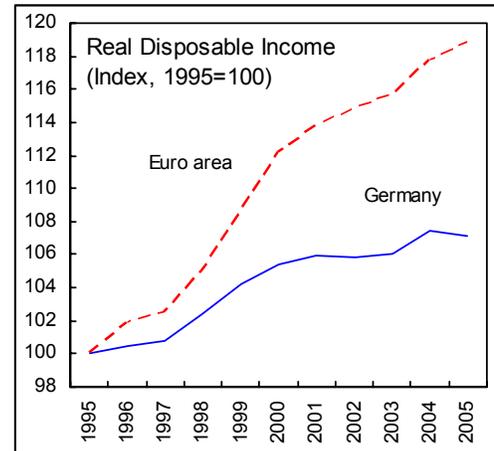
<sup>5</sup> Bundesbank (2006a).

<sup>6</sup> KFW (2006). Hommel and Schneider (2003) estimate that SMEs generated nearly half of GDP in 2000.

### ...And Languishing Domestic Demand...

7. **Domestic demand was weak for more than a decade amid sluggish consumption growth.** Once the unification-related boom subsided, domestic demand languished, with real growth averaging 0.7 percent per annum during 1996 to 2005. Household consumption growth averaged 1 percent per annum in real terms during this period. The following were key contributing factors to the slump in consumption:

- **Stagnating income growth.** Real disposable household income grew on average by 0.7 percent a year during 1996 to 2005, amid slow employment growth and persistent wage moderation. Furthermore, difficult but necessary cuts in entitlement and unemployment benefits curtailed income. In contrast, real disposable income growth averaged 2.6 a year in the EU-15 during the same period.

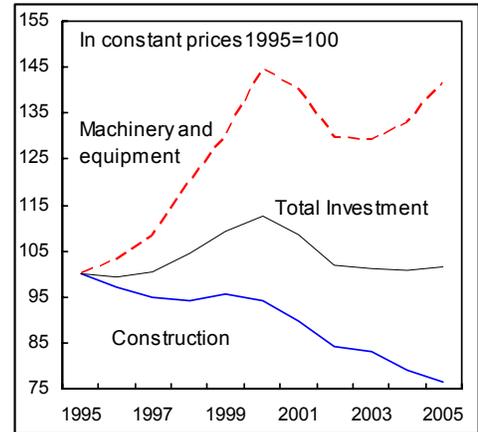


- **Rising household savings.** Social security reductions and fears about potential job losses—unemployment reached a post-war high in 2005—may also have spurred precautionary savings. Household savings rose by 2.4 percentage points from their trough in 2000 to 10.6 percent of disposable income in 2005, although their level remains below historical patterns.

- **Slowing wealth formation.** Household wealth formation has been held back over the past 10 years, reflecting in large part (i) the high share of real estate in household assets and price pressures in the residential real estate market; and (ii) a borrowing spree in the 1990s that has kept household indebtedness high by historical standards, notwithstanding steady deleveraging since 2000. Wealth formation thus trailed international developments since 1995, including that in France, Italy, Spain, and the U.K.<sup>7</sup>

<sup>7</sup> IMF (2006).

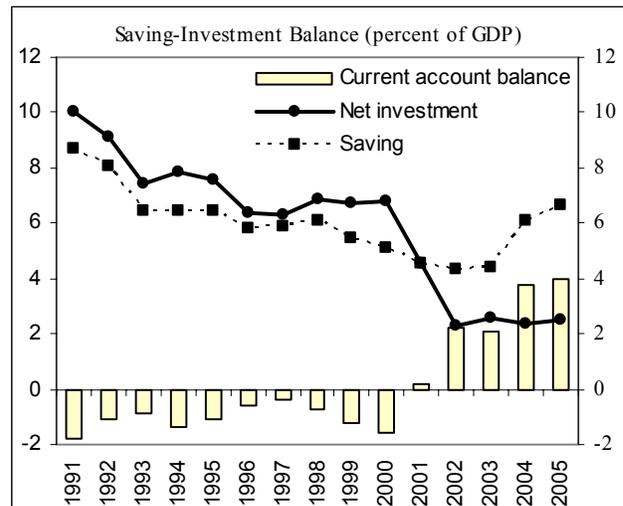
8. **In parallel, stagnating investment also weighed on domestic demand.** Real investment remained largely unchanged during 1996 to 2005, as moderate replacement investment in machinery and equipment were offset by the prolonged downturn in the construction sector. In particular, the building boom spurred by unification resulted in a supply overhang and led to a contraction in commercial and residential real estate investment since the mid-1990s. More recently, investment activities began to strengthen, however, in part as the construction sector showed signs of stabilization.<sup>8</sup>



...Caused a Rising External Surplus.

9. **Diverging developments in the external and domestic sectors have led to a growing external current account surplus.** With fast growing exports juxtaposed against feeble domestic absorption, the current account surplus rose to 4 percent of GDP in 2005, following deficits in the 1990s. This turnaround in the current account is mirrored by a steady improvements in the trade balance, especially within the EU.

10. **A sharp fall in investment is the primary reason for the rise in the current account.**<sup>9</sup> Investments net of depreciation fell below 3 percent of GDP during 2002–05, after having hovered around 7 percent during the 1990s. Indicative of rising fiscal pressures, public sector investments were curtailed and fell short of depreciation. Most importantly, however, private sector investments—more than four fifths of total investments—halved compared to the 1990s.



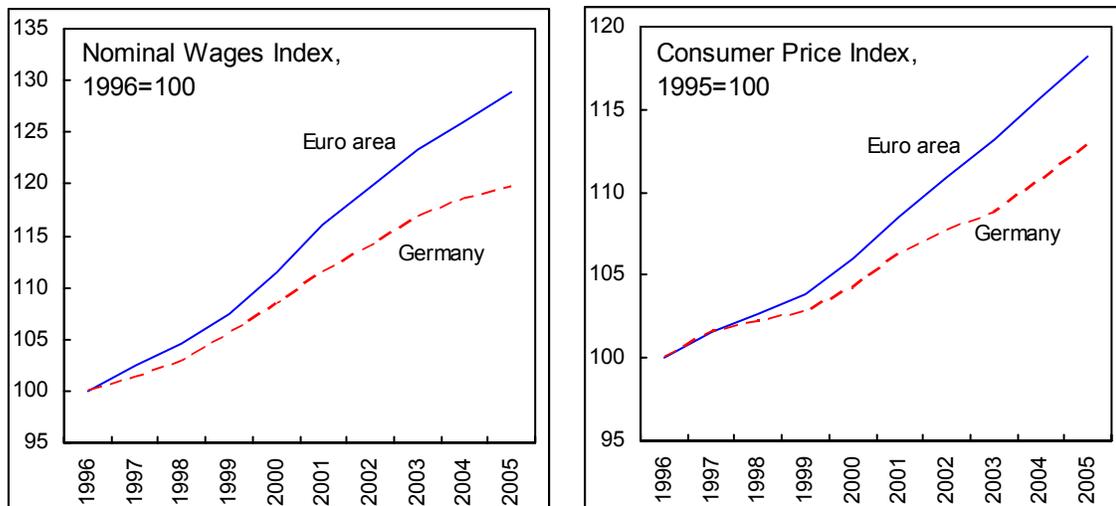
<sup>8</sup> The recent increase in construction activity include some temporary effects, such as the elimination of the homeowner subsidy in 2006 and the likely advancement of activity in anticipation of the 2007 VAT hike. Therefore, it is still not clear whether construction is now in a sustainable recovery.

<sup>9</sup> Bundesbank (2006b).

11. While **savings have risen steadily this decade, their increase was less pronounced than the decline in investment.** Domestic savings increased by 2 percentage points from their low earlier this decade to 6.5 percent of GDP in 2005, which corresponds approximately to the average value during the 1990s. This increase was generated in large part by the corporate sector, given its rebounding profitability, and households. At the same time, the public sector continued to dissave. As a result, an increasing share of domestic savings were not absorbed by investments, and, therefore, were made available as capital exports to non-residents.

### C. The Adjustment Process in the Private Sector

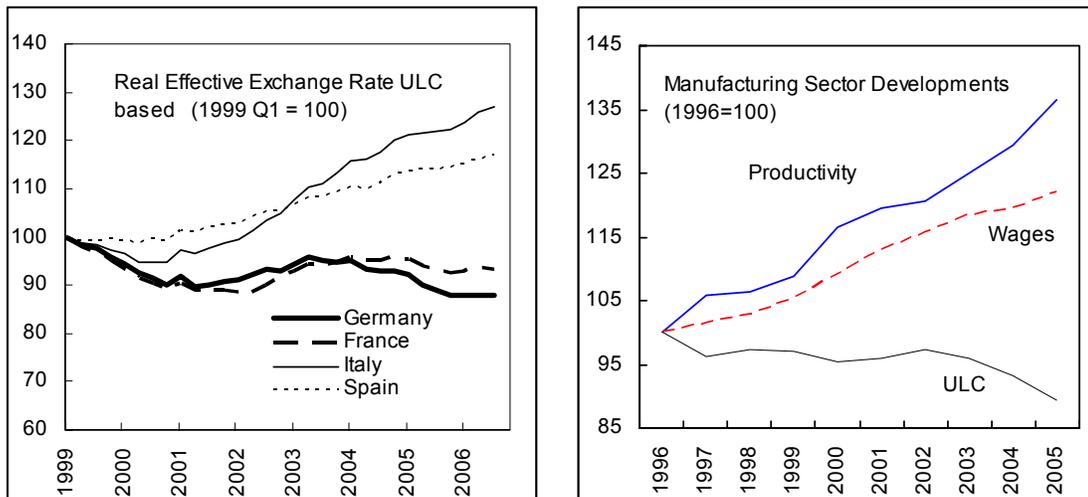
12. **A series of shocks undermined competitiveness and necessitated far reaching adjustment.** A wage boom following unification triggered a pronounced increase in unit labor costs (ULCs). In addition, the near universal extension of labor-market and other institutions from the former West Germany saddled the former East Germany with rigidities that impeded a timely closing of its productivity gap. The accelerating international division of labor and capital, spurred by globalization and EU expansion, further aggravated the loss of competitiveness and set the stage for profound adjustment.



13. **At the same time, the advent of the European Monetary Union (EMU) limited the macroeconomic policy channels.** Since exchange rates were fixed in 1999, the restoration of Germany's competitiveness came to rely almost exclusively on slowing inflation and wage growth relative to euro area partners.<sup>10</sup> Indeed, nominal wage growth trailed the euro area by 9 percent during the past ten years, helping to subdue inflation. These developments were simultaneously a symptom of adjustment as well as a cause of slower domestic demand, especially private consumption.

<sup>10</sup> Schumacher (2006).

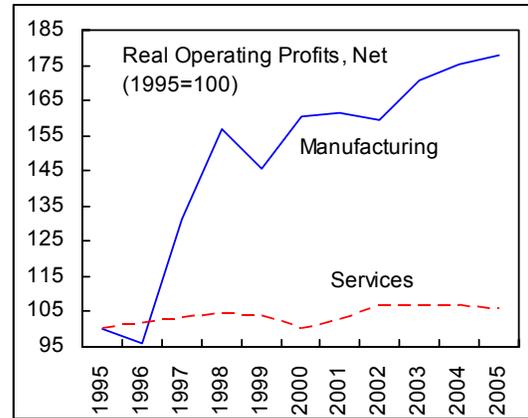
14. **The export sector has taken the lead in restructuring.** Confronted with globalization, the export sector deepened its international division of labor and capital and shifted production abroad. This adjustment not only restrained domestic investment but also resulted in extensive labor shedding.<sup>11</sup> Given the opportunity to tap into less expensive and, increasingly productive, pools of labor abroad, corporations sought domestic labor concessions in order to maintain domestic production and employment.<sup>12</sup> Indicative of these developments, the manufacturing sector has shed almost 40 percent of its workforce since the early 1990s, and nominal wage growth has moderated to 2 percent per year this decade, barely exceeding inflation. The resulting decline in unit labor costs bolstered profit margins, boosted corporate sector profits, and helped to restore external competitiveness.



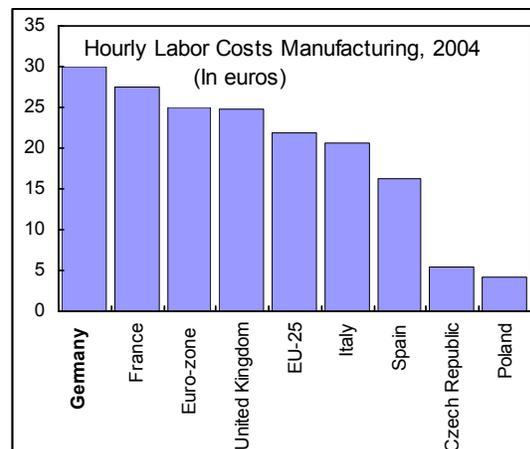
<sup>11</sup> Odenius (2006).

<sup>12</sup> In a prominent case, Volkswagen agreed to maintain the production of its flagship model in Germany in exchange for restoring the 5-day work week without additional compensation.

15. **However, most of the domestic economy—notably the service sector—has been slow to react.** The pressures unleashed by labor shedding in the export sector were aggravated by the downturn in the construction sector.<sup>13</sup> Indicative of rigidities and a lack of dynamism, the domestic economy failed to absorb these resources, thereby creating wage pressures at the macroeconomic level. Economy-wide ULCs only recently have shown signs of stabilizing, pointing to sluggish adjustment in the service sector. Indeed, service sector profitability continues to trail the manufacturing sector: real operating profits in the service sector remained virtually unchanged during 1996–2005, while they rose by 77 percent in the manufacturing sector. Service sector performance has also been found to be sub-par when compared to peers in other countries.<sup>14</sup>



16. **Continued international competition may result in additional export sector adjustment.** Hourly wage costs in Germany continue to rank among the highest in the world, notwithstanding wage restraint in recent years. Eighty-six percent of firms opting to shift production abroad in 2006 cited high labor costs as a major factor.<sup>15</sup> Shifting production capacity abroad generates substantial cost savings, with ULCs in central and eastern Europe estimated to be lower by two thirds than in Germany.<sup>16</sup> This differential reflects the productivity boom unleashed by foreign direct investment.



<sup>13</sup> By 2005, construction sector employment had declined by 1.1 million persons or 33 percent from its peak in 1995.

<sup>14</sup> Citron and Walton (2002).

<sup>15</sup> Deutsche Industrie und Handelskammer (2006).

<sup>16</sup> Marin (2005).

17. **Against this background, firms intend to continue stepping up their presence abroad and adjustment will go on.** Survey data suggest that two fifths of firms are investing abroad at a rising pace. Cost cutting remains the primary motivation, superseding market penetration—which suggests further pressures on German labor markets (Figure 3). Thirty-nine percent of firms investing abroad state that these investments could be carried out in Germany, if conditions—especially labor costs—were more favorable.

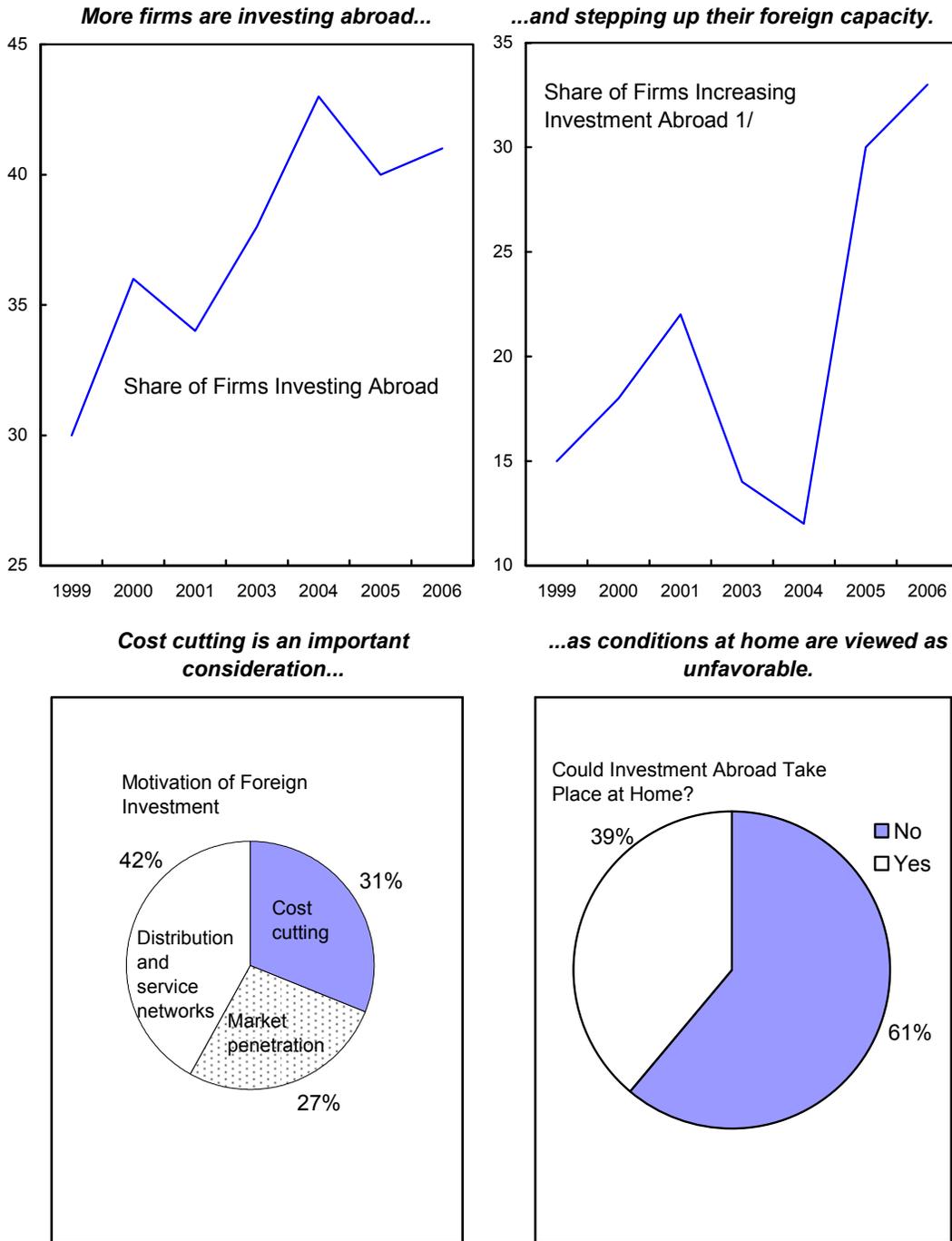
18. **Nevertheless, Germany also retains strong advantages as a business location.** Germany continues to rank high as a business location in international surveys, largely owing to high-quality public institutions, stable property rights, and a sound judicial system. Reflecting some of these advantages, Germany even has benefited from “inshoring,” as long as it concerns specialized or high valued-added activities.<sup>17</sup> In addition, some of the companies that have shifted production abroad also report positive spillover growth effects of these activities on their domestic businesses. Nevertheless, and given Germany’s substantial qualities, its international ranking could be higher were it not for “the pessimism of its business community about the short-term economic growth outlook and the presence of a large fiscal deficit.”<sup>18</sup>

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<sup>17</sup> Deutsche Bank (2006) reports multinational companies are shifting research and marketing activities to Germany.

<sup>18</sup> World Economic Forum (2005).

Figure 3. Germany: Industrial Sector Investment Intentions, 2006



Source: DIHK, survey of 7,000 industrial enterprises.

1/ Balance of firms raising investments abroad net of firms lowering investments.

## D. The Role of Macroeconomic Policies

### Fiscal Policies: The Need to Prepare for Aging

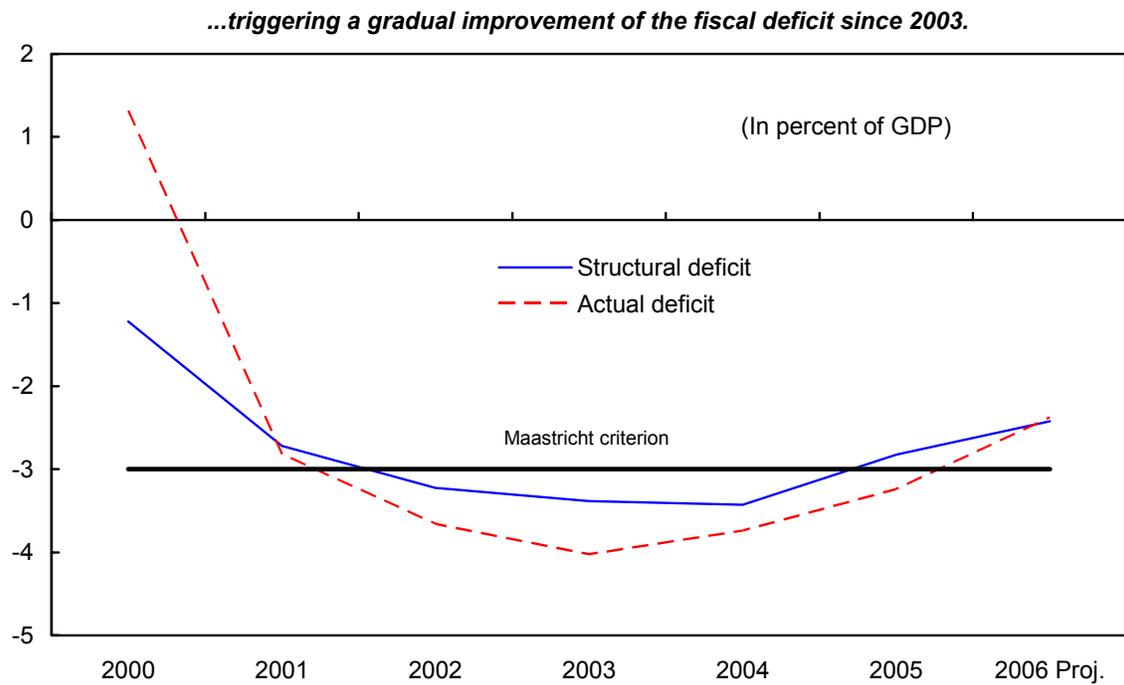
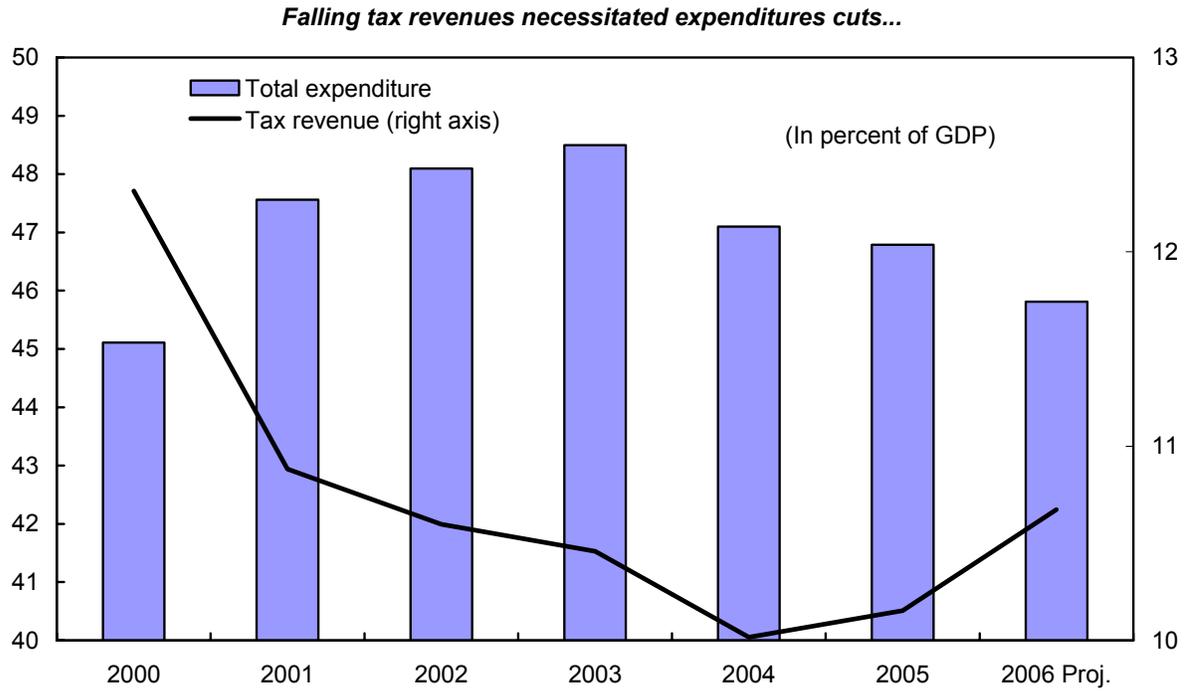
19. **There has been little leeway for fiscal policy to stimulate domestic demand this decade.** Amid legacy costs of unification, insufficient adjustment during earlier upswings, the changing demographic profile, tax cuts in 2001, 2004 and 2005 equivalent to about 2 percent of GDP, and weakening trend growth, the fiscal deficit breached the Maastricht criterion for the fourth consecutive time in 2005. Most important, however, the persistent weakness in employment and domestic demand in turn caused a pronounced erosion in the major tax bases—labor income and consumption.

20. **The authorities responded to these structural pressures through far-reaching expenditure measures.** The previous government's "Agenda 2010" reforms included social expenditure cuts, which were followed in 2006 by further expenditure cuts by the grand coalition, including of household subsidies. These measures largely offset the stimulus from lower taxation. After widening earlier in the decade, the structural deficit stabilized during 2003–04, before registering an improvement in 2005–06 (Figure 4).

#### The impact of fiscal adjustment on domestic demand took several forms:

- Public sector capital expenditure declined by  $\frac{3}{4}$  percent of GDP this decade, complementing falling private sector demand and further contributing to the weakness in investment.
- At the same time, social expenditure cuts, the reduction in household subsidies, and public sector wage restraint complemented downward wage pressures in the private sector to curtail household disposable income and private consumption.
- The policy mix of reducing social benefits and cutting taxes may have been regressive. With benefit cuts largely falling on lower incomes and tax cuts in part aimed at higher incomes (and corporates), the effect on consumption was likely negative, given the relatively higher marginal propensity to consume of low income earners.
- At 42 percent of gross wages in 2005, payroll taxes restrained disposable income and resulted in a high wage wedge by international standards.

Figure 4. Germany: General Government Finances, 2000-06

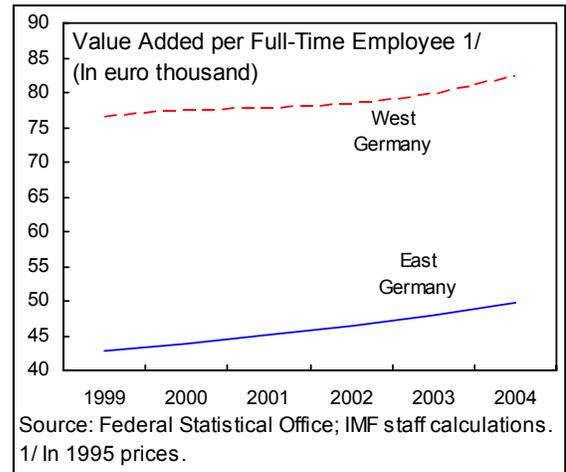


Source: Ministry of Finance; IMF staff calculations.

- Despite high payroll taxes, pension benefits still had to be cut to mitigate aging-related social expenditure pressures. Cutbacks of pension benefits were at the core of the Agenda 2010 reforms, which reduced the net present value of future liabilities by 70 percent of GDP during 2003–05.<sup>19</sup> Indicative of these cutbacks, the expected monthly gross pension in 2009 is now 1,180 euro—one fifth below the amount anticipated by the authorities in 1995.<sup>20</sup> In response to this shock, precautionary savings appear to have been stepped up as the public realized that achieving sustainability of the welfare system may require further reductions of pension benefits.

21. **Besides withdrawing stimulus, fiscal policy also fostered structural**

**impediments in eastern Germany.** Subsidies to eastern Germany, in large part financed by a 5½ percentage point solidarity surcharge on the corporate and personal income tax, reduced incentives to supply labor. Moreover, the transfers slowed the need for adjustment in the east, with the productivity gap between the east and west remaining large. A possible alternative adjustment strategy—focused more on structural reform and productivity gains to overcome the high wage costs—was less vigorously pursued, perhaps because this tends to be accompanied by wider income differentials that are politically sensitive.

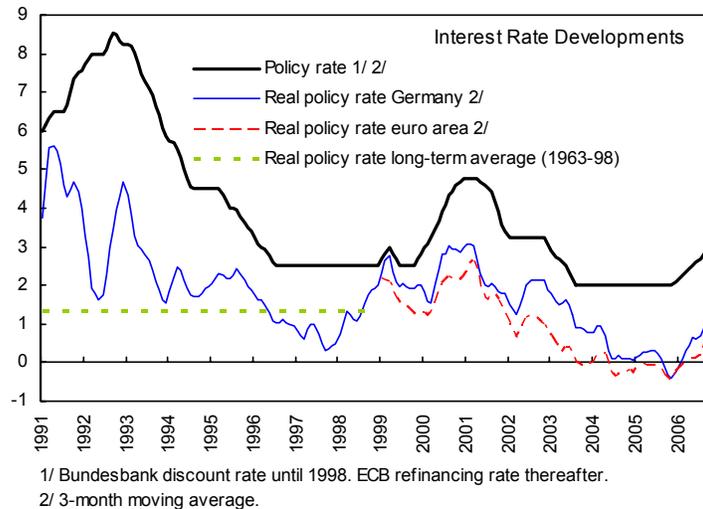


<sup>19</sup> See Traa (2005) for a discussion of the public sector balance sheet.

<sup>20</sup> HSBC (2006).

## Euro Area Monetary Policy: Restraining Growth in Germany?

22. **Real interest rates in Germany declined to a new low in 2005, but may still have remained restrictive.** This decline in real rates took place as the ECB cut nominal interest rates and as German inflation picked up somewhat from very low levels. Ahearne and Pisani Ferry (2006), however, estimate that the German “equilibrium” real interest rate—i.e. the real interest rate that would provide enough stimulus to demand to close the real output gap—has also declined over recent years. Consequently, they argue that the level of real interest rates remained restrictive for Germany.



23. **Private sector credit declined in real terms in 2001–05 and has only recently begun to pick up.** The demand for credit declined due to a combination of weak economic activity and efforts by households and firms to reduce debt and repair balance sheets. As a result of corporate restructuring and healthy profitability, companies have relied on retained earnings rather than bank loans to finance investment.<sup>21</sup> At the same time, analysis suggests that banks with weaker capitalization curtailed the supply of credit in 2003–04, but that these constraints subsequently eased.<sup>22</sup> More generally, preparation for Basel II has been a force for changed behavior by German banks, especially the greater focus on risk differentiation. These supply side changes in the banking sector, in turn, provided some of the impetus for Germany companies to restructure.

24. **Monetary policy under EMU does not appear to have been a fundamental cause of weak growth.** Hayo (2006) suggests that interest rates in Germany were “already low before the creation of EMU but due to a substantial negative output gap in some years it found the ECB rates relatively too high.” While Germany may have had to cope with a somewhat higher interest rate under the ECB regime compared to a continuation of the former Bundesbank regime, Hayo argues this does not prove that Germany is relatively worse off as a member of EMU. In particular, its export sector benefited from the strong demand impulse interest rate convergence triggered in many of its euro area trading partners,

<sup>21</sup> Deutsche Bank (2006).

<sup>22</sup> Cihak (2006).

and the precise impact on growth of opposing forces—relatively higher interest rates and foreign demand stimulus—is difficult to gauge.

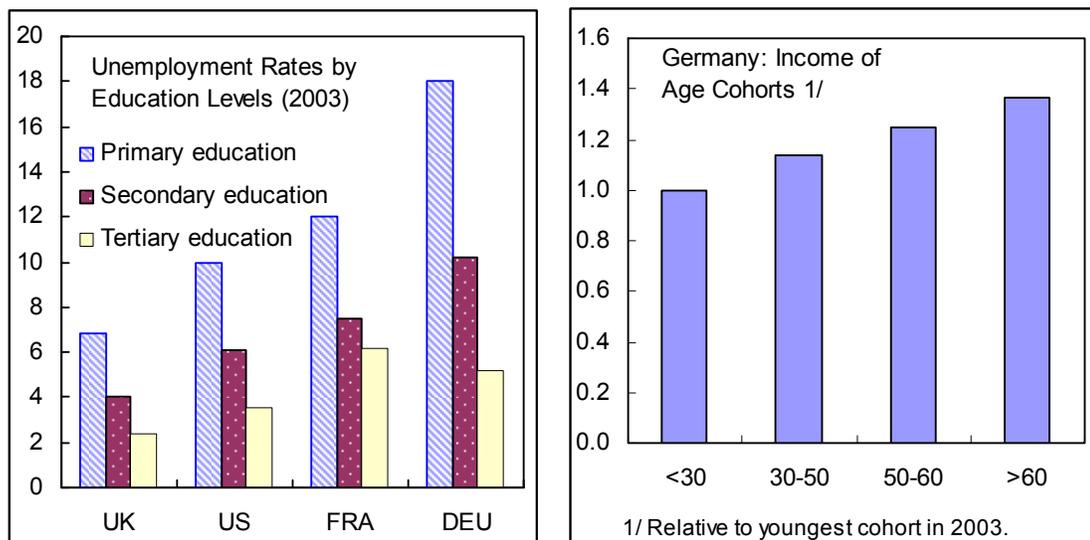
### E. Can Strong Exports be a Symptom of Domestic Structural Weakness?

25. **This section addresses the question whether the export success can be a counterpart of structural weakness.** The sharp contraction in investment—and its role in building up a sizeable current account surplus—is striking, notwithstanding the constraints placed on domestic absorption by macro policies, as discussed in the previous section. Moreover, service sector profitability remains low by international standards, as established in section C. These observations raise the question whether domestic rigidities constrain investment opportunities in the non-tradable sector, thereby triggering large scale capital exports and a rising current account surplus as its natural counterpart.

26. **Germany's stagnation is widely viewed as a structural problem with its roots in the labor market.** Overregulation has prevented the domestic economy from absorbing quickly the labor shed by the export sector. As a result, pressures occurred both on prices (lower domestic wages) and volumes (depressed employment). The resulting loss in labor income has been a major factor weighing on consumption demand this decade.

27. **Wage rigidities and high reservation wages remain important impediments to employment creation, despite significant reforms.**

- Generous welfare policies continue to elevate reservation wages and foster unemployment, especially among low-skilled labor.



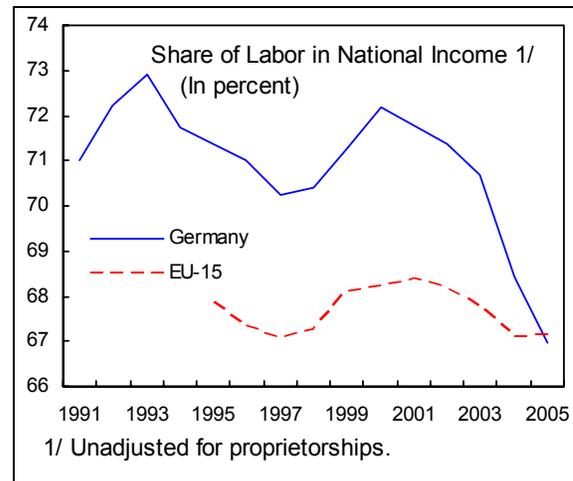
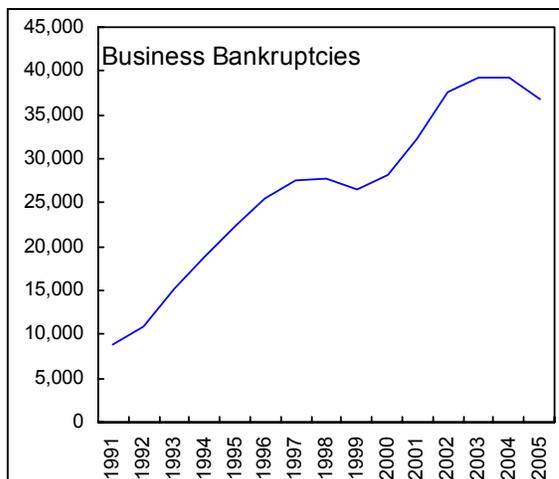
- The distribution of income across age cohorts is relatively flat, thereby contributing to the high incidence of unemployment among the elderly.

- High vacancies for, and even an outflow of, high-skilled labor also suggest evidence of wage rigidity at the high end of the wage spectrum.
- The Hartz labor market reforms, introduced during 2003-05, have so far had only limited success in fostering employment, notwithstanding their path-breaking character. High marginal tax rates for entry-level employment and weak implementation of eligibility criteria for benefits are partly to blame for this disappointment.

28. **Globalization has increased the supply of low-skilled labor and shifted the equilibrium wage downward**, thus requiring wages to fall to restore market equilibrium at the lower end of the income distribution. Otherwise, structural unemployment risks shifting up, and sluggish domestic demand will be the result during a lengthy and potentially painful adjustment period.

29. **The private sector adjustment to the global supply shock has indeed proved arduous.** Given high labor costs and wage rigidities, companies stepped up their purchases of intermediate inputs from cheaper (mostly foreign) suppliers (outsourcing) and, at times, shifted entire production lines to lower-cost counties (offshoring). The economic impact of these adjustments was aggravated by the economic slowdown that followed the bursting of the equity market bubble in 2000.

30. **These adjustments spurred starkly different micro and macro developments.** At the micro level, firms disintermediated the local labor market through lower-cost foreign labor markets, thereby restoring their profitability and strengthening their balance sheets. These developments also helped to stabilize business bankruptcies since 2003.



31. **At the macro level, the structurally higher rate of unemployment ushered in a downward shift in the labor share in national income.** As firms stepped up their capital intensity of production, employment declined, wages stagnated, and domestic demand weakened. This could be a long-run response of capital to the wage-cost blowouts that swept Europe (and Germany) in the 1970s, compounded in Germany by further cost pressures with unification.

32. **If labor institutions are rigid, the unemployed have little leeway to adjust to the global supply shock—at the same time that social benefits have to be curtailed.** The downward flexibility of wages has been limited by collective labor agreements, formal and informal agreements on sectoral applicability, as well as the generally binding nature of contracts (*Allgemeinverbindlichkeit*). At the same time, labor market and social policies did not adjust sufficiently to forestall the rise in unemployment and the resulting social expenditure pressures, also because of aging, contributed to a reduction in benefits.<sup>23</sup> The lack of labor market flexibility is affecting especially those workers that labor market institutions are intended most to protect: low productivity workers, elderly workers, and other more vulnerable groups such as women.

33. **Germany’s export success has been labeled by some “pathological”—a sign of unhealthy rather than healthy economic developments?** Specifically, Sinn (2006) argues that the specialization in capital-intensive exporting sectors can be unhealthy to the extent it reflects the sluggishness of domestic adjustment in the economy. He also argues that the specialization in capital-intensive export sectors has overshot its desirable level and the resource allocation is suboptimal because it leaves so much labor underutilized (Box 1).

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<sup>23</sup> Recent reports of “hidden” flexibility in German labor markets overstate the gains as these mainly reflect increased flexibility in working hours and bonus payments, not wage rates or decentralized bargaining.

### **Box 1. A Pathological Export Boom**

Sinn's thesis is that rigidities cause a suboptimal allocation of resources and especially labor underutilization. Globalization represents a competitiveness shock but with wages and labor markets sluggish to respond, labor intensive exporting sectors (such as textiles) fail, releasing surplus labor into the market and causing unemployment to rise. (These failures also free up capital hitherto employed in these sectors.) At the same time, capital- and skill-intensive sectors (e.g. engineering) also replace labor with capital or outsource or offshore standardized production layers to abroad, further contributing to labor surplus.

The freed-up labor in either sector is not absorbed in the services sector because wage costs are too high and labor mobility tends to be too low. High domestic unemployment therefore causes downward pressure on wages and slow domestic consumption and other household demand (such as for residential construction). Capital from failing companies or new investment in capital intensive sectors largely moves abroad to be combined with less expensive labor there.<sup>24</sup>

The large current account surplus thus does not so much reflect exceeding export prowess, but rather domestic weakness and the export of capital. Because adjustment in the domestic labor market is drawn out, specialization in capital-intensive/exporting sectors overshoots, and investment and employment in domestic service oriented sectors undershoots. In this view, the large current account surplus is a sign of insufficient opportunity for profitable investment in the nontradable sector.

## **F. Conclusions**

34. **The causes of the protracted weakness in domestic demand are multifaceted.** The wage blow-out in the early 1990s, globalization, and EU expansion required adjustments to rebuild competitiveness. Moreover, the inception of EMU limited policy channels and meant that the restoration of competitiveness had to rely on relatively subdued inflation and wage developments. Public sector adjustment to improve fiscal sustainability and far-reaching private sector adjustment interacted to slow domestic demand growth.

35. **Aiming to restore competitiveness, the export sector has gone through major restructuring.** Confronted with intensifying competition from low-cost markets, the manufacturing sector shed nearly half of its labor since the early 1990s, increasingly relied on foreign suppliers, and shifted production abroad. These developments contributed to rising unemployment, wage pressures, and curtailed disposable income. The adverse impact on domestic demand from the resulting decline in private consumption was reinforced by a sharp fall in investment, as capacity was shifted abroad.

36. **Macro-policies exacerbated the weakness in domestic demand, especially overdue and necessary fiscal adjustment.** The fiscal deficit deteriorated markedly during

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<sup>24</sup> More recently, restrictions in the EU Services Directive prevent cheap labor from coming in, providing an incentive for capital to lower-labor cost locations abroad.

the first half of the decade, amid the legacy costs of unification, insufficient adjustment during earlier recoveries, the changing demographic profile, and weakening trend growth. Against this background, cuts in discretionary and entitlement expenditures also contributed to restraining domestic demand. However, the common monetary policy under EMU does not appear to have been a fundamental cause of weakness in domestic demand.

37. **Structural rigidities, notably in the labor market, further restrained domestic demand.** Wage rigidities and high reservation wages interacted to foster a structural increase in unemployment, and high wage costs prevented the nontradable sector, especially the service sector, from absorbing the labor shed by the export sector. Service sector profitability is low by international standards, raising the possibility that rigidities curtail domestic investment opportunities.

38. **Although export sector adjustment is well advanced, it is difficult to gauge whether the domestic demand will rebound strongly.** The current cyclical recovery notwithstanding, deeper structural change is needed to transpose further the strength of the external sector to the domestic economy. Specifically, labor market flexibility needs to be improved to foster employment creation, especially in the services sector. Parallel productivity-enhancing reforms in product, service and financial markets are needed to magnify the impact of labor reforms and raise the profitability of the domestic economy. And, fiscal consolidation and entitlement reforms are critical to increase confidence in the sustainability of the welfare state.

## References

- Ahearne, Alan and Jean Pisani-Ferry, 2006, *The Euro: Only For the Agile*, Bruegel Policy Brief 2006/01, February 2006.
- Allard, Céline, Mario Catalan, Luc Everaert, and Silvia Sgherri, *Explaining Differences in External Sector Performance Among Large Euro Area Countries*, IMF Country Report, No. 05/401.
- Bundesbank, 2006a, *Determinants of the Current Accounts in Central and East European EU Member States and the Role of German Foreign Direct Investment*, Monthly Report, January.
- Bundesbank, 2006b, *German Balance of Payments in 2005*, Monthly Report, March.
- Cihak, Martin, 2006, *The German Banking Sector: Credit Decline, Soundness, and Efficiency*, in *Germany Selected Issues*, IMF Country Report No. 06/17.
- Citron, Laura, and Richard Walton, 2002, *International Comparisons of Company Profitability*, *Economic Trends*, No. 587 (October), pp. 21-34.
- Danninger, Stephan and Fred Joutz, 2006, *What Explains Germany's Rebounding Export Market Share*, forthcoming IMF Working Paper.
- Deutsche Bank, 2006, *The German Credit Exception*, *European Daily Economic Notes*, Daily Briefing, 27 October 2006.
- Deutsche Industrie und Handelskammer, 2006, *Investitionen im Ausland, Ergebnisse einer DIHK-Umfrage bei den Industrie- und Handelskammern Frühjahr 2006*.
- Hommel, Ulrich, and Hilmar Schneider, 2003, *Financing the Mittelstand*, *EIB Papers*, Vol. 8, (No 2), pp 52-91.
- Hayo, Bernd, 2006, *Is European Monetary Policy Appropriate for EMU Member Countries? A Counterfactual Analysis*, *Marburg Papers on Economics*, No. 10-2006.
- HSBC, 2006, *Germany—Still Unbalanced*, *European Economics Quarterly*, Second Quarter 2006.
- International Monetary Fund, 2006, *Germany—2005 Article IV Consultation Staff Report*, IMF Country Report No. 06/16, (Washington: International Monetary Fund).

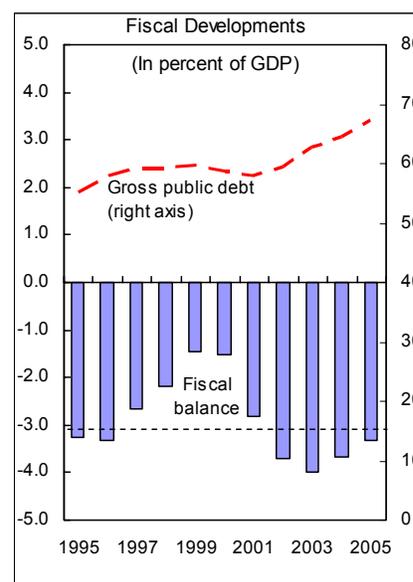
- Kreditanstalt für Wiederaufbau, 2006, *Die Globalisierung des Mittelstandes Chancen und Risiken*, (Frankfurt: Kreditanstalt für Wiederaufbau).
- Marin, Dalia, 2006, *A New International Division of Labor in Europe: Outsourcing and Offshoring to Eastern Europe*, Journal of the European Economic Association, Papers and Proceedings, 2006, forthcoming
- Neuhaus, Marco, 2006, *Inshoring to Germany, Global Networking is not a One-Way Street*, Deutsche Bank Research.
- Odenius, Jürgen, 2006, *The Performance of Germany's Nonfinancial Corporate Sector*, in Germany Selected Issues, IMF Country Report No. 06/17.
- OECD, 2006, *OECD Economic Surveys, 2006, Germany*, (Paris: Organization for Economic Co-Operation and Development).
- Schumacher, Dirk, 2006, *German Restructuring is Good for Euroland (After a While)*, European Weekly Analyst, Issue No 06/18, Goldman and Sachs.
- Sinn, Hans-Werner, 2006, *The Pathological Export Boom and the Bazaar Effect—How to Solve the German Puzzle*, April 2006, CESifo 1708.
- Stahn, Kerstin, 2006, *Has the Impact of Key Determinants of German Exports Changed? Results from Estimations of Germany's Intra-Euro Area and Extra-Euro Area Exports*, Deutsche Bundesbank Discussion Paper, Series 1: Economic Studies, No. 7.
- Traa, Bob, 2006, *A Preliminary Public Sector Balance Sheet for Germany*, in Germany Selected Issues, IMF Country Report No. 06/17.
- World Economic Forum, 2005, *The Global Competitiveness Report 2005-06, Policies Underpinning Rising Prosperity*, (Davos: World Economic Forum).

## II. TAX REFORM AND DEBT SUSTAINABILITY IN GERMANY: AN ASSESSMENT USING THE GLOBAL FISCAL MODEL <sup>25</sup>

*There is considerable uncertainty about the growth and spillover effects of the tax reform proposals contained in the coalition agreement, namely an increase in the VAT rate, a reduction in payroll taxes, and a corporate income tax reform. We use the IMF's Global Fiscal Model (GFM) to analyze the macroeconomic and fiscal effects of the coalition package and explore various options for addressing fiscal pressures from population aging and their implications for debt sustainability. The main findings are that the growth dampening impact of the VAT increase is likely to be modest, largely owing to the stimulating effect of other tax reductions. Overall the reform achieves a more efficient tax system and improves the debt outlook. However, to put debt on a sustainable trajectory it is necessary to achieve structural balance over the medium term. To meet this goal, a package of expenditure restraint, entitlement reform, and tax base broadening compares favorably to other adjustment options. Spillover effects to trading partners of these policies are anticipated to be modest.*

### A. Introduction

39. **Chronic fiscal deficits and rising aging-related future liabilities pose a serious threat to the German welfare system.** In 2005 Germany violated the Maastricht deficit ceiling for the fourth consecutive year and public debt grew to almost 70 percent of GDP. International competition and domestic adjustment have kept employment and income growth low and eroded the main taxes bases. Fiscal pressures from population aging are mounting and have not been sufficiently anticipated. Even after far-reaching reforms (Agenda 2010 and Hartz-reforms), aging related expenditures are projected to increase by up to 4 percent of GDP by 2050.<sup>26</sup>



<sup>25</sup> Prepared by Dennis Botman (FAD) and Stephan Danninger (EUR).

<sup>26</sup> The fiscal aging cost profile is taken from a long-term fiscal scenario developed IMF Country Report 06/17, and is in between a more optimistic scenario by the authorities (Federal Ministry of Finance 2005, Werding and Kaltschütz 2005) and the EU's Aging Working Group (2¾ percent), and a more pessimistic view expressed by the IFO institute (7¾ percent): although 4 percent of GDP is used as the baseline projection of aging costs, the sensitivity to alternative estimates is also analyzed.

40. **Germany's coalition government reached an agreement on three tax reform initiatives aimed at reducing the fiscal deficit and strengthening potential growth:** (i) a VAT increase from 16 to 19 percent partly offset by (ii) a reduction in payroll taxes for unemployment insurance, both effective in 2007; and (iii) a reduction in corporate income tax rates (CIT) to become effective in 2008.<sup>27</sup>

41. **This chapter investigates the implications of these tax reform plans and Germany's medium-term fiscal pressures for long-run debt sustainability.** Specifically, the paper asks the following questions:

- *What are the growth and fiscal effects of the VAT hike and the proposed relief in payroll and corporate income taxation?*
- *Which (combination of) tax and expenditure measures are most efficient to achieve structural balance over the medium-term?*
- *What is the trade-off between upfront, delayed, and gradual deficit reduction?*
- *What are the international spillovers of fiscal reform in Germany, especially on the Euro area and new EU member states?*

In addition, we consider whether the results are robust to alternative assumptions about consumer and producer behavior and different degrees of Germany's integration with international capital markets.

## **B. Analytical Framework and Calibration**

42. **The framework used is a four-country version of the IMF's Global Fiscal Model (GFM) calibrated to the German economy.** GFM is a macroeconomic model developed to examine a broad range of fiscal issues.<sup>28</sup> GFM analyzes the impact of fiscal policy on real activity through both aggregate demand and supply channels. Aggregate demand responses result from the absence of debt neutrality and consumers' impatience. Aggregate supply responses arise from the distortionary effects of taxation. Compared to earlier applications of the model, the current version features marginal payroll taxes on workers that exceed the average rate, which allows for the consideration of the effects of tax base broadening. The calibration reflects the trading patterns between Germany, the Euro area excluding Germany, new EU member states and accession countries, and the rest of the world (Table 1).

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<sup>27</sup> In addition, the authorities' are considering health care reform with potential fiscal implications.

<sup>28</sup> See Botman and others (2006) for the micro-foundations of the model.

43. **In GFM, fiscal policy matters because of the following departures from Ricardian equivalence:**

- Consumers have finite horizons. As a result, even temporary changes in fiscal policy may affect consumption because any offsetting action required by the government's intertemporal budget constraint is (perceived to be) borne by future generations and there is no bequest motive.
- A fraction of consumers are liquidity constrained. Liquidity constrained consumers do not save and cannot borrow, and therefore any change in fiscal policy that affects their disposable income immediately changes their consumption as well.
- Taxes are distortionary, affecting labor supply and saving-investment patterns.

44. **The model is parameterized to reflect key macroeconomic features of Germany** (Table 1). In particular, the ratios of consumption, investment, government spending, wage income, and income from capital relative to GDP are set to their values in 2005. Similarly, key fiscal variables—revenue to GDP ratios from taxation of corporate, labor, and personal income and consumption tax, as well as government debt and current government spending—have been calibrated to Germany's fiscal structure.

45. **Key behavioral parameters are based on microeconomic evidence.** These include parameters characterizing real rigidities in investment, markups for firms and workers, the elasticity of labor supply to after tax wages, the elasticity of substitution between labor and capital, the elasticity of intertemporal substitution, and the rate of time preference. Simulations examine the impact of changing the values of the following key parameters:<sup>29</sup>

- ***The sensitivity of labor supply to the real after-tax wage (Frisch elasticity):*** The baseline value (-0.08) is at the low-end of those found by micro-economic studies given that German specific micro-evidence points to a more inelastic relationship (Evers et al 2005). Alternative simulations assume almost completely inelastic labor supply (-0.01).
- ***The elasticity of substitution between labor and capital in the production function:*** The baseline value is -0.75, with alternative simulations using a value of -0.6.
- ***The elasticity of intertemporal substitution:*** The baseline value for this parameter that describes the sensitivity of consumption to changes in the real interest rate

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<sup>29</sup> Other structural parameters have been calibrated using evidence from Laxton and Pesenti (2003) and Batini and others (2005).

is -0.33. The parameter value in the alternative simulation (-0.25) is consistent with the lower end of microeconomic estimates.

- ***The wedge between the rate of time preference and the yield on government bonds:*** This parameter, which determines consumers' degree of impatience, has not been subject to extensive microeconomic analysis. We set the baseline value of the wedge to 4 percent (corresponding to a planning horizon of 25 years), with an alternative simulation using 1 percent.
- ***The fraction of consumers that is liquidity constrained:*** The baseline assumes that 40 percent of consumers is liquidity constraint. As these consumers have no wealth, this implies that these individuals consume a quarter of aggregate consumption. An alternative simulation assumes that 20 percent of individuals are excluded from participating in financial markets.
- ***Price markups:*** The baseline assumes that the markup over marginal cost in the tradables sector in Germany is equal to 14 percent and in the nontradables sector is equal to 27 percent. An alternative simulation lowers these values by 25 percent to 10.5 and 20.25 percent.

46. **Other main aspects of the model are:**

- Consumption and production are characterized by constant elasticity of substitution functions. Firms and workers have some market power, so that prices and wages are above their perfectly competitive levels.
- There are traded and non-traded goods that allow for a bias toward domestic goods in private or government consumption.
- There are two factors of production—capital and labor—which are used to produce traded and non-traded goods. Capital and labor can move freely between sectors, but are not mobile internationally.
- Investment is driven by Tobin's Q with adjustment costs. Firms respond sluggishly to differences between the discounted value of future profits and the market value of the capital stock.
- Wages and prices are fully flexible. As a result, monetary policy is ineffective.
- There are two kinds of financial assets, government debt (traded internationally) and equity (held domestically). In the standard version of GFM, international trade in government debt implies the equalization of nominal interest rates across countries as capital markets are fully integrated. Alternatively, however, the model can be

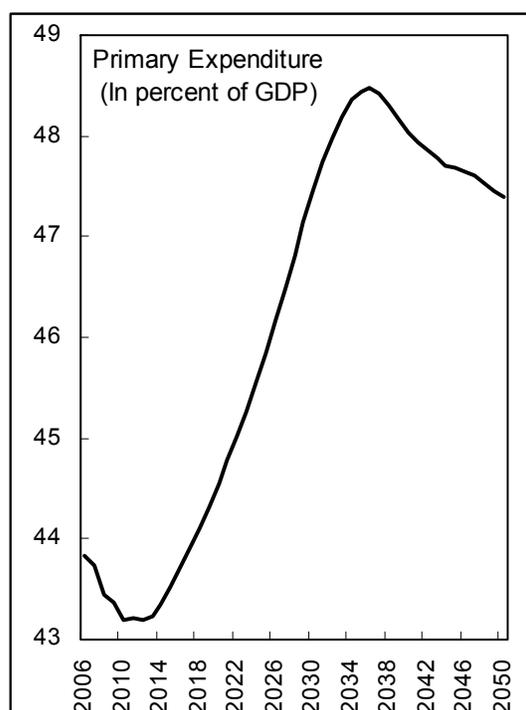
specified such that it contains a risk premium which depends on the level of public debt.

47. **GFM provides a good platform for discussing the relative merits of alternative fiscal consolidation measures and has been applied to several countries.**<sup>30</sup> The non-ricardian structure of the model implies empirically plausible responses of key macroeconomic variables to changes in fiscal policy. The wide ranging menu of taxes allows for a detailed analysis of the composition of adjustment while the strong microfoundations allows to consider the fundamental determinants of the effects of fiscal policy, such as the response of consumers and producers to changes in fiscal policy as well as the sensitivity to the structure of the economy. Finally, as GFM is an open economy model, it allows for the study of fiscal interdependence.

### C. Assessing Tax Policy Proposals

48. **The baseline projection assumes aging-related expenditure pressures of 4 percent of GDP by 2050 (Scenario A).** It does not include the approved VAT increase and reductions in payroll and corporate income taxation so that these can be evaluated separately. Responses of the economy to these spending pressures and changes in tax policy—for example on revenue, real interest rates, and growth—are then determined endogenously within the GFM.

49. **The choice of the baseline is critical to interpret the costs and benefits of different reform strategies.** The focus of this study is to analyze the implications of various fiscal adjustment scenarios for debt sustainability in order to highlight implications of aging on the public sector balance sheet. As a result, the baseline investigates the dynamics in debt as an endogenous variable without any particular government response to what might become a very rapid debt buildup.<sup>31</sup>



<sup>30</sup> The model has been applied by IMF staff for background work on recent Article IV consultations with Canada, Japan, the United Kingdom, and the United States.

<sup>31</sup> The GFM imposes a fiscal reaction function that re-establishes debt sustainability only in the very long run. The simulations in this paper focus on benefits over a shorter policy horizon (until 2050).

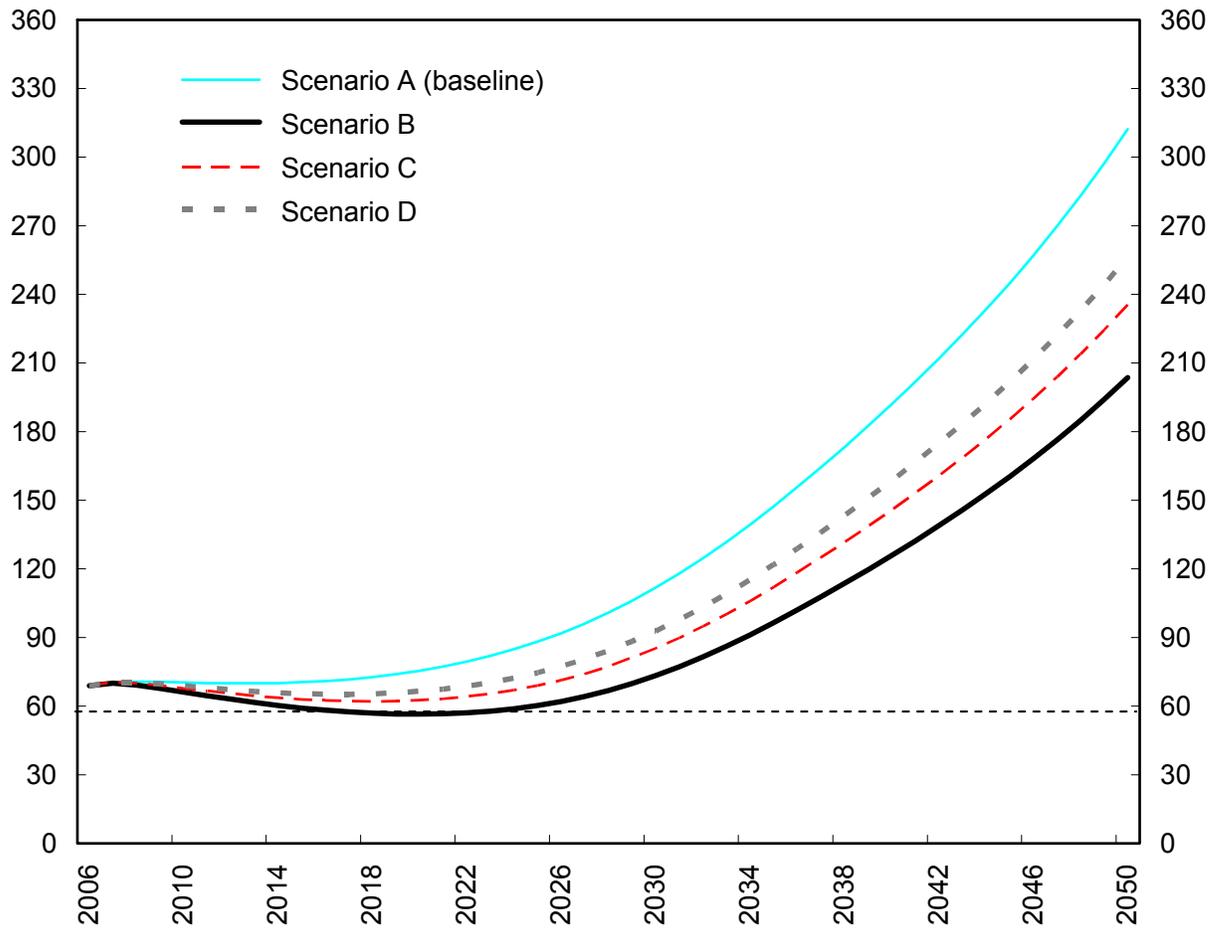
50. **The simulations understate the long-term growth effect of population aging.** An alternative modeling strategy might constrain debt accumulation to a ceiling, which triggers endogenous (payroll) tax increases. In other words, rather than adjusting now or never, the baseline could be constructed to compare adjusting now or later. This other formulation of the baseline would highlight the growth effect—rather than the debt effects—of fiscal adjustment strategies. For this reason, the simulations in this study underplay long-term growth effects, since they use an unrealistic, unchanged- policies scenario as a counterfactual. This implication of the model simulations needs to be kept in mind when interpreting the long-term growth effects presented in this study.

51. **The analysis of tax reforms in 2007–08 distinguishes three policy experiments and contrasts them with the baseline projection.**

- *Scenario B* extends the baseline by adding the effects of the three-percentage point increase in the standard VAT rate of 16 percent in 2007—estimated to generate additional revenue of 1 percent of GDP. Since GFM does not incorporate VAT exemptions, we have mapped this policy into a corresponding “effective VAT rate” of 10.1 percent of total consumption in 2006, which increases by 1.9 percentage point from 2007 onwards.
- *Scenario C* adds to scenario B the payroll-tax relief equivalent of 0.4 percent of GDP effective January 2007.
- *Scenario D* is the full scenario and adds to scenario C a reduction in the corporate income tax rate at a revenue loss of 0.25 percent of GDP from 2008 onward. The proposed reform would reduce the marginal CIT rate from an average of 39 percent to less than 30 percent, partly financed through base broadening measures. As the coalition’s intentions with the corporate income tax reform are evolving, the experiment simulates an equivalent tax relief through a CIT rate reduction only, yielding a revenue loss of ¼ percent of GDP without offsetting base broadening. Hence, the simulated CIT rate cut is hence smaller than the announced statutory rate cut.

52. **GFM suggests that the tax measures in 2007–08 will improve the long-term debt outlook, but are not enough to secure fiscal sustainability** (Figure 1). The baseline simulation shows unsustainable debt dynamics with the debt-to-GDP ratio rising to over 300 percent of GDP in the long-run. The planned (permanent) VAT hike in isolation (Scenario B) could lower the debt ratio by about 100 percentage points of GDP a result of a lower interest burden and a less distortionary tax base. The cuts in social security payroll taxes and the CIT (Scenarios C and D) each offset part of the VAT revenue gains and result in debt of between 230-250 percent of GDP by 2050. Hence, while the combined tax measures lower the debt buildup, the fiscal improvement would not be sufficient to stabilize the debt ratio.

Figure 1. Germany: Debt Path and Tax Reform Proposals  
(In Percent of GDP)



Source: GFM simulations.

53. **The VAT tax hike temporarily dampens growth in 2007, but lower payroll taxation and anticipatory effects of the CIT cut in 2008 substantially reduce the magnitude of this effect (Figure 2).** The model suggests that the 2007 tax relief package would reduce growth by 0.2 percent. The main channel would be a weakening of consumption by about  $\frac{3}{4}$  percentage point.<sup>32</sup> Since investment decisions of firms are forward-looking and firms prefer to smooth investment over time the CIT would also have an additional offsetting effect in 2007 of 0.1 percent. The extent to which a reduction in corporate income taxation increases growth in 2007 needs to be interpreted with caution, however. On the one hand, the benefits of CIT reform on incentives to save and invest will be considerably larger, since the announced cut in statutory CIT rates is larger than simulated.<sup>33</sup> On the other hand, it is unclear what type of base broadening measures will be implemented to compensate for the revenue loss and hence what their impact on investment activity may be.

54. **Overall, however, the reforms are likely to achieve a more efficient tax system by shifting from direct to indirect taxation.** Over the long run, shifting revenue from direct taxation to less distortionary indirect taxes increases growth through higher employment and investment growth. This is relevant in an aging society where the direct tax base could contract, while the indirect tax base is more stable.

#### **D. Achieving Long-Term Sustainability**

55. **Achieving fiscal sustainability requires additional efforts beyond those in the coalition's tax reform package.** As set out in its February 2006 Stability Program, the government aims to move towards structural balance over the medium-term. In practical terms, this would require about a  $\frac{1}{2}$  percentage point of GDP reduction in the deficit per year during 2008-11 (some 2 percent of GDP in total). The following subsections assess various strategies to achieve structural balance and the effects of a different timing and phasing of adjustment.

#### **Ranking different adjustment strategies**

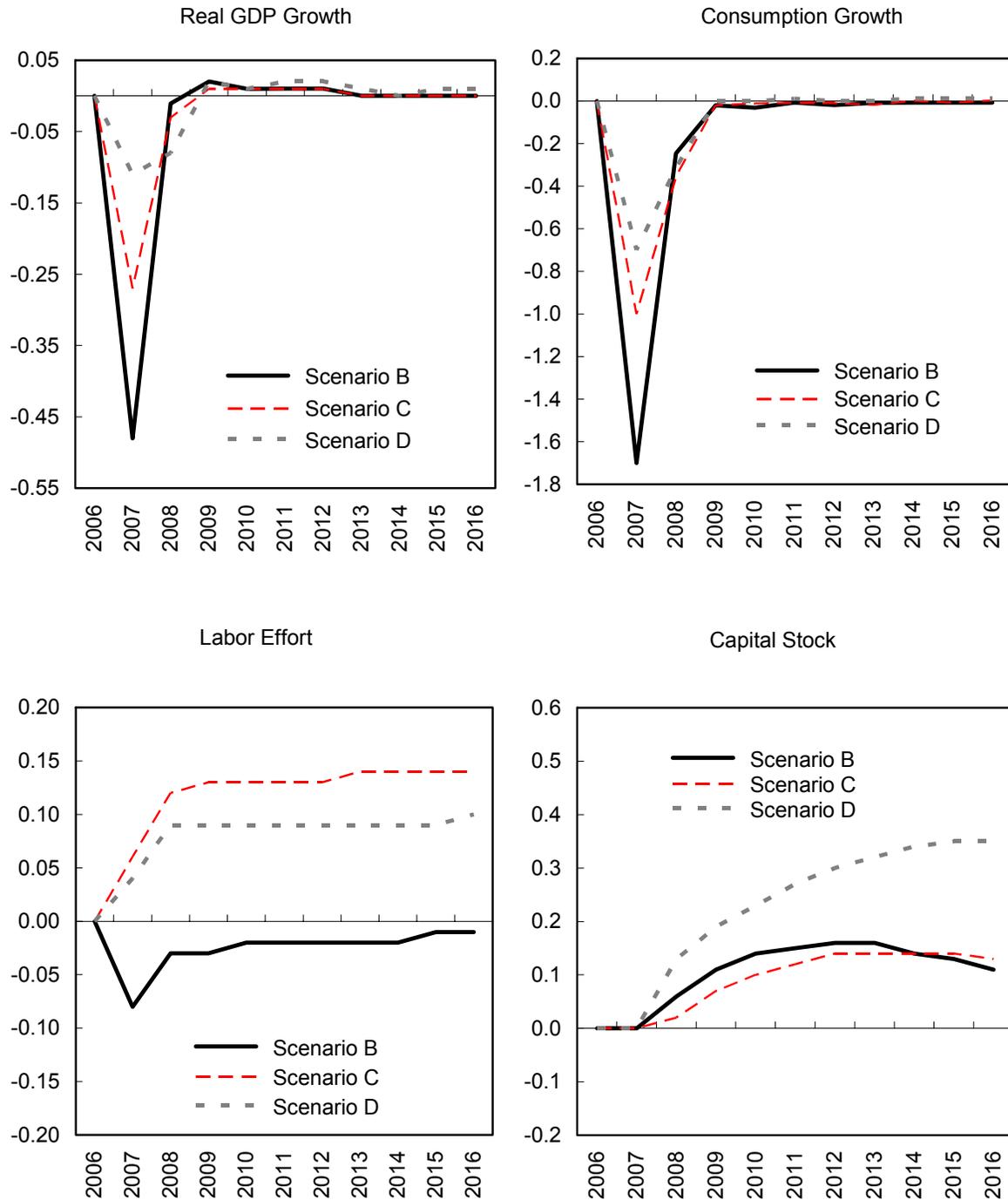
56. **Structural balance by 2011 could be attained through various combinations of expenditure and revenue measures** (Table 2). GFM can be used to analyze the effects of different consolidation methods: (i) lower government consumption; (ii) lower government transfers; (iii) higher worker social security contributions; (iv) higher employer social security contributions; (v) higher personal income tax rates; (vi) a higher VAT; (vii) labor income tax base broadening measures; (viii) higher corporate income tax rates, or (ix) a combination of these measures.

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<sup>32</sup> Negative consumption growth effects in 2007 could be larger than indicated in the model, as GFM does not include anticipation effects in consumption ahead of the VAT hike (no consumer durables in the model).

<sup>33</sup> The model also understates the sensitivity of investment to taxation as capital is not internationally mobile.

Figure 2. Germany: Economic Impact of Tax Reform Proposals 1/  
(Deviations from baseline in percentage points)



Source: GFM simulations.

1/ Baseline includes effects of population aging on government spending. Scenario B includes increase in VAT by 3 percentage points in early 2007. Scenario C adds a reduction in social security contributions by workers equal to 0.4 percent of GDP to Scenario B. Scenario D adds a reduction in corporate income taxation equivalent to 0.25 percent of GDP to scenario C.

57. **The GFM model suggests that the short-run growth slowdown of achieving structural balance varies with the type of consolidation measure.** The impact on short run growth varies between -0.1 and -0.4 percent a year between 2007–11, depending on the specific measures, their distortionary effect, and the impact on domestic demand:

- **Expenditure cuts.** Lowering social security transfers has the smallest growth impact per year (-0.1) percent until 2011. This modest growth effect occurs when the benefits that are reduced are distributed in a lump sum manner—reducing transfers that cause economic distortions (such as unemployment benefits) would imply even smaller growth losses. Part of the decline in consumption demand is absorbed by trading partners via reduced import demand. In contrast, reductions in other government consumption in contrast would lead to a larger slowing in growth, which reflects the fact that current government spending in the model is heavily biased towards nontradables (“home bias”).
- **Revenue increases.** The negative growth impact of the different tax measures ranges from -0.1 to -0.3 percent. The VAT is less distortionary than payroll taxes, because it also taxes accumulated savings (i.e. reaches a broader base) and hence does not solely affect the labor-leisure choice. Increasing payroll taxes on workers is more distortionary than reducing tax exemptions (base broadening) or raising social security contributions on employers owing to marginal tax rates on workers (but not employers) exceeding the average rate. Raising corporate or personal income taxes is roughly equally distortionary in terms of output loss. That payroll taxes are less distortionary than taxation of capital is a result found in other studies as well (Baylor, 2005), and reflects generally inelastic labor supply in Germany.

58. **If no specific strategy is proposed, rising aging-related expenditure pressures would likely result in higher direct taxation.** German law stipulates that the social security accounts have to maintain balance and as a result, under current rules, growing expenditures must be met with equivalent social security contributions. While this prevents runaway fiscal deficits and a buildup of debt, it implies higher payroll taxes as the default policy response.

59. **Expenditure cuts and entitlement reform, in combination with base broadening and raising indirect taxes, compares favorably to raising direct taxes.** Achieving the 2 percent of GDP adjustment between 2008–11 by relying exclusively on just one of the eight adjustment measures appears difficult, and the government likely will need to choose a combination of measures. For instance, reducing government spending—whether on goods and services or social security transfers—by 2 percentage points of GDP by 2011 implies unrealistically large cuts in discretionary spending. Similarly, further increases in the VAT revenue are also limited (including through EU regulations), although further base broadening would be possible by placing fewer items under the lower (7 percent) VAT rate. Raising direct taxation is distortionary and runs counter to the coalition’s intentions to increase incentives for labor participation and investment. The fiscal impulse of a mixed

policy package is outlined in Figure 3 comprising lower government spending, lower social security transfers, reductions of payroll tax exemptions (base broadening), and a small further increase in the effective VAT.<sup>34</sup> Eliminating the structural deficit by 2011 through such a package lowers medium-run growth by about 0.2 percent per year (Figure 4).

**60. Achieving structural balance by 2011 lowers the debt-to-GDP ratio significantly until 2030.** Thereafter debt will start to increase above the Maastricht threshold of 60 percent of GDP at the height of aging pressures (Figure 5). Focusing on a limited set of feasible adjustment strategies, debt ratios range between 90 and 120 percent of GDP by 2050, depending on how the adjustment method interacts with the direct and indirect tax base—the fiscal pressures from aging imply a relative expansion of the latter. Essentially, achieving structural balance by 2011 amounts to prefunding a substantial part of aging-related liabilities, but it would not resolve the long-run financing problem in its entirety.

### **Phasing of the adjustment**

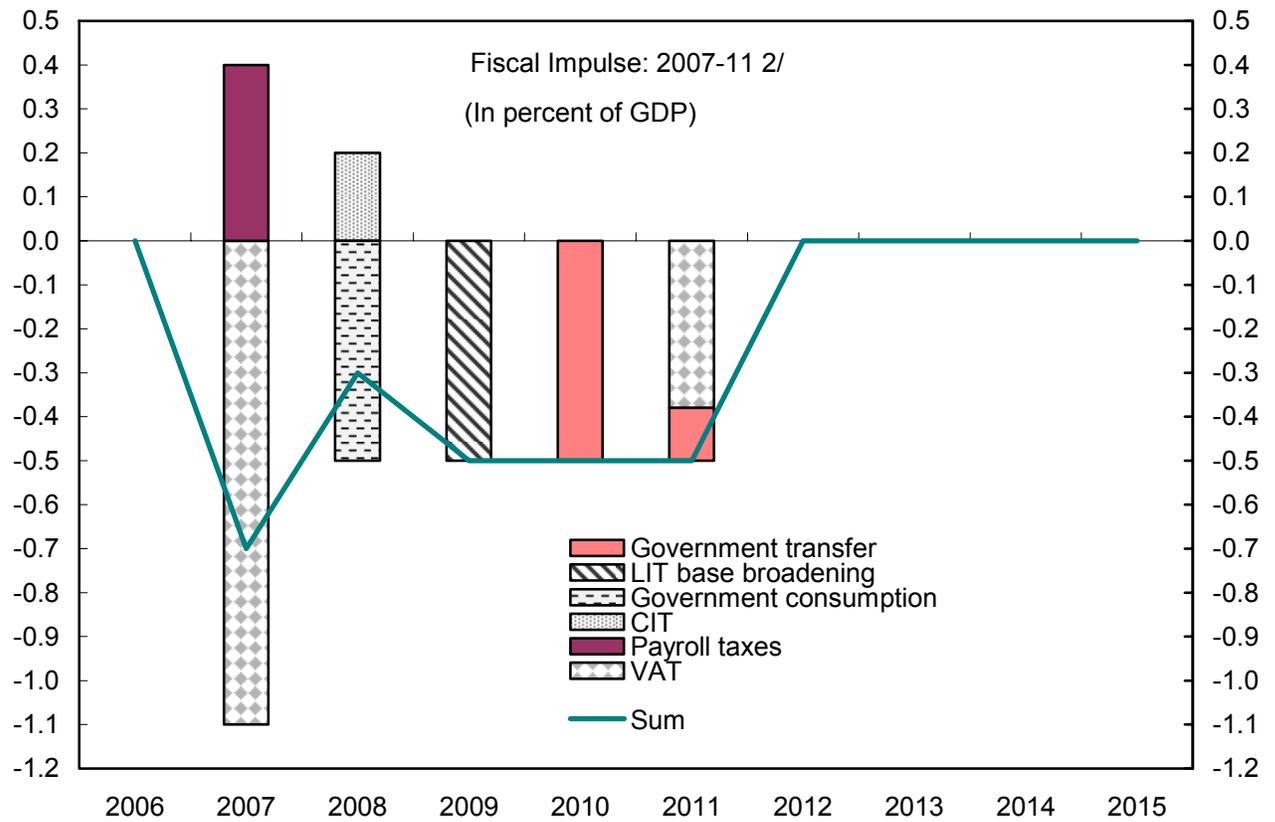
**61. Political as well as technical reasons may prevent a front-loading of fiscal adjustment.** After the significant tax increases in 2007, the political room for further adjustment on the revenue side may be limited. Furthermore, designing a package of high-quality expenditure-saving measures may require significant lead time and implementation may need to be phased in. GFM allows to quantify the implied economic and fiscal trade-offs between an immediate, delayed, and gradual adjustment. Two alternative scenarios to the ½ percent adjustment package are considered: (i) a more gradual ¼ percentage point adjustment completed only by 2015, and (ii) a delayed implementation of ½ percent adjustment until 2011–15.

**62. Delaying adjustment or more gradualism increases the medium and long-term debt burden only modestly** (Figure 6). As deficits remain higher under more gradual or delayed adjustment, debt dynamics will be slightly less favorable. As long as the adjustment strategy is credible and convincingly completed before aging pressures peak, the negative spiral of rising interest rates, debt, and declining investment would be manageable, even with a more gradual path of adjustment.

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<sup>34</sup> This policy package assumes a combination of the following measures in percent of GDP: 2008 ½ percent reduction in government consumption, 2009 ½ percent of labor income tax base broadening, 2010 ½ percent of reduction in government transfers, and 2011 ½ percent from a combination of cuts in transfers and raising the effective VAT rate .

Figure 3. Germany: Composition of Mixed Policy Fiscal Adjustment Package 1/

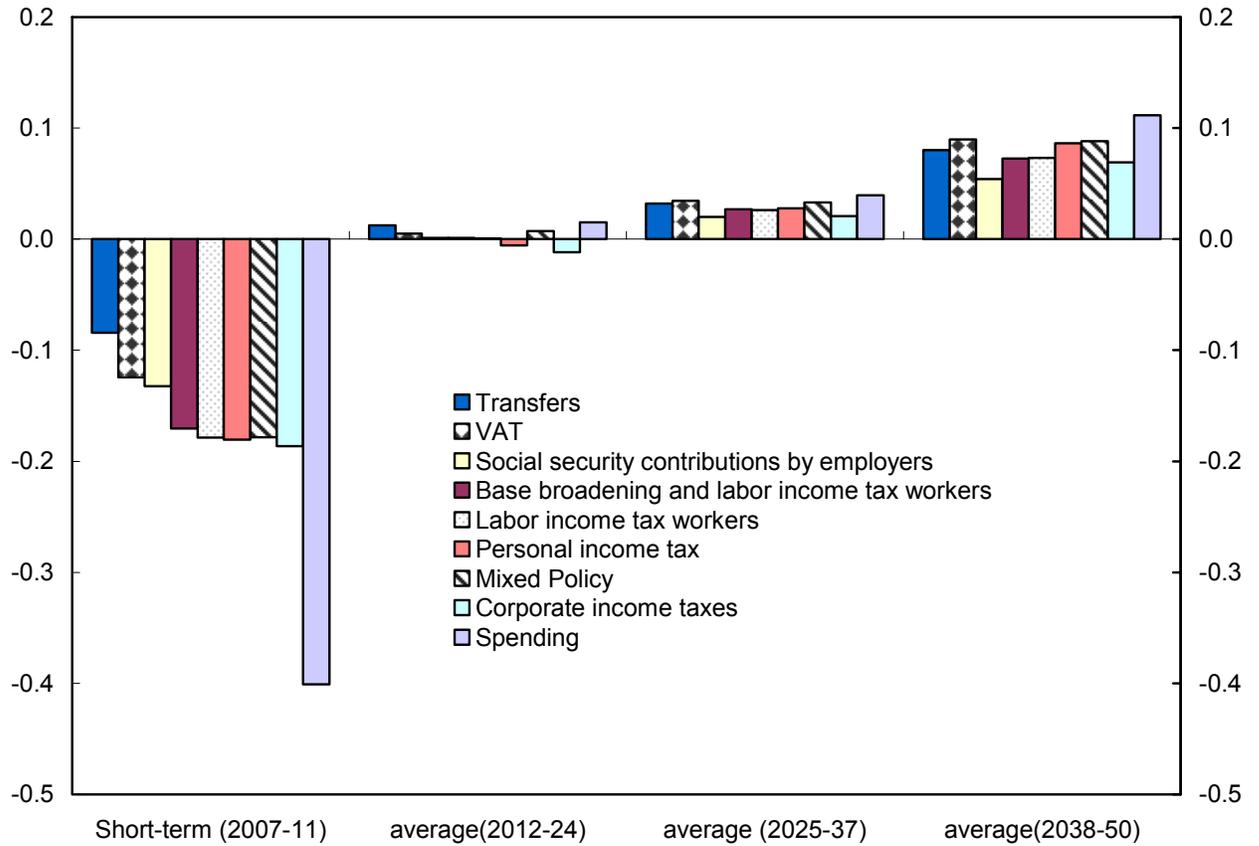


Source: GFM simulations.

1/ Adjustment package of  $\frac{1}{2}$  percent of GDP per year between 2008-11 comprising revenue and expenditure measures.

2/ Change in fiscal deficit between two years.

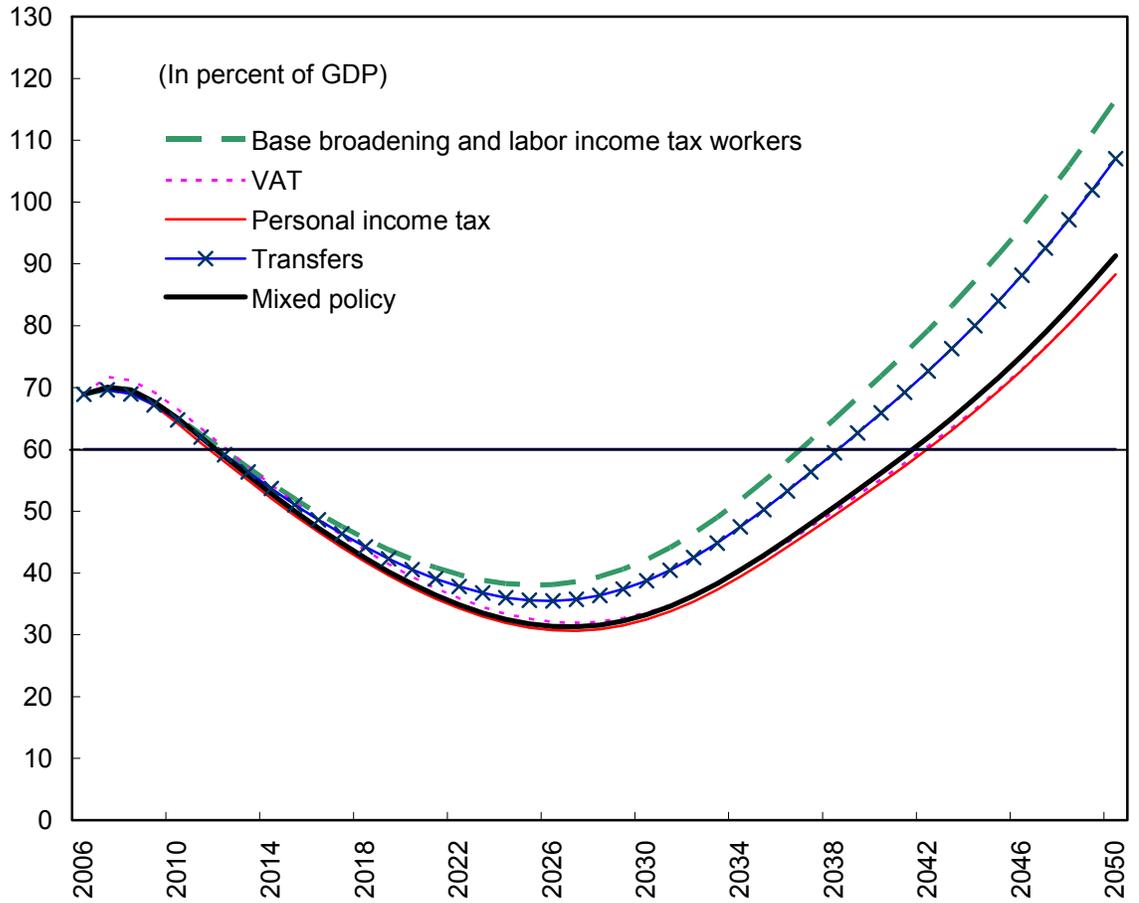
Figure 4. Germany: Growth Effects of Medium-Term Fiscal Adjustment Strategies 1/  
 (Average annual deviation in real GDP growth by adjustment method)



Source: GFM simulations.

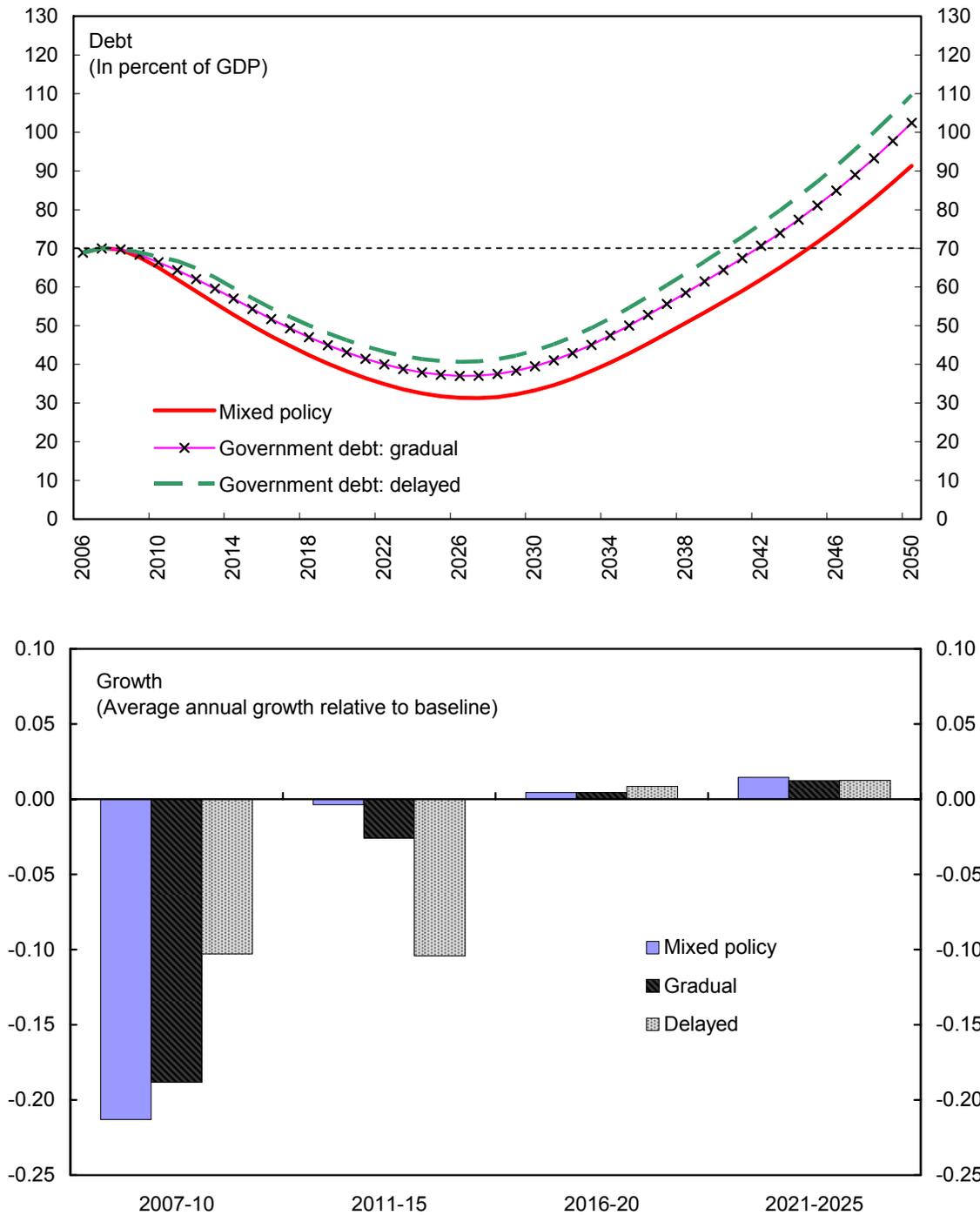
1/ Fiscal adjustment of 1/2 percent of GDP per year between 2008-11.

Figure 5. Germany: Debt Dynamics of Selected Medium-Term Fiscal Adjustment Strategies



Source: GFM simulations.

Figure 6. Germany: Fiscal Adjustment Package: Delayed or Gradual Implementation 1/



Source: GFM simulations.

1/ Gradual adjustment is defined as a 1/4 percent of GDP fiscal adjustment for eight consecutive years between 2008-15; delayed adjustment defined as a 1/2 percent of GDP adjustment between 2011-15; mixed policy defined as package of revenue and expenditure measures with 1/2 percent of GDP adjustment between 2007-11.

63. **Delaying or slowing down fiscal adjustment shifts the negative effects on growth to the medium term.** The benefits of delaying action for a few years in terms of avoiding further contractionary impulses are limited. However, postponing reform even further, beyond the medium term, would have significant negative real effects. By delaying adjustment until a time when debt levels are accelerating together with aging pressures—e.g. beyond 2020—the government would have to engage in repeated and sizeable adjustments of the fiscal balance that lead to large output losses. This implies that the long-run aging problem needs to be substantially anticipated and resolved in the next decade before drastic measures will become necessary to secure solvency of the welfare state.

### E. Spillover Effects

64. **As Germany is an open economy, and well integrated with international capital markets, spillover effects of its policies are of interest.** In GFM, spillover effects occur through trade and financial channels. Because Germany's fiscal policies in isolation<sup>35</sup> have only a small effect on the global pool of savings and investment, financial spillover effects in real interest rates will be relatively modest. Spillover effects through trade channels could be more substantial, although any change in import demand will also affect international relative prices.

65. **The planned tax policy measures for 2007–08 have limited spillover effects for trading partners** (Figure 7). Germany's current account surplus improves further as a result of increasing the VAT. However, the effects on partner countries'—accession countries, euro-zone partners, and the rest-of-the-world (ROW)—growth and current account balances are modest because the VAT increase will have only temporary and small effects on German consumption and import demand. Furthermore, as Germany is well integrated with international capital markets, there is an offsetting effect on partner country growth through lower real interest rates—albeit this effect is small as Germany is a relatively small open economy. These spillover effects are even smaller when the increase in the VAT is combined with lower labor income taxes and CIT, as foreseen in the government's plans as it reduces the impact on German consumption.

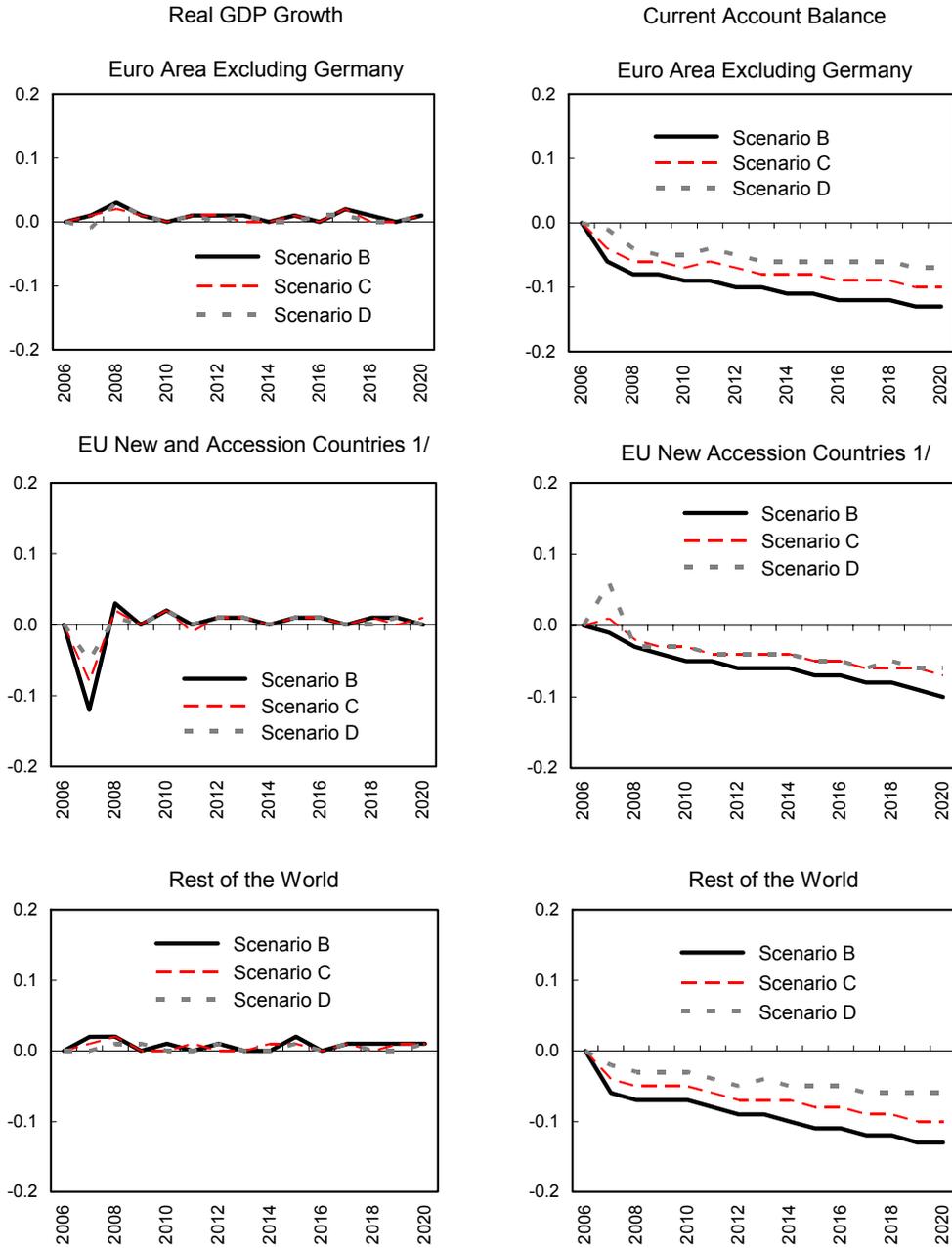
66. **Additional adjustment to achieve structural balance has limited supplemental spillover effects to other economic regions** (Figure 8). Germany's current account position will improve somewhat further because of the greater overall adjustment effort.<sup>36</sup>

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<sup>35</sup> Abstracting from the fact that other countries also face aging problems fiscal difficulties are set to compound on a global scale.

<sup>36</sup> Again, this assumes that Germany is the tackling aging pressures in isolation. In reality, other countries may also be expected to reduce aging costs. To the extent that this induces *global* fiscal adjustment, *global* growth could slow, and the external current account of countries could swing either way, depending on their *relative* adjustment effort. At the same time, interest rate in Germany and other countries would be expected to decline by more.

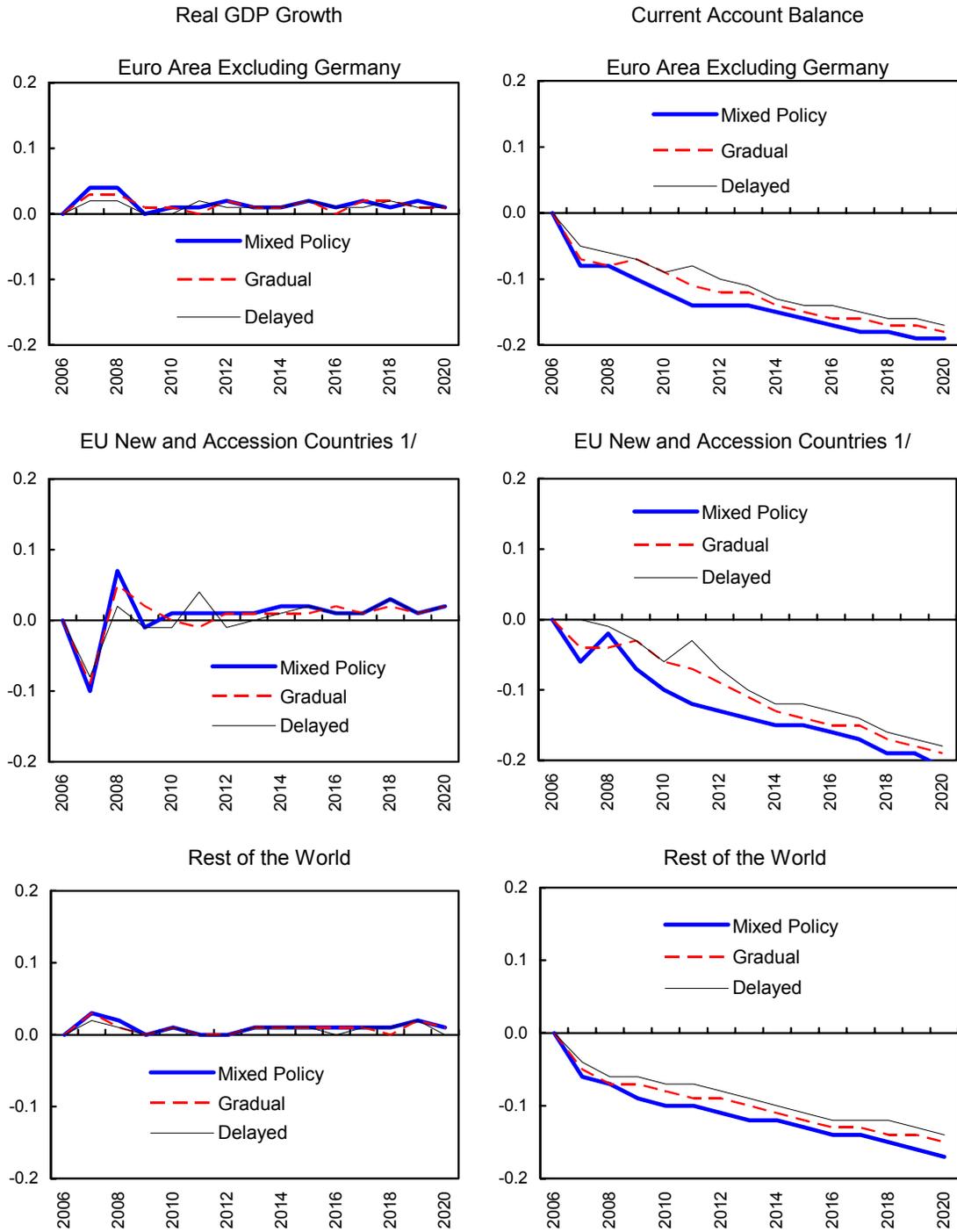
Figure 7. Germany: Spillover Effects of Tax Reform Proposals  
(Difference from baseline in percentage points)



Source: GFM simulations.

1/ 10 new EU member states and Bulgaria, Croatia, and Romania.

Figure 8. Germany: Spillover Effects of Medium-Term Adjustment  
(Difference from baseline in percentage points)



Source: GFM simulations.

1/ 10 new EU member states and Bulgaria, Croatia, and Romania.

## F. Sensitivity Analysis

67. **Sensitivity analysis indicates that the results outlined above are robust to changes in the behavioral assumptions and structural parameters of the model.**

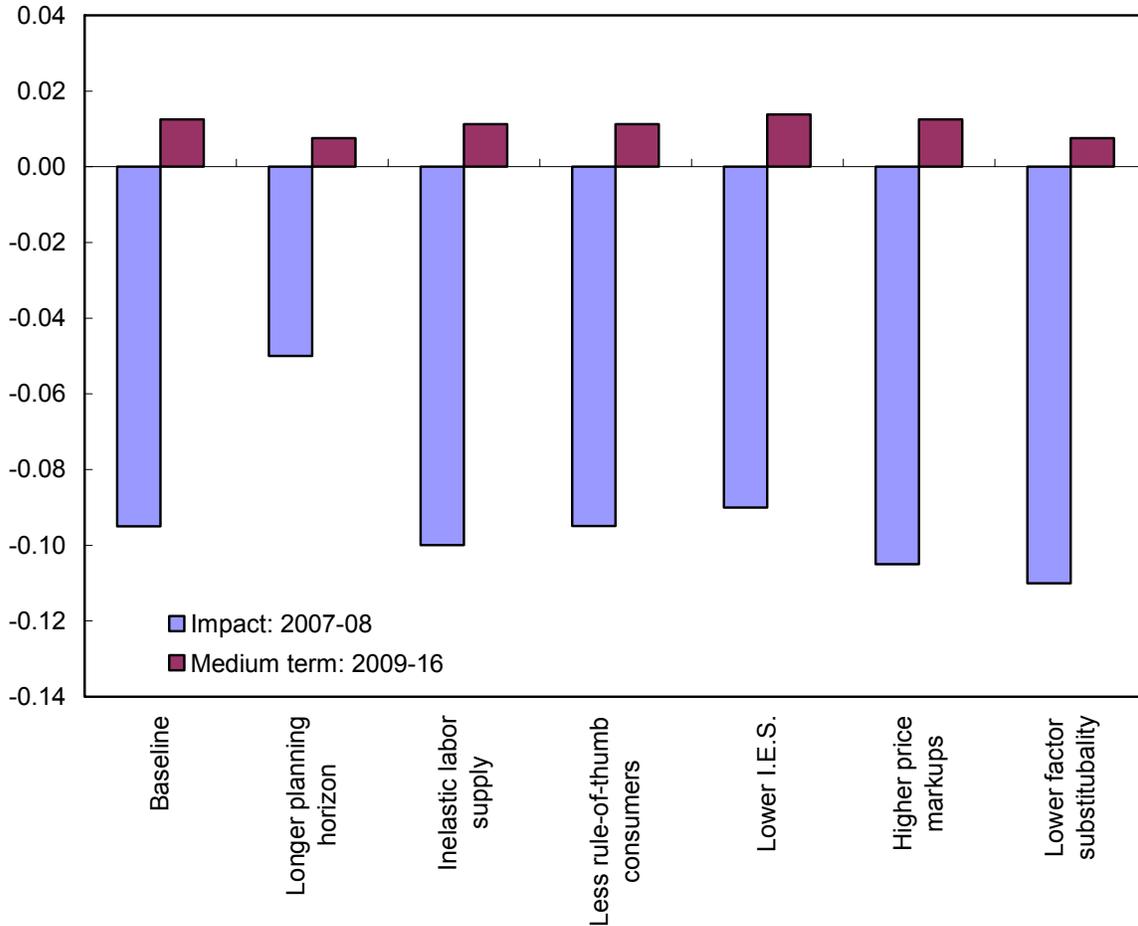
- ***The relative impact of fiscal consolidation on economic growth does not vary much with different model parameters*** (Figure 9). The largest change in the results can be observed for a parameterization extending the planning horizon. More forward looking behavior would limit the crowding out effects of government debt, but would also reduce the impact on consumption of increasing the VAT. Less elastic labor supply would reduce the benefit of cutting payroll taxes, while higher price markups reduce the benefit of cutting corporate income taxes as more of the tax burden would fall on monopolistic rents rather than the return to capital.
- ***The impact of the timing and the pace of consolidation depend on the planning horizon of consumers and their sensitivity to changes in interest rates*** (Figure 10). Implementing the adjustment to achieve structural balance is less costly if consumers are more forward looking, but overall the results are robust to changes in modeling assumptions.
- ***If Germany is less well integrated in international capital markets, the debt-GDP ratio will increase faster.*** With perfectly integrated capital markets, real interest rate increase by only 20–30 basis points under the coalition’s proposals by 2050 (Figure 11). Introducing imperfectly integrated capital markets—by specifying a risk premium in relation to the change in the current account deficit to GDP—amplifies the increase in real interest rate in the long term to between 40 and 70 basis points. Government debt increases more quickly because interest payments rise more quickly, unless structural balance is achieved (Figure 12). The short-term costs of fiscal adjustment are also smaller, since interest rates decline more (Figure 13).<sup>37</sup> These long-term beneficial effects of fiscal adjustment would be larger if the interest rate would be even more sensitive to the debt profile.

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<sup>37</sup> The long-term debt projections in GFM are by 20–30 percentage points of GDP lower than long-term fiscal projections obtained reported in the accompanying Staff Report (Figure 12). Most of this discrepancy can be explained by the larger, endogenous, decline in the real interest rate in GFM following lower debt.

Figure 9. Germany: Sensitivity Analysis: Effects of Coalition Agreement on German Real GDP Growth 1/

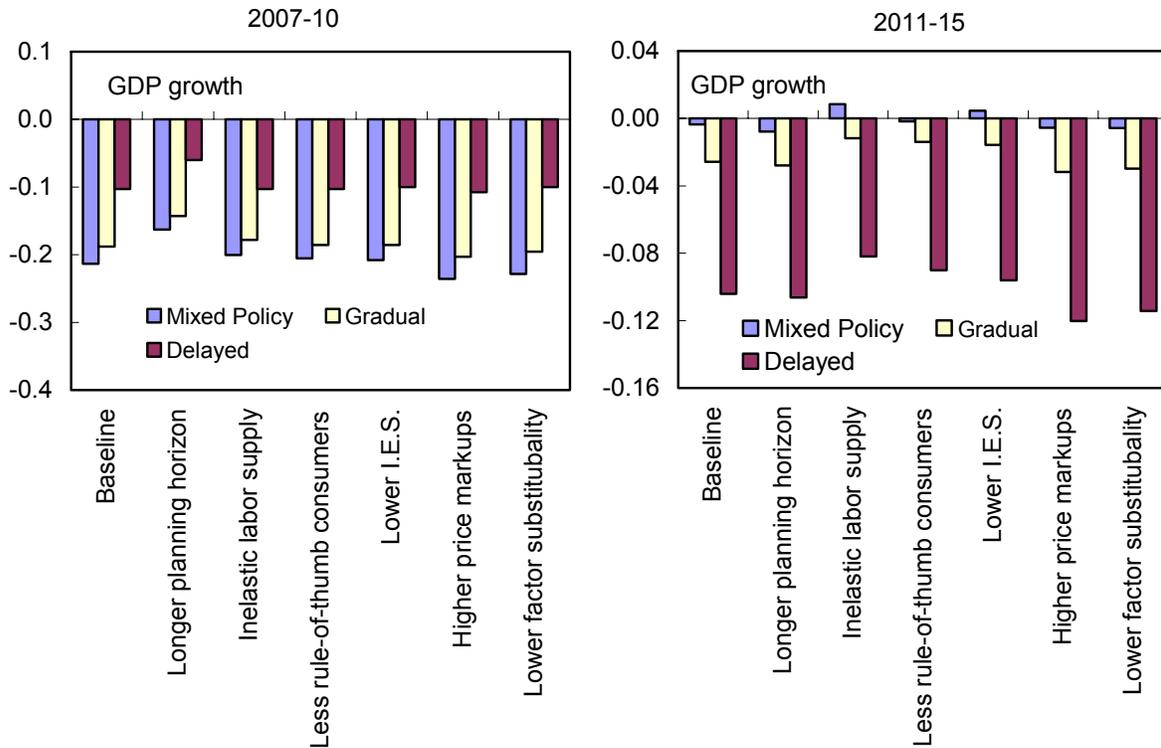
(Deviation from baseline in percentage points)



Source: GFM simulations.

1/ Alternative simulations consider a longer planning horizon (100 versus 25 years in the baseline); less elastic labor supply (absolute elasticity of labor supply equal to -0.01 rather than -0.08 in the baseline); a smaller share of rule-of-thumb consumers (20 percent of consumers compared with 40 percent in the baseline); lower price markups (a reduction of 25 percent relative to the baseline), and less substitutability between capital and labor (0.60 rather than 0.75 in the baseline; with a value of unity indicating the Cobb-Douglas case).

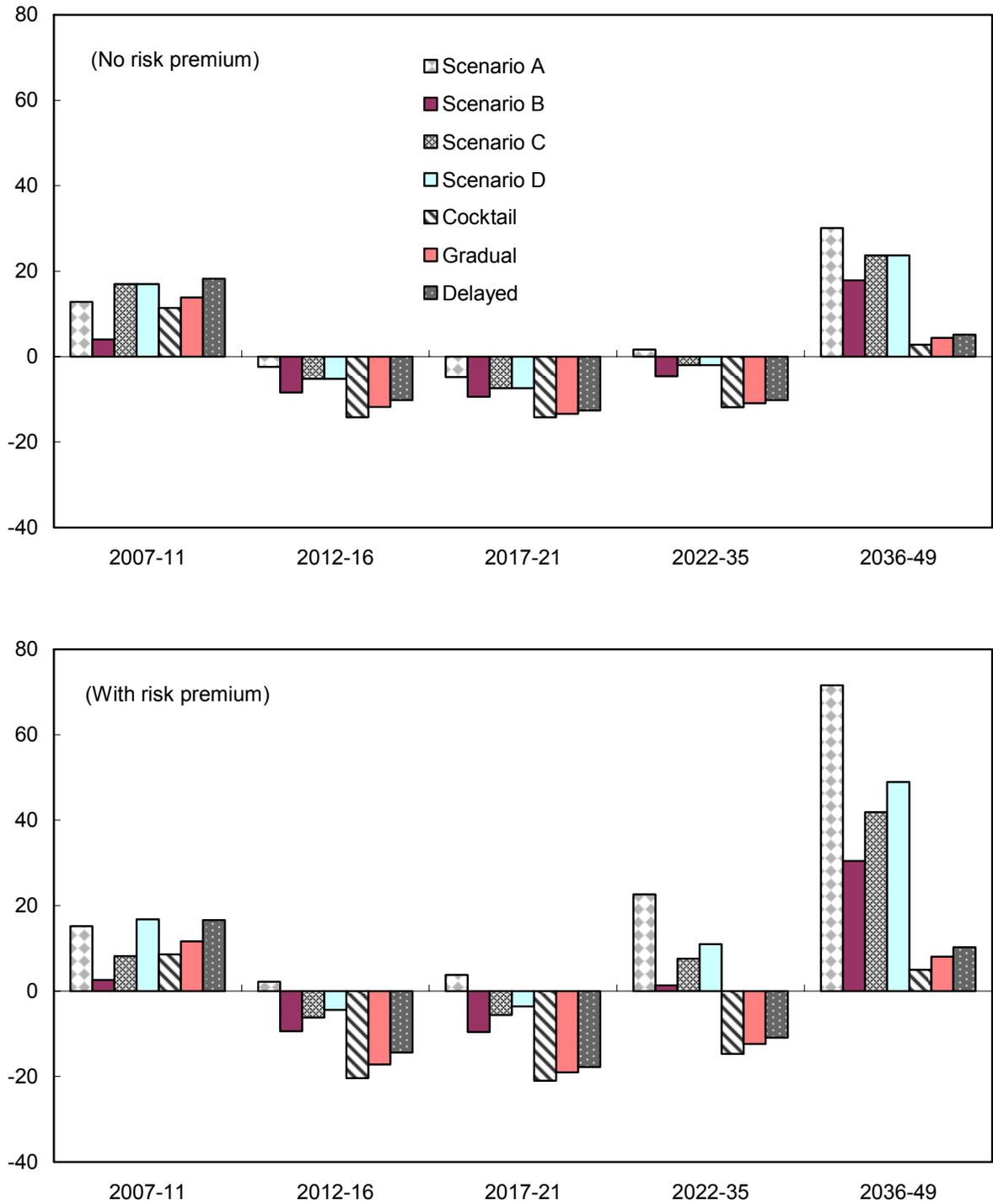
Figure 10. Germany Sensitivity Analysis:  
Effects of Mixed Policy, Gradual, and Delayed Adjustment on Real GDP Growth 1/  
(Deviation from scenario D in percentage points)



Source: GFM simulations.

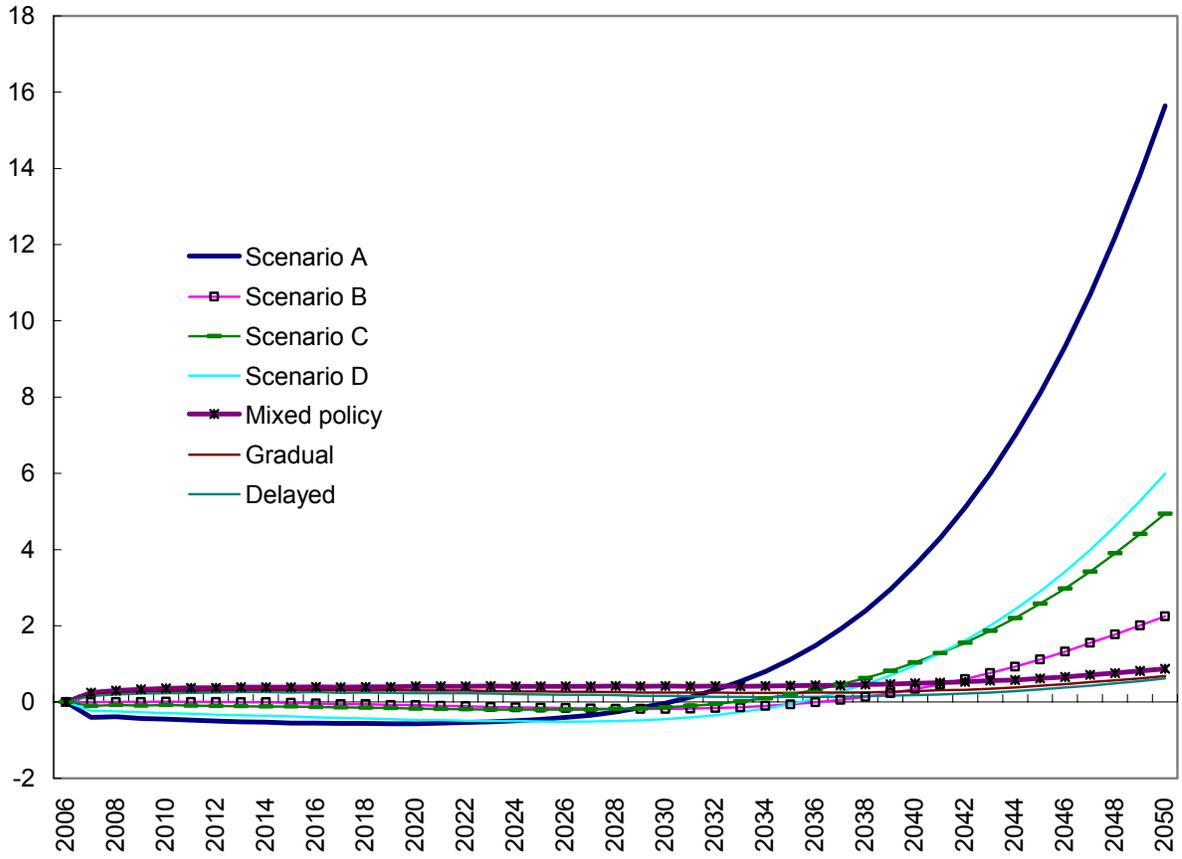
1/ Alternative simulations consider a longer planning horizon (100 versus 25 years in the baseline); less elastic labor supply (absolute elasticity of labor supply equal to -0.01 rather than -0.08 in the baseline), a smaller share of rule-of-thumb consumers (20 percent of consumers compared with 40 percent in the baseline); lower price markups (a reduction of 25 percent relative to the baseline), and less substitutability between capital and labor (0.60 rather than 0.75 in the baseline; with a value of unity indicating the Cobb-Douglas case).

Figure 11. Germany: Sensitivity Analysis: Effect on Real Interest Rate  
(Deviation from 2006 projection in basis points)



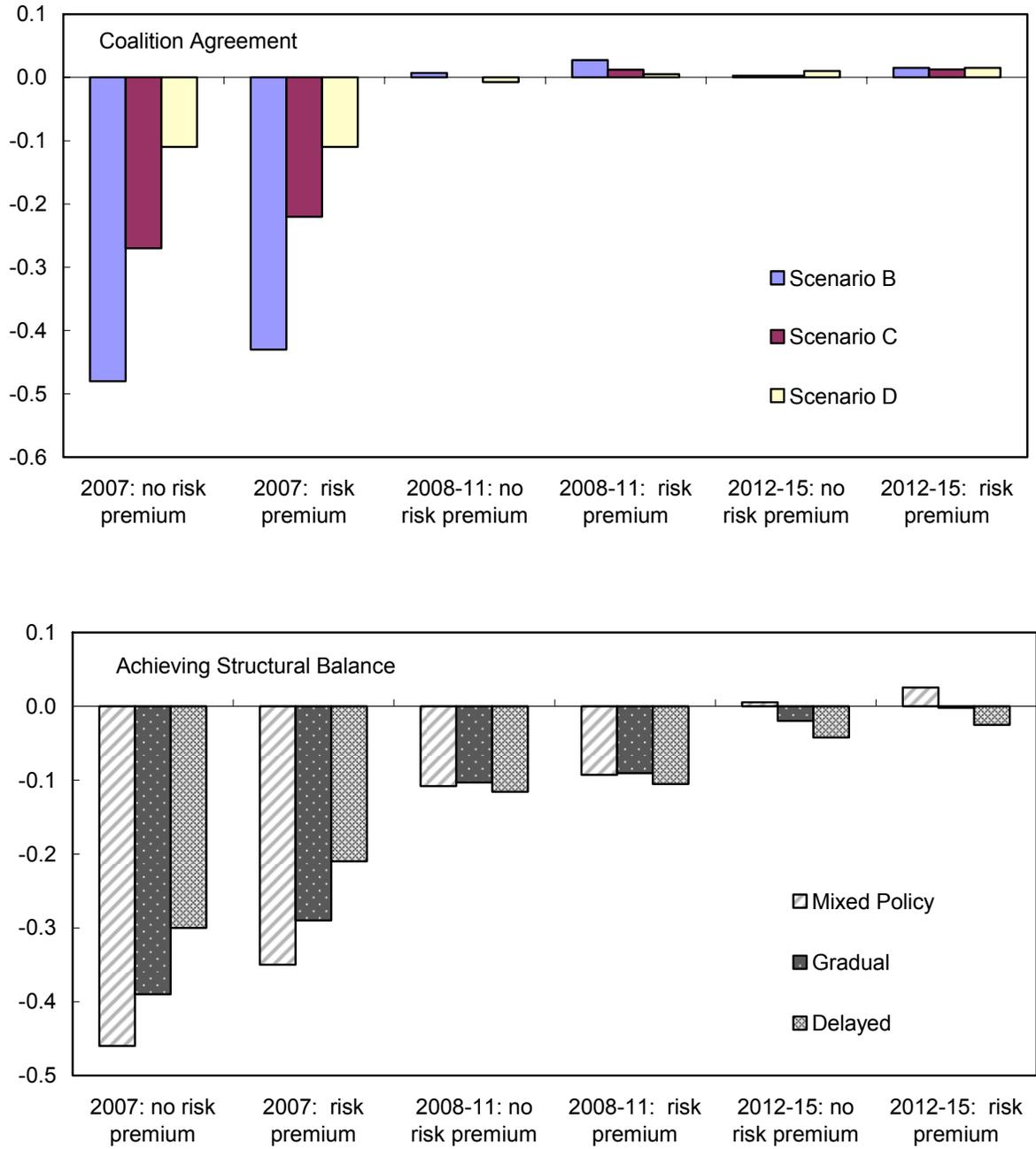
Source: GFM simulations.

Figure 12. Germany: Debt Ratio with Imperfect Capital Market Integration  
 (Difference in debt relative to no-risk premium in percent of GDP)



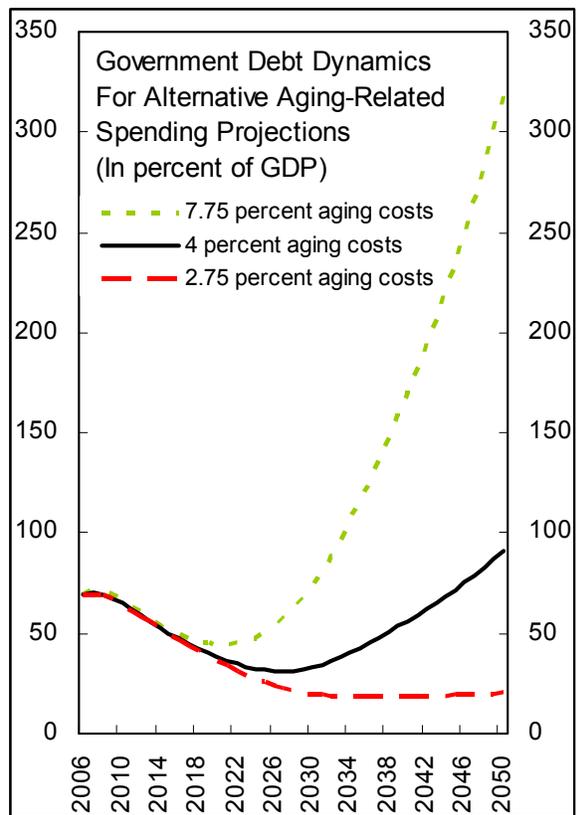
Source: GFM simulations.

Figure 13. Germany: GDP Growth Effects of Varying Risk Premia  
(Deviation from baseline in percentage points)



Source: GFM simulations.

68. **The debt profile is highly sensitive to alternative assumptions about the cost of an aging population.** Estimates for aging related spending pressures range from 2¾ percent of GDP to 7¾ percent. The debt dynamics after 2025 are highly sensitive to the size of these costs implying that, to help guide policies, the authorities should convene a group of independent experts to estimate aging costs as is done for the preparation of joint tax estimates.



## G. Conclusions

69. **The coalition’s planned tax policy measures for 2007–08 significantly improve the debt outlook, achieve a more efficient tax system, but do not secure fiscal sustainability.** GFM simulations suggest that the coalition’s tax reforms increase labor demand and incentives to save and invest by moving from direct to indirect taxation. As the reforms lower the deficit path, the outlook for debt improves, by about 60 percentage points of GDP, but not yet to long-run sustainability.

70. **Fiscal adjustment leads to some sacrifice in growth and consumption in 2007, as necessary to address aging related spending pressures.** Real GDP growth following the increase in the VAT is estimated to slow by about ½ percentage point upon implementation, with small effects on growth afterwards. The proposed reduction in payroll taxes in 2007 would reduce this impact on growth by half, while the planned reduction in corporate income taxation appears to be broadly neutral on growth.

71. **Beyond the tax reforms in 2007–08, achieving structural balance over the medium term would further significantly improve the debt dynamics and set aside resources for aging-related liabilities.** Model simulations suggest that ½ percent of GDP adjustment each year in the structural balance from 2008-11 would lead to a further significant reduction in government debt over the medium term. However, from

2030 onwards, debt would start to increase again, still resulting in a debt-to-GDP ratio of around 100 percent by 2050. Achieving structural balance by 2011, therefore, is no panacea.

72. **Expenditure cuts and entitlement reform, in combination with base broadening and raising indirect taxes, compare favorably to raising direct taxes.** Achieving structural balance through increasing payroll taxation—whether on workers or through social security contributions by employers—or taxation of corporate or personal income taxation implies the largest efficiency losses. At the same time, relying on cuts in government spending or social security transfers alone would require large cuts that may be politically difficult. Eliminating the structural deficit by 2011 through such a mix of expenditure and revenue measures lowers growth by about 0.2 percent per year.

73. **Debt would be higher and adverse growth effects would occur later if achieving structural balance is delayed or occurs more gradually over time.** Delaying adjustment to 2011–15 or phasing in adjustment more gradually to beyond 2011 would increase the debt ratio by 10 and 20 percent of GDP in the long run, respectively, while adverse growth effects are broadly the same in magnitude although occurring later. Postponing reform to the longer run, however, (say, waiting until 2020) would have significant adverse growth effects, as the government would be forced eventually to apply much larger and hence more distortionary adjustment measures.

74. **International spillover effects on growth and current account imbalances are moderate.** Under the assumption that Germany is well-integrated with international capital markets, the coalition's reforms will have only a moderate impact on international saving-investment balances. As consumption declines in Germany in 2007 following the higher VAT, demand for imports falls. At the same time, by strengthening government saving, the international financing environment would improve somewhat (less crowding out of saving). Over the longer run, less pressure from government debt supports more private sector investment and growth.

75. **These results are robust to alternative assumptions about the structure of the economy and the sensitivity of consumers and producers to changes in tax and expenditure policy.** However, the debt profile is highly sensitive to alternative estimates of the cost of an aging population. The simulations indicated moderate effects of reducing the elasticity of labor supply to after-tax real wage, lengthening the planning horizon of consumers, reducing the fraction of consumers that is excluded from financial markets, the sensitivity of consumers to changes in the real interest rate, reducing price markups, or lowering the substitutability between capital and labor. The introduction of country specific risk premia makes consolidation less costly and reduces the direct output costs of achieving structural balance, but makes the debt dynamics worse because of higher debt servicing costs.

Table 1. Germany: Key Macroeconomic Variables in the Initial Steady State

| National expenditure accounts at market prices<br>(In Percent of GDP) |         |              |                    |                   |
|---|---------|--------------|--------------------|-------------------|
| Expenditure ratios  |         |              | Factor Incomes     |                   |
| Private consumption   | 63.2    |              | Capital            | 43.6              |
| Government consumption  | 18.6    |              | Labor              | 56.4              |
| Investment  | 18.9    |              | Government         |                   |
| Exports   | 31.3    |              | Debt               | 68.9              |
| Tax rates and revenue   |         |              |                    |                   |
| Payroll taxes (Worker and Employer)                                   |         |              | On Personal Income |                   |
| Effective tax rate  | 49.6    |              | Effective tax rate | 9.0               |
| In percent of GDP   | 17.6    |              | In percent of GDP  | 8.9               |
| On Corporate Income   |         |              | On Consumption     |                   |
| Effective tax rate  | 29.0    |              | Effective tax rate | 10.1              |
| In percent of GDP   | 7.8     |              | In percent of GDP  | 6.2               |
| Trade flow matrix   |         |              |                    |                   |
|   | Germany | Euro area 1/ | EU new 2/          | Rest of the world |
| GDP share (in percent of global output)                               | 6.8     | 15.9         | 1.7                | 75.6              |
| Total exports to:   | 31.3    | 19.8         | 36.8               | 4.2               |
| Germany   |         | 6.2          | 14.5               | 1.2               |
| Euro area 1/  | 13.2    |              | 13.3               | 2.7               |
| EU new 2/   | 2.6     | 1.3          |                    | 0.3               |
| Rest of the World   | 15.5    | 12.2         | 8.9                |                   |

Source: IMF staff estimates.

1/ Euro area without Germany.

2/ 10 new EU member states and Bulgaria, Croatia, and Romania.

Table 2. Germany: Eight Illustrative Adjustment Strategies: 2006-11 1/

|   | 2006 | 2007 | 2011 |
|---|------|------|------|
| VAT   |      |      |      |
| Statutory rate  | 16   | 19   | 24.5 |
| Effective tax rate                                    | 10.1 | 12   | 15.5 |
| Revenue, in percent of GDP                            | 6.2  | 7.3  | 9.3  |
| Labor income tax workers                              |      |      |      |
| Effective tax rate                                    | 26.8 | 25.6 | 31.6 |
| Revenue, in percent of GDP                            | 8.8  | 8.4  | 10.4 |
| Base broadening and higher labor income tax workers   |      |      |      |
| Base broadening                                       |      |      |      |
| Effective exemption rate 2/                           | 15.0 | 15.0 | 1.5  |
| Labor income tax                                      |      |      |      |
| Effective tax rate                                    | 26.8 | 25.6 | 27.3 |
| Overall revenue effect, in percent of GDP             | 8.8  | 8.4  | 10.4 |
| Labor income tax employers                            |      |      |      |
| Effective tax rate                                    | 22.8 | 22.8 | 29.4 |
| Revenue, in percent of GDP                            | 8.8  | 8.8  | 10.8 |
| Personal income tax                                   |      |      |      |
| Effective tax rate                                    | 9.0  | 9.0  | 11.0 |
| Revenue, in percent of GDP                            | 8.9  | 8.9  | 10.9 |
| Corporate income tax                                  |      |      |      |
| Effective tax rate                                    | 29.0 | 29.0 | 34.9 |
| Revenue, in percent of GDP                            | 7.8  | 7.8  | 9.8  |
| Social security transfers                             |      |      |      |
| In the absence of fiscal adjustment (aging effect) 3/ |      |      |      |
| Spending, in percent of GDP                           | 19.6 | 20.5 | 19.4 |
| With fiscal adjustment                                |      |      |      |
| Spending, in percent of GDP                           | 19.6 | 20.5 | 17.4 |
| Government consumption                                |      |      |      |
| Spending, in percent of GDP                           | 18.6 | 18.6 | 18.6 |

Source: IMF staff estimates.

1/ Adjustment of 1/2 percent of GDP between 2007-11 in addition to the coalition agreement.

2/ Fraction of average labor income that is tax exempt.

3/ Aging costs are projected to decline between 2007-11.

## References

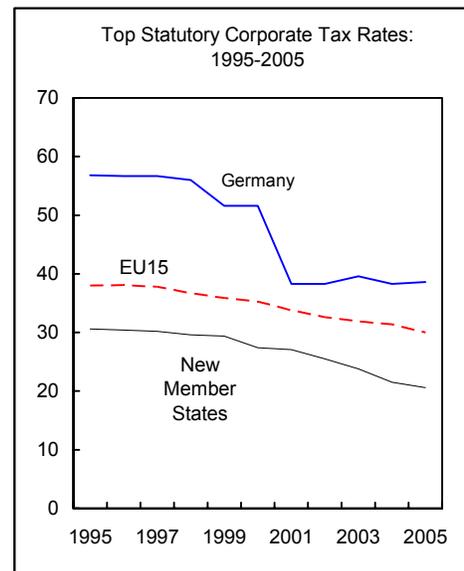
- Batini, Nicoletta and Papa N'Diaye, and Alessandro Rebucci, 2005, *The Domestic and Global Impact of Japan's Policies for Growth*, IMF Working Paper 05/209 (Washington, D.C.: International Monetary Fund).
- Baylor, Maximilian, 2005, *Ranking Tax Distortions in Dynamic General Equilibrium Models: A Survey*, Working Paper 2005-06 (Ottawa: Department of Finance).
- Bayoumi, Tamim and Dennis Botman, 2005, *Jam Today or More Jam Tomorrow? On Cutting Taxes Now Versus Later, Canada-Selected Issues*, IMF Country Report No. 05/116 (Washington, D.C.: International Monetary Fund).
- Bayoumi, Tamim, Dennis Botman, and Manmohan Kumar, 2005, *Effects of Social Security and Tax Reform in the United States, United States-Selected Issues*, IMF Country Report No. 05/258 (Washington, D.C.: International Monetary Fund).
- Botman, Dennis and Keiko Honjo, 2006, *Options for Fiscal Consolidation in the United Kingdom*, IMF Working Paper 06/89 (Washington, D.C.: International Monetary Fund).
- Botman, Dennis and Manmohan Kumar, 2006, *Fundamental Determinants of the Effects of Fiscal Policy*, IMF Working Paper 06/208 (Washington, D.C.: International Monetary Fund).
- Botman, Dennis, Doug Laxton, D. Muir, and Alexander. Romanov, 2006, *A New Open Economy Macromodel for Fiscal Policy Evaluation*, IMF Working Paper 06/45 (Washington, D.C.: International Monetary Fund).
- Botman, Dennis, Hali Edison, and Papa N'Diaye. *Strategies for Fiscal Consolidation in Japan Japan-Selected Issues*, IMF Country Report No. 06/276 (Washington, D.C.: International Monetary Fund).
- Evers M, Ruud A. de Mooij and Daniel J. van Vuuren, 2005. *What explains the Variation in Estimates of Labour Supply Elasticities?*, CesIFO Paper 1633.
- Federal Ministry of Finance, Berlin, 2005, *Bericht zur Tragfähigkeit der Öffentlichen Finanzen* (Long-Run Fiscal Sustainability Report).
- Laxton, Doug and P. Pesenti, 2003, *Monetary Rules for Small, Open, Emerging Economies*, Journal of Monetary Economics, Vol. 50, No. 5, pp. 1109-52.
- Werding, Martin and Anita Kaltschütz, IFO, Munich, 2005, *IFO Beiträge zur Wirtschaftsforschung—Modellrechnungen zur Langfristigen Tragfähigkeit der Öffentlichen Finanzen*.

### III. BUSINESS TAX REFORM IN GERMANY<sup>38</sup>

*Amid increased competition over mobile capital and profit shifting of corporations to foreign subsidiaries the government intends to reform the corporate tax system. This chapter assesses the likely impact of the cornerstones of the reform. The general direction of the reform—cutting rates and broadening the base—is appropriate. The policy debate has focused primarily on options to reduce profit shifting and to broaden the tax base. The paper examines the pros and cons of some of the key provisions that have been put forward, including limits on the deduction of interest costs in specific cases. It concludes that targeted limits on interest deduction that are akin to thin capitalization rules may be better suited than broad limits to reduce revenue leakage. Eliminating accelerated depreciation allowances and raising business property taxes are promising avenues for broadening the tax base and limiting the revenue loss. The envisaged package of reforms, however, would not reduce the complexity of the business tax system in Germany. The proposal is not yet finalized and hence the judgments in this paper should be viewed as preliminary.*

#### A. Introduction

76. **Just five and a half years after the last major corporate income tax (CIT) reform, the government published an outline for further reform intended to become effective in 2008.**<sup>39</sup> While many details remain open, the plan generally aims at broadening the tax base combined with lowering tax rates. This is in line with previous reforms and those in other advanced countries over past decades.<sup>40</sup> However, some of the specifics of the original German proposal were unusual and triggered a second round of proposals.



77. **The need for reform is the result of external pressures and Germany-specific factors.** During the last decade, 20 of the now 25 EU members have cut their CIT rate at

<sup>38</sup> Prepared by Alexander Klemm (FAD) and Stephan Danninger (EUR).

<sup>39</sup> On July 12, 2006, the Ministry of Finance published a list of cornerstones (Eckpunkte) of a business tax reform, available at the Ministry of Finance's website: <http://www.bundesfinanzministerium.de/>. A revised proposal was announced by a working group in November 2, 2007 and its details are discussed in Appendix A. For an analysis of the 2000 reform see Keen (2002).

<sup>40</sup> See *inter alia* Devereux et al. (2002).

least once.<sup>41</sup> European integration and greater mobility of capital have created common pressures on all advanced economies to cut statutory rates. Moreover, Germany needs to reform business taxation to reduce the complexities of the current system and the unintentional heterogeneity of tax burdens across firms.

78. **Limited scope for tax relief requires offsetting measures reducing the targeted incentive effects.** Because the fiscal deficit and debt are high, and aging pressures are building, Germany can ill-afford permanent revenue losses. CIT reforms are complicated and the behavioral responses can be difficult to predict. This became clear in the last reform in 2000, when CIT revenues unexpectedly turned *negative* (in net terms) in the first year following the reform, before they recovered.<sup>42</sup>

79. **The objective of this paper is to assess whether the reform is likely to be effective in lowering distortions in German business taxation.** The paper concludes that:

- The direction of reform, lowering tax rates and broadening the tax base, is appropriate in light of international tax competition pressures.
- The reform may reduce profit shifting by multinationals operating in Germany to their subsidiaries in lower-tax jurisdictions. The authorities' most recent proposal includes limits on the deduction of interest costs in specific cases where there is evidence of borrowing from foreign subsidiaries to shift profits abroad. This is a moderation from initial proposals of broad limits on interest and leasing cost deductions, which could have induced unintended distortions in business investment decisions.
- The corporate tax burden remains high and pressures for additional reform are likely to continue in light of further tax competition from abroad.
- Even after the reform, the German CIT system would remain complex.

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<sup>41</sup> The exceptions being Malta, Norway, Slovenia, Spain and Sweden. Source: Updates from Devereux et al. (2002) (from <http://www.ifs.org.uk/data/internationaltaxdata.zip>) and KPMG Corporate Tax Rate Survey (various years).

<sup>42</sup> The unexpected revenue losses were the result of the abolition of the previous split rate system, in which tax rates on distributions were lower than on retentions, and companies were allowed to reclaim the difference between both rates when they distributed previously retained profits. The reform introduced a uniform rate (below both previous rates), but still permitted firms to reclaim the tax differential when paying out previously retained profits. This created an incentive for firms to make distributions out of retained earnings to benefit from the tax rebate, while new profits could be retained without being subject to a higher tax rate. This accelerated pay out of retentions led to (temporary) negative overall tax payments.

80. **The reform plan is not yet final.** The latest proposal reflects the outcome of the government's working group and awaits endorsement by the cabinet. The political challenge is to cut CIT rates at a time of fiscal consolidation and other tax increases, such as the VAT. Moreover, while theory suggests that the final incidence of even a CIT may largely fall on labor (the less-mobile factor), the public perception may nevertheless be that a CIT cut mainly benefits owners of capital and raise additional resistance.

### B. The Corporate Income Tax System in Germany

81. **Profits are subject to three layers of taxation:** a federal corporate income tax, a municipal trade tax, and a solidarity surcharge. The federal tax is charged at a rate of 25 percent. The municipal tax rate is subject to a minimum of 10 percent without a maximum, but in practice the highest rate is 24.5 percent.<sup>43</sup> The local tax is a deductible expense from its own tax base and that for the corporate income tax. The solidarity surcharge is 5.5 percent of the federal tax liability. The resulting composite CIT rate ranges from 33.1 to 40.9 percent.<sup>44</sup>

82. **The base is different for local and federal taxes.** The local tax base is obtained by making several adjustments to the federal tax base. The main adjustments include: (i) half of all long-term interest expenses are added back in, (ii) half of all rental and lease payments are added back in, unless they are subject to the local tax by the recipient, (iii) any foreign profits are deducted, and (iv) a measure related to the value of real estate is also deductible (as real estate is subject to a different local tax).

83. **There are many unincorporated firms whose tax treatment differs from incorporated ones.** While they are liable for local trade taxes, at the federal level they are assessed at the personal (PIT) rather than corporate income tax rate. Whether this leads to lower or higher effective taxes depends on the specific circumstances. In very general terms, firms with low profits are better off under the (progressive) PIT system, while those with large retained profits are better off under the CIT system.

84. **Taxation at the shareholder level follows a relief system.** Only half of the dividend earnings are included in the PIT base, to account for some of the tax already paid at the corporate level (to diminish double taxation). However, interest income is fully taxable under the PIT. Withholding taxes are preliminary and taxpayers whose marginal tax rate is higher than the preliminary assessed rate need to cover the difference, while those below are entitled

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<sup>43</sup> Formally, the law provides for a statutory rate (Steuermesszahl) of 5 percent, which is augmented by a municipal multiplier (Hebesatz) between 200 and 490 percent.

<sup>44</sup> This is calculated as  $\frac{l + f(1 + s)}{1 + l}$ , where  $l$ : local tax,  $f$ : federal tax and  $s$ : solidarity surcharge.

to a refund. Moreover, there is a personal allowance for capital income of €1,370 (€2,740 for couples) per year.<sup>45</sup>

85. **Thin-capitalization rules limit the amount of debt that can be held by owners or other related parties (Gesellschafter-Fremdfinanzierung).** Specifically, lending by each shareholder may not exceed 1.5 times the equity held, otherwise interest is not tax deductible. This measure aims at limiting profit shifting to lower-tax countries through excessive borrowing from other subsidiaries of the same multinational enterprise located in lower-tax countries.

86. **Putting the German CIT tax system into a comparative perspective is hampered by the complexity of tax laws.** With tax codes in most countries running to hundreds of pages, a full comparison of all rules determining the tax base (e.g. varying definitions of capital, assets, and liabilities; different rules for provisions, acquisition and production costs, depreciation rules and inventory valuation, etc.) is not practicable. Simple measures, such as the effective tax rates used below, do take tax base definitions into account, but necessarily abstract from most of the detailed rules.<sup>46</sup> Tax measures based on revenue data reflect all tax rules, but they are a function of company behavior and can be very misleading. Low tax countries for example, where it is profitable to locate businesses and report profits, would tend to have high tax revenues, and it would be wrong to interpret this as evidence of strict tax laws. An international comparison of a variety of tax rules for corporate income tax (CEPS 2005) does not suggest that Germany's corporate income tax system is an outlier in terms of definitions of its tax base. However, the study focused on ways to achieve tax harmonization within Europe and did not evaluate corporate tax systems. More generally, there is tremendous heterogeneity of tax rules across countries which reflects the absence of a common international best practice standard.

### C. Pressures Faced by the German Corporate Income Tax System

#### Tax competition

87. **As an open economy, Germany is subject to fiscal externalities, to the effect that other countries' tax choices affect German welfare, and vice-versa.** These externalities induce competition for the location of (i) productive activity,<sup>47</sup> (ii) reported profits, and (iii) corporate headquarters.

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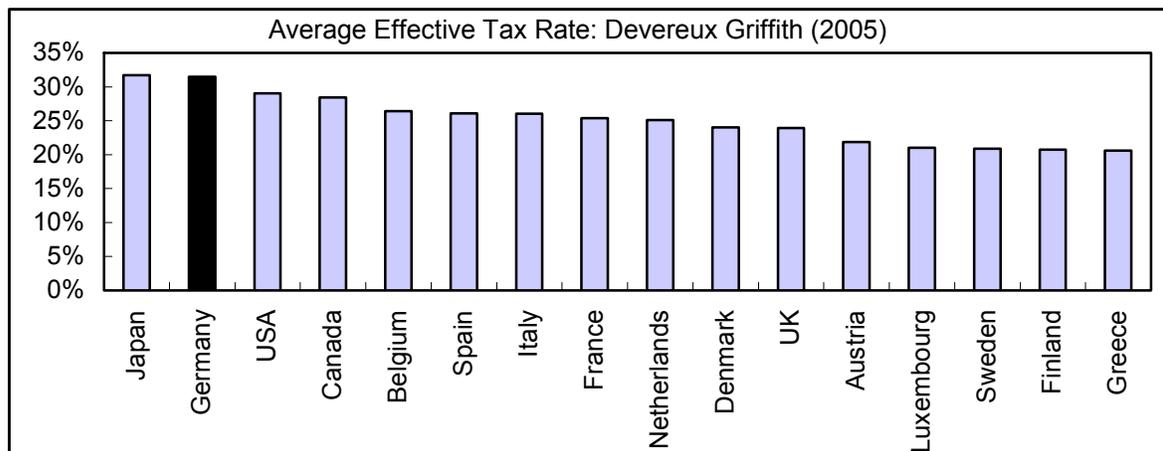
<sup>45</sup> To be reduced, as already legislated, to €750 (€1,500 for couples) from 2007.

<sup>46</sup> Reassuringly though, attempts to incorporate more tax rules, such as in the European Tax Analyzer model do not change rankings obtained by effective tax rates much. See Spengel and Wiegard (2005).

<sup>47</sup> For recent evidence on the effect of taxes on FDI into Germany see Becker et al. (2006).

- **Location decisions** by multinationals depend on a range of factors including average effective tax rates that are determined by a combination of the tax laws, investment allowances, treatment of losses, etc. In general, the more profitable an investment, the more important is the *statutory* tax rate, as this is the marginal rate applicable to an additional unit of profit, while most allowances relate to costs.
- **Profit reporting** depends mostly on *statutory* tax rates, which determine the tax saving from profit shifting. It is limited by rules against profit shifting, such as transfer pricing and/or thin-capitalization rules.
- **The location of corporate headquarters** depends mainly on the treatment of foreign-source income. Countries that exempt such income are generally more attractive than those that just provide a credit for foreign taxes.<sup>48</sup>

88. **Tax competition may have intensified with the EU accession of Eastern European countries that have low statutory tax rates.** In 2005, following the accession of 10 new member countries, top statutory tax rates averaged 30.0 percent in the old member states, and only 20.6 percent in the new member countries. At this time, some old member states cut their CIT tax rates, notably Austria, which also shares a land border with the new members states. If for the comparison definitions of tax bases are also taken into account, Germany's average effective tax rate remains high by international standards.



<sup>48</sup> Headquarters located in countries that provide a credit for foreign taxes face additional tax charges on profits originating in countries whose taxes are lower than in the residence country. In practice such residence taxes can often be avoided, for example by mixing profits from low and high tax foreign jurisdictions.

89. **The debate about the economic implications of international tax competition has not yet reached a consensus on where the process will end.**<sup>49</sup> There are however theoretical arguments that suggest that Germany, as a relatively large economy, could have somewhat higher tax rates than some of its neighbors.<sup>50</sup> Also, countries which are close to large markets (and/or have large internal markets) should be able to maintain a higher tax rate than smaller countries at the periphery because they can tax agglomeration rents (Baldwin and Krugman, 2003).

90. **The empirical literature shows that statutory tax rates have come down over the last three decades, tax bases have been broadened, and corporate income tax revenues have remained relatively stable.**<sup>51</sup> Explanations for these trends include competition for highly profitable activities or for reported profits,<sup>52</sup> but it could also be the result of an emerging consensus about the benefits of low statutory tax rates.<sup>53</sup>

91. **There are important links between the location of productive activity and profit shifting.** If profit shifting enables firms to avoid tax, then high tax rates are less distortionary in effective terms and may not displace much investment. Consequently, a revenue-neutral reform that reduces the scope for profit shifting, but cuts tax rates may not attract much additional investment, although reported taxable profits would increase.<sup>54</sup> To attract more investment, it would be necessary to cut *average* tax rates, at least for highly profitable, mobile firms.

## EU Implications

92. **The rules on tax competition and evasion are increasingly affected by judgments in the European Court of Justice.** As a result, it is more difficult to react to profit shifting, as tax laws cannot treat transactions with other member states (where profit shifting is possible) differently from domestic ones. Moreover there are revenue risks to the extent that existing laws may be found to be in breach of EU law.

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<sup>49</sup> This literature is surveyed in Wilson (1999), and Fuest et al. (2003).

<sup>50</sup> Because a large economy loses more revenue from lowering the tax rate on its existing capital stock, while gaining little new capital in proportion to the existing capital (Bucovetsky, 1991).

<sup>51</sup> This applies to advanced economies (Devereux, Griffith and Klemm, 2002). For developing countries there is some evidence that tax-to-GDP ratios have fallen somewhat as tax rates were reduced (Keen and Simone, 2004).

<sup>52</sup> For a theoretical treatment of the incentives to broaden tax bases and cut tax rates to attract reported profits see Haufler and Schjelderup (2000).

<sup>53</sup> There is a small empirical literature on how countries react to tax changes in other countries, surveyed in Brueckner (2003). At least for some taxes, there appears to be a behavioral response by tax authorities, rather than a common trend in tax policy. It is not possible though to distinguish between tax mimicking and a reaction based on resource flows.

<sup>54</sup> For instance, a lower tax rate may generate profits *in addition to* those that would not be shifted anymore.

## Domestic Issues

93. **Germany, like some other countries, allows tax competition between municipalities.**<sup>55</sup> Under the new proposal tax competition at the local level may intensify, as lower federal rates reduce the benefit of deductibility and hence increase the net impact of local taxes. While there is no consensus in the economic literature on whether tax competition is harmful, beneficial, or irrelevant,<sup>56</sup> it would be difficult to justify different judgments about the merits of domestic and international tax competition.

94. **Effective tax rates vary across different investments.** For instance, some types of assets benefit from favorable depreciation treatment. Also, debt-financed investment often incur lower taxes (common in most countries).

### D. Reform Proposals

95. **Based on the cornerstones for reform (Eckpunkte) published in July 2006 (Box 1) a working group was commissioned to prepare a final business tax reform plan.** After intensive public debate and negotiations the group reached an agreement in November 2006.

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<sup>55</sup> For empirical evidence see Buettner (2001).

<sup>56</sup> The following provides one example for each case: tax competition will be harmful if it reduces the taxing capacity of a welfare-maximizing government; it is irrelevant if there are other taxes that can be raised at the same cost instead; and it can be beneficial if governments are over-taxing for political economy reasons.

### Box.1 Main Features of the Original Proposal from July 2006

- The federal CIT and local trade tax is to be renamed to federal and local business tax.
- The composite tax rate is to be cut by about 10 percentage points to just below 30 percent. The distribution between the federal and local tax is yet to be determined.
- The bases of the local and federal tax are to be harmonized.
- The tax base is to be broadened to partly offset revenue losses. One element would be to limit the deductibility of some interest expenditures and leasing costs. Different mechanisms are to be considered: (i) the deductibility could be limited to a fixed percentage (as is already the case for the local tax), (ii) there could be a maximum tax deductibility or a minimum tax rule, or (iii) interest deductibility could be removed for loans from owners or related parties.<sup>57</sup> Other financing options are also to be considered, such as the taxation of a company's real estate or payroll.
- For the PIT, capital income (both dividends and interest) is to become subject to a final withholding tax. Proposed rates range from 25 to 30 percent.
- For businesses under the PIT rather than CIT, the rate for retained earnings may be reduced or tax deductible provisions for investment may be introduced.
- The inheritance tax is to be eliminated for heirs who continue running the family business, subject to certain conditions such as job preservation.
- The overall revenue cost of the reform should not exceed €5 billion (¼ percent of GDP) per year.

96. **Many of the key elements of the reform announced in July remain valid.** The proposal confirms the intention of a significant corporate income tax cut, which would be partly financed by tax base broadening. Targeted revenue losses are still intended to be limited to 5 billion euros (0.25 percent of GDP).

97. **The main changes in the November version compared to the July proposal relate to the tax base broadening measures and new or tighter rules for preventing profit shifting.**

- The government will introduce a revised rule for limiting the deductibility of interest expenses. Instead of including 50 percent of interest payments in the tax base, interest

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<sup>57</sup> The banking sector would be exempted from changes in interest deductibility.

will remain deductible subject to an upper limit linked either to profits or equity and coupled with a general exemption of 1 million euros per year. The law would also include an escape clause for special business circumstances.

- The tax base of the local trade tax and the corporate income tax will not be harmonized. The local trade tax will include 25 percent of interest and leasing expenditure rather than 50 percent of interest expenditure as now.
- The tax base will be broadened by eliminating accelerated depreciation rates.
- The income tax rate on retained earnings of businesses under the PIT will be lowered to 29 percent to approximately match the corporate income tax rate. This measure clarifies the planned tax relief for smaller enterprises.
- Several measures aimed at preventing profit shifting are considered: a tightening of rules to avoid shifting profitable functions of multinational corporations to low tax countries in line with international conventions on transfer pricing; new limits on the ability of recognizing losses in cases of mergers and acquisitions.

98. **These changes address important concerns raised in the public debate.** The original plan for a CIT reform included a controversial provision to limit interest deductibility for all corporations. The staff and others had raised concerns about too sweeping a restriction on interest deductibility as explained in the following subsection. The revised proposal would restrict interest deductibility to a limited number of cases.

99. **However, a final judgment on the reform needs to be postponed until a complete draft is released.** The implications of the new provisions cannot be easily quantified, because they are not final and because quantification would require detailed knowledge about the structure of corporations in Germany.

### **Implications of a General Limitation of Interest Deductibility**

100. **To judge the net effect of any reform on firms' incentives, it is useful to summarize the tax burden into a single measure, such as the cost of capital or an effective marginal or average tax rate.** To that end, some specific assumptions were made, including that (i) the federal rate will be cut in half, with local rates remaining unchanged and,<sup>58</sup> (ii) that the tax base will be broadened by including 50 percent of interest expenditures. The latter assumption reflects the most stringent version of deductibility limitations which were originally under consideration.

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<sup>58</sup> The 12.5 pp cut in the federal tax rate leads to a reduction in the cost of the solidarity surcharge and also reduces the deductibility benefit of the local tax; in net terms, the composite tax rate drops by 10 pp.

101. **An expansion of the tax base by discontinuing full interest deductibility would have been atypical but not without justification.** While unusual in practice, taxation of interest at the corporate level has a theoretical background and justification. A corporate tax with no deduction of interest is known as a Comprehensive Business Income Tax (CBIT), and was first suggested by the US Department of Treasury (1992), as a method to reduce the distortion that results from different tax treatment of equity versus debt financing (currently, in most countries, generating a preference for debt financing). It is one of the recurring proposals for fundamental tax reform, with the main alternative being an Allowance for Corporate Equity system, which instead permits firms to deduct notional interest costs on their equity stock.<sup>59</sup> The original reform would thus achieve a system with aspects of a CBIT, and thus reduce, but not eliminate the tax-preference for debt finance. Moreover, it could have potentially led to further difficulties: (i) if interest is only partially deductible, it would also be necessary to exempt part of interest received by other corporations to avoid cascading of taxes; (ii) it could create complications with double tax agreements, which were drafted on the assumption that interest is fully deductible from the federal tax; (iii) it would appear inconsistent with European initiatives to harmonize tax bases.

102. **For now, we abstract from the taxation at the personal level, such as taxes that are paid on dividends and interest.** This will allow to single out the effect on taxes at the corporate level. More importantly though, this is also the preferable way of analyzing the incentives faced by companies in an open economy whose shareholders and debtors may be nonresidents and, therefore, not liable to German personal income taxes.<sup>60</sup> Such flows may face taxes in the investor's home country, but those would be different depending on the country and can potentially be avoided. The assumption that the marginal shareholder faces no capital income taxation is made often in the literature.<sup>61</sup>

103. **The effective average tax rate (EATR) reflects the hypothetical impact on the tax base and rate in a single measure.** This concept was developed in Devereux and Griffith (2003) and is summarized in Appendix A. It is defined for different levels of expected economic profit ( $p$ ), allowing an impact analysis varying with the profitability of the business.

104. **The EATR encompasses the earlier concept of the effective marginal tax rate (EMTR) as a special case,** which is obtained when the expected after-tax profit is zero. As argued in Devereux and Griffith (1998), the EMTR may be informative about investment incentives at the margin, but will be less relevant for discrete investment decisions of multinationals which expect to earn economic profits. If personal income taxes are ignored,

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<sup>59</sup> The main references are Boadway and Bruce (1984) for the theoretical foundations, and Devereux and Freeman (1991) for a discussion of a practical proposal.

<sup>60</sup> Or liable only to a very limited extent if double taxation treaty provides for a withholding tax.

<sup>61</sup> This "tax irrelevance view" was first stated in Miller and Scholes (1978).

the EATR turns out to be the weighted average of the EMTR and the statutory tax rate. The higher the expected after-tax profit, the closer is the EATR to the statutory rate. If personal income taxes are included—which they are not for now—it will be necessary to distinguish between finance by retained earnings and new equity because dividends are taxed differently from capital gains. Moreover, the EATR will then converge towards an adjusted statutory tax rate that takes personal taxes into account.<sup>62</sup>

**105. Based on the EATR, analysis shows that limiting interest deductibility would have had the following effects:**

- **The tax burden for all equity-financed investments would have been reduced.** The cut in the statutory tax rate shifts the entire tax schedule down by about 10 percentage points (Figure 1), as equity-financed firms are not affected by the reduced interest deductibility. The pattern of the EATR remains largely unchanged, with the EATR rising as profitability rises.
- **For debt-financed investments the tax burden would have only declined for highly profitable firms.** The importance of the lower statutory tax rates, envisaged under the reforms, rises with firms' expected profitability. At the same time, the lower interest rate deductibility affects relatively less profitable firms the most. As a result, the effective tax schedule becomes flatter and the pre- and post-reform schedules cross (at 16 percent profitability), given the assumptions. In summary, firms relying on debt-finance would also experience an effective tax cut, if profits are sufficiently high.
- **The tax treatment of debt-financed firms would have remained more favorable than that of equity-financed firms.** The EATR schedule for debt-financed firms remains below the EATR schedule for equity-financed projects. While the preferential treatment for debt finance would be reduced, it would not be eliminated by this reform.

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<sup>62</sup> Even though more taxes will be included, tax rates can decrease, because the required rate of return for shareholders is reduced by the taxation of interest.

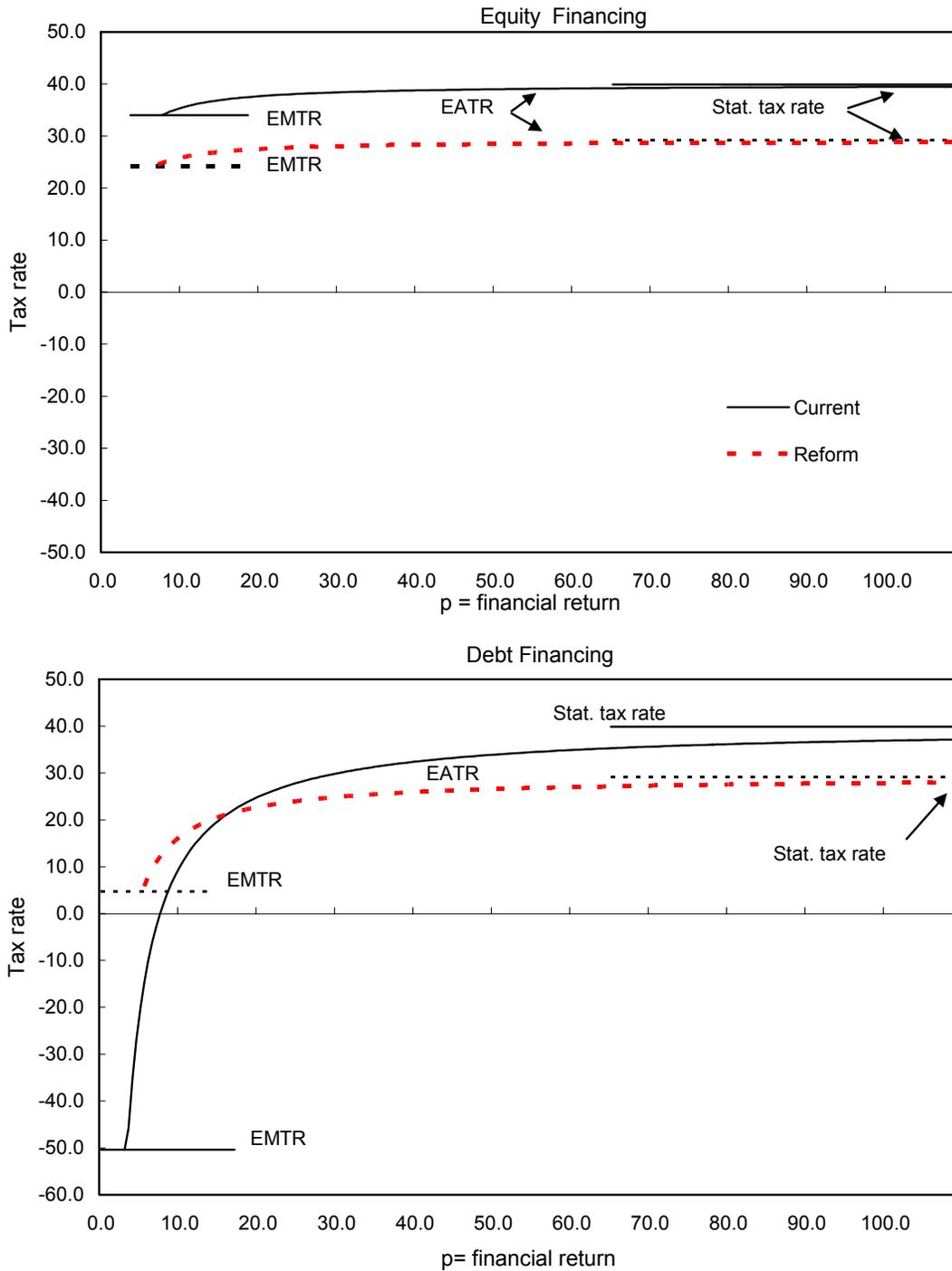
106. **Based on the EMTR, tax rates would have been lower under for equity-financed investments and higher for debt-financed investments.** Equity-financed investments benefit from the lower tax rate and are unaffected by the changes to taxation of interest. Debt-financed investments become less attractive because the rate cut has a smaller effect on a marginal project than the increased tax burden on interest.<sup>63</sup>

| EMTR and Cost of Capital with and without Limits on Interest Deductibility<br>(In percent) |        |       |                 |      |
|--|--------|-------|-----------------|------|
|  | EMTR   |       | Cost of capital |      |
|  | Equity | Debt  | Equity          | Debt |
| Without  | 34     | -50.4 | 7.6             | 3.3  |
| With   | 24.2   | 4.7   | 6.6             | 5.2  |

Source: Staff calculation.  
Notes: For definitions see Devereux and Griffith (2003). Assumptions discussed in the appendix.

<sup>63</sup> Indeed, it is worth noting that the EMTR under debt-finance is negative under the current tax legislation. This outcome results from combining interest deductibility and investment allowances. The former already would ensure that normal profits would not be taxed, as they would just cover the interest paid. Additionally allowing firms to deduct depreciation allowances implies that the tax system is subsidizing some investment (assuming the firm has taxable profits to apply the deductions). It would be sufficient to have some expectation of future profits, as tax losses can be carried forward, although they will be less valuable because of lost interest.

Figure 1. Germany: The Effective Average Tax Rate for Equity and Debt-Financing (In percent)



Source: Author's calculation. The statutory rate includes all layers of taxation (see appendix).

107. **A general limitation of interest deductibility may have been successful in reducing profit shifting, but it is less clear whether it would have attracted much new investment.** The reduction in profit shifting is achieved directly by broadening the tax base to include interest and, indirectly, by lowering the statutory tax rate, which reduces the benefit from profit shifting. For an investor using equity finance, or expecting high profits under debt-finance, Germany would have become more attractive to locate business activity. However, for an investor expecting low profits and planning to use debt finance, or used to avoiding most of the tax by profit shifting, the effective tax rate may have increased and could have potentially led to a shift of production abroad.

### Changes to the taxation of capital income

108. **The introduction of a final withholding tax on dividends and interest will increase dividend taxation but reduce interest taxation for a top-rate taxpayer.** This is because the proposed final withholding tax of 25 percent is lower than the current top rate of the PIT schedule, but still larger than half that rate, which is implied by the half-income system. Changes at the individual level, therefore, work in the opposite direction of those at the corporate level. Hence, when individual taxes are taken into account, changes in EATRs are much smaller across all sources of finance, although EMTRs increase quite significantly. It should be remembered though that the marginal providers of funds may not be liable to German PIT, so that it is questionable whether tax changes at the individual level affect firms' cost of capital.

|                              | Retained earnings |        | New equity |        | Debt    |        |
|------------------------------|-------------------|--------|------------|--------|---------|--------|
|                              | Current           | Reform | Current    | Reform | Current | Reform |
| EMTR,<br>p = cost of capital | -36.8             | -23.2  | 5.6        | 26.8   | -28.9   | 8.8    |
| EATR,<br>p = 30%             | 40.4              | 39.6   | 43.1       | 44.2   | 40.8    | 42     |
| EATR,<br>p = 60%             | 45.8              | 44.5   | 47.1       | 46.8   | 46      | 45.7   |
| EATR,<br>p = infinite        | 51.2              | 49.4   | 51.2       | 49.4   | 51.2    | 49.4   |

Source: Staff calculation.

## Changes affecting small businesses

109. **The tax reform for small companies which are under the PIT system generates some questions.** The possible reintroduction of a split rate system (i.e. a lower rate for retained earnings) is surprising given that, for firms under CIT, this was just abolished in the 2000 reform. More generally, it is not obvious why retained earnings should be preferred to other sources of finance, although it is true that this is also the case for large firms, if personal taxes are taken into account. If the aim is to allow small firms to share the benefit of lower tax rates on retained earnings, it would be worth reducing the cost of incorporation, instead.

110. **Reducing inheritance taxes on heirs who run the family business and avoid job losses also raises some questions.**<sup>64</sup> First, why should preference be given to heirs running companies over outside investors.<sup>65</sup> Also, why should the tax system create incentives to keep firms in sole ownership, rather than as public corporations with shares subject to inheritance tax. Moreover, the anticipated restriction on job losses may lead to inefficient staffing. Ensuring compliance with these provisions is, in any event, difficult, particularly if the restriction on job losses covers a long period. In sum, the proposed changes to the inheritance tax may increase distortions, rather than lower them.

### E. Further Reform Considerations

111. **International pressure cannot easily be dealt with at the national level.** If tax competition is considered harmful, than a supranational solution is required. The European Commission is proposing to harmonize corporate tax bases, which could later lead to a common consolidated tax base for the EU, to be allocated to member states by an apportionment formula.<sup>66</sup> The suggested reform should therefore be carefully reviewed to not preclude a possible later move towards tax harmonization.

112. **Increasing taxation of business real estate would shift some of the burden of taxation towards the owners of the immobile factor land.** It may therefore be an

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<sup>64</sup> This measure was approved by the cabinet on October 25, 2006.

<sup>65</sup> Recent empirical evidence suggests that poor management practices are prevalent among family-owned firms which pass management to their eldest son (Bloom and Van Reenen, 2006).

<sup>66</sup> The apportioned tax base could then be taxed in each country at the national tax rate. This would remove intra-EU profit shifting opportunities, but not necessarily tax competition, as companies could still move the factors of the apportionment formula to benefit from low tax rates. For an overview of the issues see inter alia Klemm (2001) or Weiner (2002). The policy was established in European Commission (2001) and its progress reviewed in European Commission (2006).

appropriate response to tax competition. Moreover, taxes on immovable property are comparatively low in Germany.<sup>67</sup>

113. **A competitive tax rate is a dynamic concept.** As long as other countries keep changing their tax rates, further reductions may be required to keep the same position. Other countries could decide to react to the German rate cut by adjusting their rates too.

114. **There remains ample scope for simplification.** The alignment of tax bases would remove one obstacle to replacing the local and federal tax and the solidarity surcharge with a single business tax—however, the problem of different local tax rates would remain. Yet, if tax competition across countries is a problem, why should it be considered an advantage within Germany?

115. **Despite these pressures for continued reform, the importance of a stable tax system should not be forgotten.** Long-term investments are discouraged by frequent changes to tax laws. This concern should not prevent reform, but calls for a well-designed reform and good implementation, so that the risk of the need for corrections is minimized.

## F. Conclusions

116. **The current corporate income tax system in Germany faces multiple pressures, and the case for reform is strong.** It is important that the reform is well-designed and implemented to reduce the risk of backtracking or the need to introduce quickly another round of reforms to correct them.

117. **The general direction of the reform is to broaden tax bases and cut tax rates, which is in line with recent reforms elsewhere.** It can be seen both as a response to profit shifting and competition for profitable investments and should help alleviate these pressures.

118. **The November proposal for limited interest deductibility appears less controversial than earlier plans.** The latest proposal is a moderation from initial proposals of broad limits on interest and leasing cost deductions, which could have induced unintended distortions in business investment decisions and may have been inconsistent with existing double tax agreements as well as European tax harmonization initiatives. The implications of the new provisions cannot be easily quantified, because some key provisions are still undecided and because quantification requires a detailed knowledge about the structure of corporations in Germany. Nonetheless, some general observation can be made. First, the high exemption rate would reduce the likelihood of creating a higher tax burden for less profitable,

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<sup>67</sup> According to OECD Revenue Statistics (2006), taxes on immoveable property raised 0.4 percent of GDP in Germany, compared to 0.9 percent for the OECD average, 0.8 percent for the EU15 average and 2.8 percent in the United States in 2004.

bank-financed enterprises compared to the previously proposed rule. Second, the new rule would generate less international tax complexities compared to earlier plans, since it is targeted at a small number of large enterprises and, depending on the final formulation, possibly more in line with standard thin capitalization rules.

119. **The suggested reform of the CIT is likely to achieve some, but not all its aims:**

- **Profit shifting** is likely to be reduced because the targeted taxation of interest will make it more difficult to shrink the tax base for large enterprises, while a lower statutory rate will reduce incentives to do so.
- **Harmonization.** Tax bases of local and federal business income tax will not be fully aligned.
- **Complexity.** The reform will not reduce the complexity of the business taxation system.

120. **New tax base broadening measures should help limit revenue losses.** The government plans to eliminate accelerated depreciation provisions, which are likely to exceed true economic depreciation.<sup>68</sup> This is a welcome step. However alternative tax base broadening measures, such as raising business property taxes, could also be considered to limit the risk of larger than expected revenue losses if profit shifting cannot be prevented to the intended extent. The suggested taxation of firms' real estate would be a particularly well-targeted response to tax competition, because of the shift towards an immobile factor.

121. **The reform proposals for small businesses raises some questions.** The abolition of inheritance tax for small businesses is difficult to justify.

122. **Even if a well-designed reform takes place, further reforms may be necessary depending on developments in other countries.**

123. **A final judgment on the reform needs to be postponed until a complete draft is released.** The revised proposal from November 2007 by the working group still requires cabinet approval. Further decisions on details need to be taken to translate the reforms into draft legislation. Under current plans legislative changes will be submitted to parliament in early or mid 2007. Full implementation is planned for January 2008.

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<sup>68</sup> Currently moveable investment goods can be depreciated at double rates using the declining balance method, until this leads to lower depreciation than the straight-line rate.

### Appendix A. Effective Average Tax Rate

The effective tax rates were calculated according to the methodology developed by Devereux and Griffith (2003). The effective average tax rate, or EATR is defined as:

$$\text{EATR} = \frac{R^* - R}{p/(1+r)},$$

where  $R^*$  is the rent earned without tax,  $R$  is post tax rent (defined

below),  $p$  is the real financial return and  $r$  is the real interest rate. For an investment, which just breaks even after tax (i.e.  $R = 0$ ), the EATR is equal to the effective marginal tax rate, EMTR.

The rent of a project can be modeled as a perturbation in the value of the firm, defined as

$$R = \sum_{s=0}^{\infty} \gamma \frac{dD_{t+s} - dN_{t+s}}{(1+\rho)^s},$$

where  $D_{t+s}$  are dividends,  $N_{t+s}$  are new equity issues at time  $t+s$ ;  $\gamma$  is

a term measuring the discrimination between new equity and distributions, defined as  $\gamma = (1-t^d)/(1-z)$ , where  $t^d$  is the tax rate on distributions and  $z$  is capital gains tax rate; and  $\rho$  is the discount rate, defined as  $(1-t^i)i$ , where  $i$  is the nominal interest rate and  $t^i$  is the tax rate on interest.

Devereux and Griffith use this framework to analyze the tax consequences of a one period perturbation in the capital stock, financed by retained earnings, debt or new equity. This investment is modeled as an increase in capital stock by 1, yielding a real financial return of  $p$ , and being subject to real economic depreciation of  $\delta$ . The tax system provides an investment allowance of  $\phi$  and taxes profits at rate  $\tau$ . For convenience, the above equation is solved for retained earnings first, yielding a level of rent  $R^{RE}$ . The cases of finance by new equity and debt are then dealt with by additional financial effects for new equity  $F^{NE}$  and debt  $F^D$ , which are calculated as:  $F^{NE} = \frac{-\rho(1-\gamma)}{1+\rho}(1-\phi\tau)$  and  $F^D = \frac{\gamma(1-\phi\tau)}{1+\rho}(\rho - i(1-\tau))$ .

This paper extends the Devereux and Griffith (2003) framework to allow the calculation of effective tax rates under limited deductibility of interest. This is achieved by changing the

financial effect of debt finance to  $F^D = \frac{\gamma(1-\phi\tau)}{1+\rho} \left( \rho - i \left( 1 - \frac{1}{2}\tau \right) \right)$ .

The following specific assumptions were made to allow the calculation of tax rates:

Economic depreciation ( $\delta$ ): 12.25 percent

Writing down allowances ( $\phi$ ): 20 percent per year declining-balance for four years, then 10 percent per year straight line until fully written down.

Local tax rate: 22.5 percent (i.e. ‘‘Hebesatz’’ of 450 percent).

Inflation ( $\pi$ ): 2 percent.

Real interest rate ( $r$ ): 5 percent (including risk premium).

## References

- Baldwin, Richard and Paul Krugman (2003) *Agglomeration, Integration and Tax Harmonisation*, *European Economic Review* 48, pp. 1-23.
- Becker, Johannes, Clemens Fuest and Thomas Hemmelgarn (2006) *Corporate Tax Reform and Foreign Direct Investment – Evidence from Firm-Level Data*, CESifo Working Paper 1722.
- Bloom, Nicholas and John Van Reenen (2006) *Measuring and Explaining Management Practices Across Firms and Countries*, NBER Working Paper W12216.
- Boadway, Robin and Neil Bruce (1984) *A General Proposition on the Design of a Neutral Business Tax*, *Journal of Public Economics* 58, pp. 57-91.
- Brueckner (2003) *Strategic Interaction among Governments: an Overview of Empirical Studies*, *International Regional Science Review* 26(2), pp. 175-188.
- Bucovetsky, Sam (1991) *Asymmetric Tax Competition*, *Journal of Urban Economics* 30, pp. 167-181.
- Buettner, Thiess (2001) *Local Business Taxation and Competition for Capital: the Choice of the Tax Rate*, *Regional Science and Urban Economics* 31, pp. 215-245.
- CEPS (2005) *Achieving a Common Consolidated Corporate Tax Base in the EU*, Report of a CEPS Task Force, Brussels: Centre for European Policy Studies.
- Devereux, Michael P. and Harold Freeman (1991) *A General Neutral Profits Tax*, *Fiscal Studies* 11(1), pp.1-15.
- Devereux, Michael P. and Rachel Griffith (2003) *Evaluating Tax Policy for Location Decisions*, *International Tax and Public Finance* 10, pp. 107-126.
- Devereux, Michael P., Rachel Griffith and Alexander Klemm (2002) *Corporate Income Tax Reforms and International Tax Competition*, *Economic Policy* 17(35), pp. 451-495.
- European Commission (2001) *Towards an Internal Market Without Tax Obstacles. A Strategy for Providing Companies with a Consolidated Corporate Tax Base for their EU-Wide Activities*, Communication COM (2001) 582.
- European Commission (2006) *Implementing the Community Lisbon Programme: Progress to Date and Next Steps Towards a Common Consolidated Corporate Tax Base*, (CCCTB) Report COM (2006) 157.

- Fuest, Clemens, Bernd Huber and Jack Mintz (2003) *Capital Mobility and Tax Competition: a Survey*, CESifo Working Paper No. 956.
- Haufler and Schjelderup (2000) *Corporate Tax Systems and Cross Country Profits Shifting*, Oxford Economic Papers 52, pp. 306-325.
- Keen, Michael (2002) *The German Tax Reform of 2000*, International Tax and Public Finance 9, pp. 603-621.
- Keen, Michael and Alejandro Simone (2004) *Does International Tax Competition Harm Developing Countries More Than Developed?*, Tax Notes International, pp. 1317-1325.
- Klemm, Alexander (2001) *Economic Review of Formulary Methods in EU Corporate Tax Reform*, in: CEPS, *EU Corporate Tax Reform*, Report of a CEPS Task Force, Centre for European Policy Studies, Brussels, pp. 30-54.
- Miller, M. and M. Scholes (1978) *Dividends and Taxes*, Journal of Financial Economics 6, pp. 333-364.
- Spengel, C. and W. Wiegard (2005) *Deutschland ist ein Hochsteuerland für Unternehmen*, Der Betrieb 10, pp. 516-520.
- US Department of Treasury (1992) *Integration of the Individual and Corporate Tax Systems: Taxing Business Income Once*, Washington DC: US Government Printing Office.
- Weiner, Joann (2002) *Formulary Apportionment and the Future of Company Taxation in the European Union*, CESifo Forum 1/2002, pp. 10-20.
- Wilson, John D. (1999) *Theories of Tax Competition*, National Tax Journal 52, 269-304.

#### IV. LANDESBANKEN: A MEASURE OF THE COSTS FOR TAXPAYERS<sup>69</sup>

*The study examines the rationale for public ownership of the Landesbanken (LBs) by estimating the opportunity costs of the ownership to the taxpayer and assessing the corresponding benefits. The study finds that the LBs have been providing poor financial returns, resulting in average opportunity costs to taxpayers equivalent to about ¼ percent of GDP annually since early 1990s. If returns could be increased to the level observed in comparator banks, the public sector net worth would improve by 10 percent of GDP. These findings strengthen the case for managing more efficiently the assets on the public sector balance sheet, and accelerating public disengagement from banking.*

##### A. Introduction

124. **Landesbanken (LBs) have been an important part of the German banking system and the public sector.** LBs are among the largest financial institutions in Germany, accounting for about 20 percent of total assets of the banking system in 2005. At the same time, the LB's net worth, about €47 billion, accounts for some 9 percent of general government assets. It is therefore relevant to analyze whether the LBs fulfill a task that requires public ownership, and whether taxpayers get an appropriate return on their ownership of these banks.<sup>70</sup>

125. **The main finding of this paper is that taxpayers' ownership of LBs has resulted in substantial opportunity costs, and in some cases direct out-of-pocket outlays.** Arguments for public ownership of the LBs are hard to come by. It is difficult to demonstrate the market failure that LBs address, and how they address it. At the same time, they create potential for distortions, including those arising from (admittedly waning) arbitrage opportunities, and from conflicting roles of the government as owner and supervisor. From a strictly financial viewpoint, the LBs have not been providing satisfactory returns to their owners. It would have been more efficient for a taxpayer to be able to extract the invested funds from LBs and place them elsewhere. Concerns about inefficiencies are in line with previous analysis by Fund staff, and strengthen the case for: (i) managing more efficiently

<sup>69</sup> Prepared by Martin Čihák (MCM) and Bob Traa (EUR).

<sup>70</sup> Landesbanken are owned by the Länder government(s), Sparkassen (which are in turn owned by municipalities) or their associations, and in some cases other public sector bodies. The shares of these owners differ among LBs. To simplify the discussion, we refer to the "taxpayer" as the ultimate owner of the LBs.

the assets on the public sector balance sheet; and (ii) accelerating disengagement of the government from commercial banking.

126. **The structure of the paper is as follows.** Section B provides a short review of the reasons for the existence of the LBs, and the arguments for and against their public sector ownership. Section C describes recent changes in the position and strategy of LBs. Section D analyzes the LBs' cash flow with the public sector, and compares their performance with private banks to determine if the tax payers get an appropriate return on their investment. Section E concludes.

### **B. Why Landesbanken?**

127. **The traditional mandate of the LBs has been to foster the economic development of their regions.** In this context, LBs were expected to finance state-owned companies and provide development financing. They were expected to subsidize local public goods, such as recreational facilities and art festivals. Profitability has not been a principal aim.

128. **Over time, however, the focus of LBs has shifted.** Since the 1960s, LBs have become increasingly involved in large-scale commercial lending and foreign business, to generate earnings as their main source for new funding. For some LBs, investment banking overseas thus became a major component of their activities, even though this implied substantial new risks and went well beyond fostering their own region's development. At present, LB activities span a broad spectrum, including refinancing the local savings banks (Sparkassen), holding excess liquidity reserves of affiliated Sparkassen, acting as clearing houses, granting loans exceeding the financial capacity of individual Sparkassen, financing foreign trade and dealing in foreign exchange, providing advice and technical help including investment management, leasing, factoring and data processing.

129. **An important part of LB's business has been based on arbitrage opportunities derived from state guarantees.** LBs have long benefited from state guarantees, which are now being phased out. In case of financial difficulties the LBs' owners would have been legally required to settle the claims of all creditors. The LBs' guarantors were directly or indirectly the Länder, and the Federal Republic of Germany, all rated 'AAA'. These guarantees created a competitive distortion, allowing LBs to borrow at low rates in international markets and use this financing for arbitrage opportunities. In 2001, the European Commission (EC) ruled the state guarantees incompatible with EU competition law. The German government and the EC agreed to abolish the guarantees. However, obligations incurred up to July 18, 2005 and maturing before end-2015, were grandfathered.

130. **It is unclear what market failure LBs attempt to remedy.**<sup>71</sup> Various arguments have been made for public sector involvement in banking, but most have little relevance in the advanced economy of Germany today. The main arguments have been that: (i) public intervention can help to ensure broad access to financial services; and (ii) public sector banks can undertake projects with higher public than private rates of return. These arguments are weak when related to LBs.

131. **Better access to financial services cannot be a justification for the existence of LBs, because they compete with private banks in the wholesale market.** The 2006 Article IV consultation mission has investigated the hypothesis that LBs provide important services to Sparkassen that would otherwise not be available, say from commercial banks. However, it found no evidence to support this hypothesis. Landesbanken representatives noted that the LB services are available to Sparkassen on commercial terms. Sparkassen representatives stated that when Sparkassen buy products from LBs, they generally do so because of the long-standing business relationship with their regional LB; familiarity with and cooperation in developing suitable products, or other attractive features—they agreed that such services were also available from commercial banks or in the capital market. Relatedly, it has been argued that banking is an increasing returns to scale activity—and therefore intrinsically monopolistic, which justifies public ownership of a network of branches. However, the literature overwhelmingly finds that the increasing returns to scale run out at a size that falls well short from the point where there would be a danger of market dominance.<sup>72</sup>

132. **There is also little evidence that LBs have a substantial engagement in projects with higher public than private rates of return.** Even if LBs engage in projects with higher public than private rates of return, this would risk duplication because that task is already performed by the national and regional development banks.

133. **LBs lend little to companies and what they lend is mostly to those that have access to capital markets.** Only about 30 percent of lending by LBs is devoted to domestic nonfinancial companies and private individuals (Table 1).<sup>73</sup> Indeed, in recent years, LBs have been gradually withdrawing from lending business (their loan-to-asset ratios have been declining by about  $\frac{1}{3}$  percentage point per annum). Some Länder governments even have explicitly separated the private and public business of their LBs, which has improved transparency.

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<sup>71</sup> The remainder of this subsection draws substantially on Chapter V of Brunner et al. (2004).

<sup>72</sup> E.g., Ferestieri (1993) or Group of Ten (2001).

<sup>73</sup> The figures on credit to foreign companies are from the Bundesverband Öffentlicher Banken Deutschlands, [http://www.voeb.de/content\\_frame/downloads/kennzahl.pdf](http://www.voeb.de/content_frame/downloads/kennzahl.pdf).

134. **A key argument against public ownership in LBs is that it distorts the banking market, creating inefficiencies in the provision of services that outweigh the benefits from remedying market failures.**<sup>74</sup> Public sector banks may not have the same incentive to maximize profits as other banks, because they do not experience the same pressure from capital markets. Accordingly, their management may focus less on efficiency gains or innovation. Publicly-owned institutions may also need to address political objectives, which may or may not be welfare maximizing. This argument is made forcefully by La Porta and others (2002). Similar points have been made by Sinn (1999) with respect to the publicly-owned LBs in Germany.<sup>75</sup> Notwithstanding the phase-out of state guarantees, public ownership will continue to provide LBs with an advantage over privately-owned counterparts with respect to their ratings, as explicitly acknowledged by rating agencies. Additionally, there is the continuing possibility of conflict of interest as long as the public sector is both owner and supervisor of the banks. The problem is mitigated by the relatively high supervisory independence<sup>76</sup> and by the fact that LBs are owned by individual Länder, while banking supervision is run at a federal level. However, these mitigating factors only make the issues smaller; they do not disappear.

135. **Compared with other advanced economies, the share of publicly-owned banks in Germany is high, and presence of wholesale-oriented publicly-owned banks is unusual.** In the early-1980s, a number of EU countries—Austria, France, and Italy—had a larger public sector banking system than Germany. However, following divestment programs, this is no longer the case. And, most importantly, the reviewed countries no longer have publicly-owned wholesale banks such as LBs.

### C. Landesbanken: Recent Developments

136. **The LBs are in transition following the removal of their state guarantees.** Although July 19, 2005 was the date on which the provision of new guarantees was abolished, the transition process is expected to continue for some time. All LBs are well prepared in terms of liquidity, because they placed large amounts of debt just before the guarantees expired. They are less advanced in achieving a new appropriate business strategy. Margins on several activities of the LBs are shrinking.

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<sup>74</sup> See, e.g., D’Souza and Megginson (1999) or Megginson and Netter (1999).

<sup>75</sup> Sinn (1999) argues that “[T]he political influence exerted on the loans business of the state banks is very great. Even if this influence is in many cases exercised in the interest of higher level regional policy, it nevertheless escapes objective control in terms of economic profitability. The way is opened for rent seeking by interest groups which concentrate their efforts in the political market rather than the economic market.”

<sup>76</sup> The Financial Sector Assessment Program found supervisory independence relatively high, even though it raised some issues about the potential for government interference in day-to-day supervision.

137. **No two LBs follow the same strategy, the differences reflecting the fact that LBs are governed by Länder-specific law.** In general, LBs have three principal strategic options to adapt: (i) linking up with their regional Sparkassen; (ii) merging with other LBs; or (iii) allowing third-party investors to become new owners. These options are not mutually exclusive and it may well be that, over time, a combination of two or more will be followed in some cases.

- *Vertical integration* with Sparkassen combines the LBs' wholesale product expertise with the retail client base of the Sparkassen. It allows the centralization of risk management and production while sustaining decentralized distribution capabilities. Some LBs (LBBW, LB Berlin, and Nord LB) already comprise significant retail activities, and others (e.g., Helaba, and Sachsen LB) seek a closer association with their local Sparkassen in various forms. Helaba also has a partial direct access to the retail market through an internet banking subsidiary.
- *Horizontal mergers* among LBs increase their size, but only by combining their wholesale operations. Success of this option depends on cost savings, including through layoffs, which beyond a point would meet with political resistance. In addition, simply creating fewer but larger LBs does not by itself improve the business model. So far, the consolidation among LBs has been slow.
- As regards the *entry of third-party investors*, some Länder have carved out the business of LBs that is not in the public interest, phasing out unprofitable operations, and taken steps toward transforming LBs into joint stock corporations operating under private law (e.g., the Bayerische LB, HSH Nordbank, and WestLB). Steps along these lines would widen the scope for divesting entirely to the private sector at some stage. Such steps may also meet political resistance, even though recently there have been signals that there is more acceptance of this option. In particular, WestLB has sold its 27 per cent stake in HSH Nordbank to foreign private equity groups.

138. **Länder-specific laws governing Sparkassen and LBs can present a burden for efficient restructuring.** First, some forms of consolidation within the public sector banking system would require changes to these laws—e.g., mergers of LBs or of Sparkassen that belong to different Länder. Second, by virtue of these laws the LBs and Sparkassen are public-law institutions and therefore it is hard for them to restructure by involving the private sector (seeking private capital). This pertains to full privatization or placing minority parts of voting stock with the private sector, including in the stock market, so as to obtain market signals that could guide the restructuring efforts.

139. **In addition, there are several other hurdles to attract private capital into the LBs.** In order to be recognized as one economic unit, various regional associations have set

up liquidity reserve funds or are in the process of doing so (Hesse/Thuringia, North Rhine-Westphalia, Lower Saxony, and Bavaria). These funds connect the Sparkassen and LB of a specific region by granting the right to claim indemnification from the fund should one of them not be able to meet its obligations. They come on top of the existing nationwide discretionary mutual support scheme of the German Savings Banks and Giro Association. These institutional protection schemes link Sparkassen and LBs, and might discourage private investment, because any investor would be potentially liable to help meet liabilities towards all creditors (not just toward depositors) of any Sparkasse or Landesbank. However, some reform of the institutional protection is already under discussion, including the introduction of risk-adjusted premiums and maximum burden limits for a single institution. Lastly, the role of public officials on the supervisory boards of Sparkassen and LBs might deter private capital because of fears that efficient credit allocation and risk-weighted portfolio optimization might not be the overriding objective of these boards.

#### **D. Landesbanken: Public Finance Implications**

140. **The purpose of this section is to analyze what role the LBs play in the public sector finances.** In particular, we look at the risks and potential losses that might have to be covered by public budgets, and we compare LBs with private banks to establish whether the taxpayers get a good financial return on their (compulsory) investment in public banks.

141. **The cash flows to LBs have been an important drain on public sector resources.** The LBs do not have profit as the key objective, and they are not a significant source of revenue (dividends) for their owners. Even in some notable cases, the Länder governments have had to inject additional money, either directly (through equity participations or silent partnerships), or indirectly (e.g., through other publicly-owned banks). Capitalization of many LBs includes a substantial amount of perpetual silent partnership certificates (stille Einlagen) provided by their owners and accepted as Tier 1 capital by German regulators (Table 2). Perhaps the biggest example of state support in recent years is WestLB, which made large losses in 2002–04 and needed to replenish its capital base. It received €2.8 billion in the form of perpetual silent participations from the state and the local savings association (i.e. from other publicly-owned banks). Other LBs also received capital injections from the public sector. In 2004, two other LBs received a total of €400 million in perpetual silent participations via the transfer of assets of the property development agency of the state of Rhineland-Palatinate. There are other examples of capital injections in various forms since the early 1990s, illustrated also by the European Commission (Box 1) and by the case of Bankgesellschaft Berlin/LB Berlin (Box 2). An overview of the injections is provided in Table 3.

142. **In addition to the direct out-of-pocket outlays, taxpayers' ownership of LBs involves substantial opportunity costs.** Profitability indicators in LBs have been low in a

cross-country comparison, and even in a comparison with other German banks, despite cheaper funding. In the last decade, the average after-tax return on equity (ROE) was 2.3 percent, well below the median after-tax ROE of 14 percent for the 100 largest European banks in the same period (Figure 1).<sup>77</sup> This difference of ROEs means lost returns equivalent to 0.26 percent of GDP (0.51 percent of tax revenues) per year.

143. **The opportunity costs are considerable, when accumulated over time.** Over a decade, the opportunity costs translate into 245 percent of the initial equity. In other words, if the taxpayer were able to reallocate her current investment in LBs into ownership shares in benchmark comparator banks, a decade later she would additionally earn almost 2.5 times the initial investment. On the current equity stake of about €47 billion, this corresponds to 115 billion of today's euros, which is about 5.4 percent of 2005 GDP (9.2 percent of current annual tax revenues). Or, to put the numbers in a different perspective, the annual improvement in primary balance of about 0.26 percent of GDP would translate into an improvement of the public sector net worth of about 10 percent of GDP (equivalent to a decline in the public debt ratio of 19 percent of GDP by 2050). These are substantial numbers, considering that LBs are just one of many asset classes owned by taxpayers.<sup>78</sup>

144. **The taxpayers' costs vary substantially across LBs.** Figure 2 illustrates the two concepts of costs in the case of three banks: a large (West LB), medium-sized (NORD/LB), and small LB (LB Rheinland-Pfalz).<sup>79</sup> The three LBs also illustrate three different profiles of performance: West LB incurred substantial losses, LB Rheinland-Pfalz was profitable, even though with small returns, and NORD/LB was in-between, with some years of small profits and some years of relatively small losses.

145. **The average opportunity costs are relatively robust with respect to assumptions.** In particular, the above calculations take 14 percent after-tax ROE as a comparator, which is a conservative benchmark given the narrow definition of the "peer group" (comparable banks in other EU-15 countries). Banks in some other countries have higher ROEs (and risk-adjusted ROEs); also, several LBs have announced plans aiming for

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<sup>77</sup> We focus here on ROEs, because it is better than return on assets (ROA) in capturing returns on the taxpayers' resources locked in the LBs. Moreover, using ROA would be biased against wholesale oriented banks (such as LBs), operating with low margins and high volumes of assets. Table 8 provides more details about soundness indicators of LBs and other comparative banks in 1998–2004.

<sup>78</sup> These calculations of long-term impact on fiscal accounts represent the impact of higher returns on public sector assets (LBs) and net worth sustained through 2050 and discounted with the end-period discount factor.

<sup>79</sup> Table 4 illustrates the clustering of LBs into large, medium-sized, and small, and provides additional information on the environment in which the LBs operate.

ROEs of 15 percent or more.<sup>80</sup> As a rule of thumb, a 1 percentage point change in the benchmark corresponds to 0.02 percentage point difference in the opportunity cost as percentage of GDP. Table 5 illustrates how the estimate of the opportunity cost and of the related impact on intertemporal net worth and public sector debt would change, if the key parameters of the above calculations changed, namely if the LBs' ROE were different and if the benchmark ROE were different.

### **Box 1. Government Support to Landesbanken: Assessments by European Commission**

The European Commission (EC) analyzes investments by public bodies in banks to assess whether capital was made available on terms that a private investor would find acceptable when operating under normal market-economy conditions (the market economy investor principle).

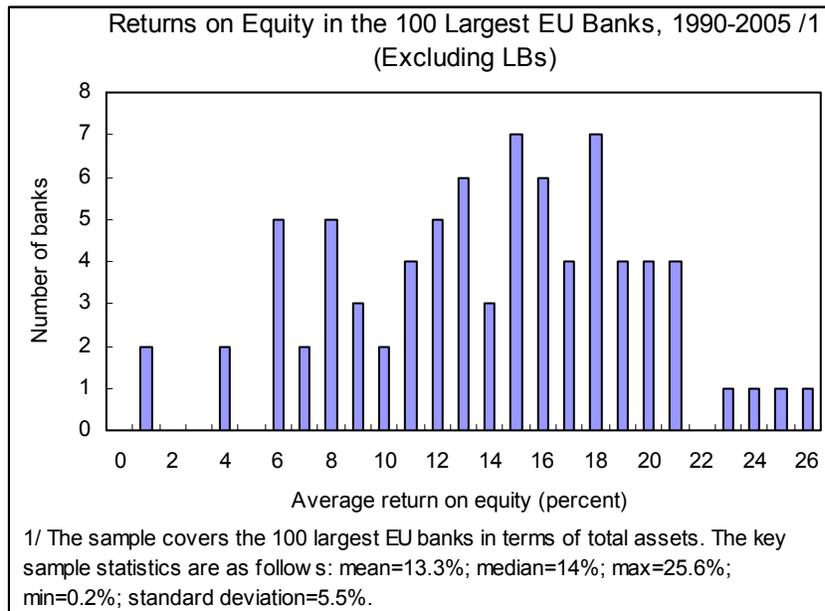
In October 2004, the EC required Germany to recover more than €3 billion, plus interest, from WestLB and six other public banks. Earlier, at the beginning of the 1990s, the introduction of the Own Funds and Solvency Directives had required German banks to take up large amounts of new capital in order to maintain their level of activities. In LBs, that capital was provided by the Länder by way of a transfer of public housing and other assets. The financial transfers triggered a complaint by the Association of German Private Banks, as they were under the same obligation to increase their solvency ratios, without being able to rely on public support.

In the event, the EC found that the remuneration agreed by the Länder in return for the asset transfer (less than 1 percent) did not correspond to the normal return on investment that a private investor would have expected (estimated by EC generally at 6–7 percent). The EC has concluded that the reduced remuneration constituted state aid within the meaning of Article 87(1) of the EU Treaty and required Germany to take measures to recover the difference from the LBs. The complaint concerned seven LBs (in parenthesis is the date when the capital transfer took place and the amount to be recovered from each LB, in € million): WestLB (1991; 979), LB Berlin (1993; 810), Norddeutsche LB (1991; 472), Bayern LB (1994 and 1995; 260), Hamburgische LB (1993; 90), LB Schleswig-Holstein (1991; 432) and LB Hessen-Thüringen (1998; 6).

More recently, in September 2005, the EC endorsed €1.2 billion capital increases for Landesbanken HSH Nordbank and Bayern LB and transfer of public fund as silent participation in Landesbank Hessen-Thüringen. The EC found that the expected return on the investments was in conformity with what a private investor would accept and therefore did not constitute state aid.

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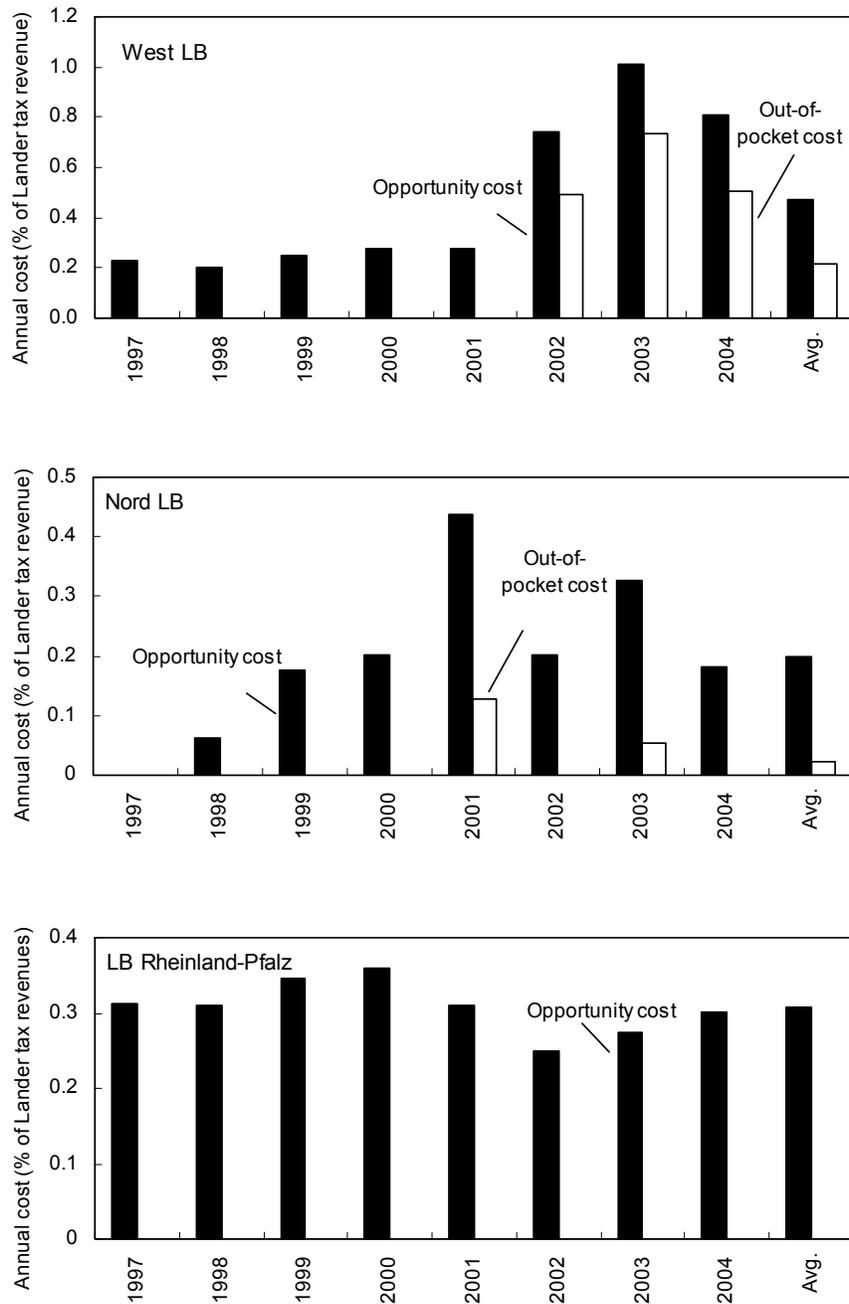
<sup>80</sup> Restricting the peer group to other banks in Germany would be inconsistent with the logic to assess the taxpayers' investment from a purely financial perspective. Indeed, one could take an even broader view, including also investments outside the banking sector (as any investor would do). Broadening the universe of investments beyond banks would increase the opportunity cost estimates.



### **Box 2. Case Study: LB Berlin**

LB Berlin serves as a cautionary tale about the pitfalls of public ownership. LB Berlin was a part of Bankgesellschaft Berlin (BGB), a joint stock corporation governed by private law, and established in 1994 by the Land Berlin to consolidate its bank holdings, including the LB Berlin, the Berliner Sparkasse (a savings bank with over 40 percent share of Berlin's retail market, owned by LB Berlin), the commercial bank Berliner Bank; and the mortgage bank Berlin Hypo. A combination of poor management, political ties, and the bursting of the post-unification real estate bubble in Berlin, caused major losses at the Berliner Bank. The Land Berlin had to inject funds totaling €1.8 billion—some 2.3 percent of Berlin GDP—and guarantee potential risk from real estate fund business until 2031. The guarantees on Bankgesellschaft Berlin's property funds may cost a further €5–7 billion over the next two decades.

Figure 1. Public Sector Costs Associated with Selected LBs 1/



1/ The out-of-pocket costs include only capital injections needed to bring LBs in compliance with regulatory standards. They do not include other capital injections, aimed at increasing capital base for further expansion.

The opportunity cost compare the returns on LB investment with an alternative investment in the 100 largest banks in EU returning 14 percent on equity.

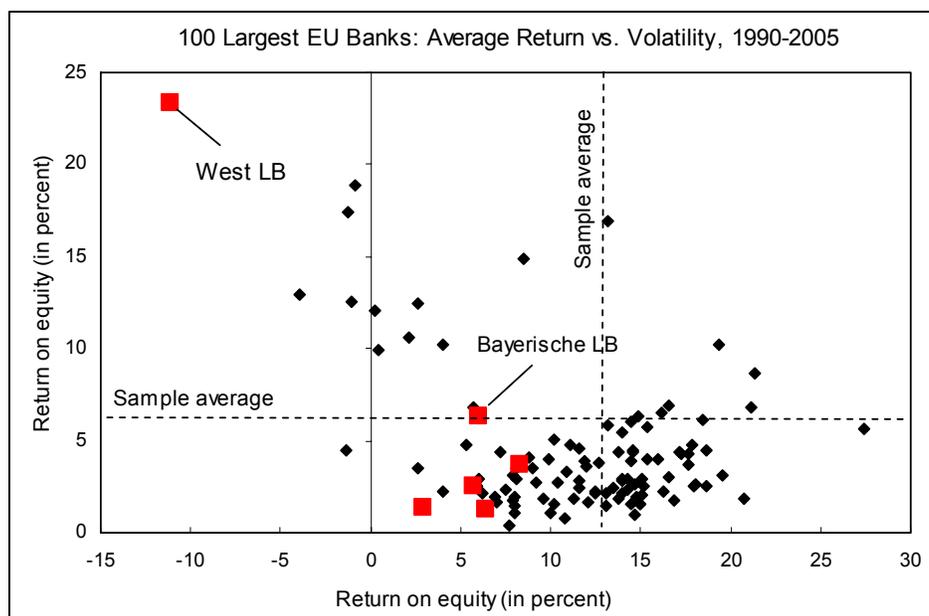
146. **The costs of LB ownership for public finances are increasing.** The existing empirical studies on bank efficiency have suggested that state-owned banks, including LBs, were as efficient as private banks; however, this result reflected the cheap funding, which is being phased out.<sup>81</sup> Without the cheap funding, the performance of LBs will be substantially worse.<sup>82</sup> Because of their triple-A rating, the LBs have paid about 25–40 basis points less on debt financing in recent years relative to large commercial banks. Since these liabilities comprise about 30 percent of their balance sheet, the interest rate margin and the ROA could fall by 0.08–0.12 percentage points, and the ROE could decline by 0.9–1.4 percentage points, which means that the currently estimated average annual opportunity cost of keeping public resources in LBs could increase from 0.26 percent of GDP to 0.29 percent of GDP (from 0.51 to 0.57 percent of tax revenues). This calculation assumes that LB’s ratings remain in the single A range assigned by Fitch Ratings (Table 4). This assumption may of course not materialize if the LBs are able to restructure and improve their performance. A staff analysis of the historical relationship between ratings and measures of bank profitability suggests that the LBs may need to raise operating income by at least 20 percent or, alternatively, lower costs by at least 30 percent to remain viable after 2015.

147. **The lower average returns in LBs are not compensated by lower volatility.** Higher returns are generally associated with higher volatility; lower returns are typically associated with lower volatility. LBs clearly offer much lower returns than most other banks, but whether they offer lower volatility of returns is unclear at best. Most of the LBs indeed have lower volatility in ROEs than most other banks; the key exception is West LB with major losses and high volatility of ROEs (Figure 3). Taken together, the LBs do not appear to have substantially lower volatility of ROEs than other banks, and with West LB included, their volatility of ROEs is actually higher than for an average bank (Table 6). The higher overall volatility of returns reflects the wholesale nature of LBs and their substantial single-counterparty exposures.

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<sup>81</sup> For example, Altunbas, Evans, and Molyneux (2001), using a range of techniques to measure cost and profit efficiency in 1,195 German banks, found little evidence that private banks are more efficient than public-sector banks; they recognized, however, that public banks had a cost and profit advantage. Similarly, Hauner (2004), using Data Envelopment Analysis of 97 large German and Austrian banks in 1995–1999 finds that state-owned banks are more efficient than private banks, but notes that this finding is likely due to cheaper funds.

<sup>82</sup> In the year since the abolition of the guarantees, guaranteed obligations have declined from 100 to about 60 percent of LB’s total liabilities. From now on, the guaranteed obligations are likely to run off slowly until 2015.



148. **Also, LBs contribute negatively to financial sector stability.** An increasingly common measure of bank soundness in the literature is the Z-score.<sup>83</sup> The Z-score is directly related to the probability of a bank becoming insolvent: it measures the number of standard deviations a return realization has to fall in order to deplete equity, under the assumption of normality of banks' returns.<sup>84</sup> For the LBs, the Z-scores are significantly lower than for private banks in EU, implying a higher probability of insolvency (Table 7). The result partly, but not fully, reflects the wholesale nature of LBs: even when comparing with similarly focused banks, LBs are still weaker in terms of the z-score.<sup>85</sup>

149. **It is difficult to see how the large opportunity costs associated with public ownership of LBs are offset by other benefits.** LB's engagement in the German economy has been low and declining over time. Reflecting their wholesale orientation, LBs lend relatively less to the German customers than other groups of banks, and their lending has been declining over time (Table 1).

<sup>83</sup> See, for instance, Boyd and Runkle (1993), Danmark Nationalbank (2004) or De Nicoló et al (2005).

<sup>84</sup> The Z-score is defined as  $z = (k + \mu) / \sigma$ , where  $k$  is equity capital as percent of assets,  $\mu$  is the average ROA, and  $\sigma$  is standard deviation of the ROA as a proxy for return volatility.

<sup>85</sup> An econometric analysis of the z-scores was carried out on a bank-by-bank level, adjusting the z-scores for bank-specific factors such as asset size, loan to assets, and an index of diversification of sources of income (to adjust for differences in retail/wholesale orientation). Even after these adjustments, z-scores in LBs were still lower than in comparable banks. Results are available from the staff upon request.

### Box 3. Including Sparkassen into the Analysis

The focus of the paper is on LBs. Most LBs are characterized by a complex relationship with their Sparkassen, with Sparkassen being co-owners of the LBs and at the same time among the main clients of LBs. This raises the possibility of cross-subsidization or the possibility that LBs provide services to Sparkassen that would otherwise be unavailable from commercial banks. However, there is little evidence of such cross-subsidization or dependency. Sparkassen representatives note that they buy products from LBs when they are competitive or have other attractive features, not because of subsidies or the lack of alternatives. Landesbanken representatives confirm that services are provided at a competitive price and because of familiarity with Sparkassen needs, and do not represent cross subsidies.

Further, Sparkassen are different in several respects from LBs. From the cost perspective, they have not resulted in substantial out-of-pockets costs to taxpayers, unlike some LBs. Nonetheless, public Sparkassen ownership entails opportunity costs to the taxpayer. With an average ROE of 5.2 percent in the last decade, they have been historically more profitable than LBs, but less profitable than comparable banks in peer countries (Table 8). Using the same methodology and assumptions as for the LBs, preliminary calculations suggest that the opportunity costs of Sparkassen is estimated to be 0.17 percent of GDP annually, which translates to an improvement of the intertemporal net worth of 6.6 percent of GDP (equivalent to lowering the public sector debt by 12.5 percent of GDP by 2050).

## E. Conclusions

150. **Germany's banking system stands out in Europe because of the continued large participation of public-sector banks.** The German banking system is less subject to the pressures of capital markets because of the important role of public sector banks. For these banks, profit maximization is not always the paramount objective.

151. **The arguments for public ownership in LBs are not compelling.** It is difficult to demonstrate the market failure that LBs address, and how they address it. At the same time, they create potential for market distortions. Public ownership can have some benefits, but those are dwarfed by budgetary and efficiency risks and by inefficiencies resulting from market distortions. A review of experience with public sector banking in other EU countries suggests that most of these countries had a larger public sector banking system than Germany in the early-1980s but this has now reversed, following reforms.

152. **Taxpayers have been getting low returns on the money in LBs and financial risks have been arguably growing.** From a financial viewpoint, the LBs have not been providing satisfactory returns to their owners. On the contrary, they have been associated with substantial direct costs, and even larger opportunity costs. It would have been more efficient for a taxpayer to shift her investment from LBs to elsewhere. Equivalently, since the LBs are on the public sector balance sheet, their low returns can be viewed as an inefficient

allocation of public sector assets. Since the public sector is concerned about how to fund the future social security liabilities, this finding strengthens the case for: (i) managing more efficiently the assets on the public sector balance sheet (thereby increasing their value to the taxpayer and potentially to a future buyer); and (ii) accelerated disengagement of the government (in this case the Länder governments) from banking in favor of higher yielding allocations or outright public debt reduction.

153. **LBs have indeed been restructuring in response to the phasing out of state guarantees, but the pace of reform has been slow.** They have followed a variety of strategies, which have often included attempts to get closer to the retail market either directly or through closer vertical integration with Sparkassen. Also, some Länder have carved out the LB business that is not in the public interest, phasing out unprofitable operations, and taking steps toward transforming LBs into joint stock corporations operating under private law. Recently, a stake in one of the LBs was sold to foreign private equity groups.

Table 1. Germany: Comparative Credit Developments in Landesbanken, 2001–04

|  | 2001  | 2002  | 2003  | 2004  | 2005  |
|--|-------|-------|-------|-------|-------|
| (Loans to resident households and enterprises, as percent of all lending by the bank group)  |       |       |       |       |       |
| All banks, of which  | 53.6  | 52.4  | 52.2  | 51.2  | 51.3  |
| Commercial banks   | 57.1  | 54.2  | 53.4  | 52.6  | 56.1  |
| Landesbanken   | 35.1  | 33.3  | 32.2  | 31.1  | 31.0  |
| Savings banks  | 83.7  | 82.6  | 83.4  | 82.3  | 83.3  |
| Credit cooperatives  | 82.3  | 82.2  | 83.0  | 82.5  | 82.5  |
| (Change in non-bank lending in percent from previous year, deflated by consumer price index) |       |       |       |       |       |
| All banks, of which  | 1.1   | -0.4  | -0.9  | -2.3  | -0.4  |
| Commercial banks   | 0.6   | -2.5  | -3.0  | -3.6  | 1.0   |
| Landesbanken   | 3.5   | 1.3   | -0.8  | -4.7  | -0.8  |
| Savings banks  | 1.6   | 1.1   | 0.0   | -1.8  | 0.2   |
| Credit cooperatives  | 0.0   | 0.1   | -0.5  | -0.5  | -0.9  |
| (Percent of all lending by the banking sector to non-banks)                                  |       |       |       |       |       |
| All banks, of which  | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Commercial banks   | 26.5  | 26.1  | 26.0  | 26.8  | 26.6  |
| Landesbanken   | 15.6  | 16.1  | 16.2  | 14.1  | 14.3  |
| Savings banks  | 19.2  | 19.5  | 19.8  | 19.4  | 19.3  |
| Credit cooperatives  | 10.4  | 10.6  | 10.7  | 10.7  | 10.8  |
| Foreign, mortgage, and other   | 28.3  | 27.7  | 27.3  | 29.0  | 29.0  |

Source: Deutsche Bundesbank; and staff calculations.

Table 2. Capitalization of Individual Landesbanken, 2005  
(In EUR million unless specified otherwise)

|                     | Equity   | Silent Participations | Silent part. as % of Equity | Dated Silent Part. as % of Equity | Tier Ratio KWG (%) |
|---------------------|----------|-----------------------|-----------------------------|-----------------------------------|--------------------|
| Bayerische LB       | 9,462.4  | 3,229.1               | 34.0                        | 18.0                              | 8.3                |
| Bremer LB           | 1,226.9  | 607.9                 | 50.0                        | 29.0                              | 7.8                |
| DekaBank            | 2,144.2  | 807.8                 | 38.0                        | 12.0                              | 8.1                |
| HSH Nordbank AG     | 6,461.1  | 4,540.4               | 70.0                        | 6.0                               | 7.0                |
| LBBW                | 10,021.1 | 3,291.4               | 33.0                        | 2.0                               | 7.7                |
| LB Berlin           | 2,052.6  | 1,943.9               | 95.0                        | 0.0                               | 8.1                |
| LB Hessen-Thüringen | 3,701.1  | 1,868.3               | 50.0                        | 3.0                               | 7.0                |
| LB Rheinland-Pfalz  | 1,909.9  | 752.5                 | 39.0                        | 12.0                              | 8.1                |
| LB Saar             | 619.9    | 267.5                 | 43.0                        | 14.0                              | 7.8                |
| LB Sachsen          | 1,079.9  | 553.3                 | 51.0                        | 51.0                              | 5.5                |
| NORD/LB             | 4,421.0  | 1,988.0               | 45.0                        | 18.0                              | 5.3                |
| WestLB AG           | 3,932.5  | 272.5                 | 7.0                         | 0.0                               | 6.9                |
| Total               | 47,032.6 | 22,122.6              | 43.0                        | 10.0                              | 7.3                |

Source: LB's annual reports, staff calculations.

Table 3. Examples of Capital Injections to LBs, 1991–2005 1/

| LB                    | Capital injection (EUR million) | Comment                                 |
|-----------------------|---------------------------------|---|
| West LB               | 979                             | 1991                                    |
|                       | 2,750                           | 2002–04                                 |
| LB Berlin             | 810                             | 1993                                    |
| Norddeutsche LB       | 1,750                           | Late 1990s (injection to the whole BGB) |
| Bayerische LB         | 472                             | 1991                                    |
|                       | 260                             | 1994 and 1995                           |
|                       | 400                             | 2005                                    |
| Hamburgische LB       | 90                              | 1993                                    |
| LB Schleswig-Holstein | 432                             | 1991                                    |
| LB Hessen-Thüringen   | 6                               | 1998                                    |
| HSH Nordbank          | 400                             | 2005                                    |
| Total of the above    | 400                             | 2005                                    |
|                       | 8,749                           |   |

Source: Staff estimates based on LB's annual report, ratings agencies, and newspaper accounts.

Table 4. Landesbanken Overview and Ratings, 2005

| Tiers of LBs<br>(by size) | Landesbank (LB)                   | State                     | Inhabitants |              |         | GDP 2004     |                           | Rating (Fitch)              |                            |                              |            |
|---------------------------|-----------------------------------|---------------------------|-------------|--------------|---------|--------------|---------------------------|-----------------------------|----------------------------|------------------------------|------------|
|                           |                                   |                           | (million)   | (% of total) | (EUR b) | (% of total) | Long-term<br>(guaranteed) | Long-term<br>(unguaranteed) | Short-term<br>(guaranteed) | Short-term<br>(unguaranteed) | Individual |
| Large                     | WestLB AG                         | Total                     | 20.6        | 25.0         | 526.4   | 24.5         | AAA                       | A-                          | F1+                        | F1                           | D          |
|                           |                                   | o/w North-Rhine Westfalia | 18.1        | 21.9         | 481.4   | 22.4         |                           |                             |                            |                              |            |
|                           | BayernLB<br>LBBW                  | o/w Brandenburg           | 2.6         | 3.1          | 45.0    | 2.1          |                           |                             |                            |                              |            |
|                           |                                   | Bavaria                   | 12.4        | 15.1         | 358.2   | 16.7         | AAA                       | A+                          | F1+                        | F1+                          | C/D        |
|                           |                                   | Baden-Württemberg         | 10.7        | 13.0         | 319.4   | 14.9         | AAA                       | A+                          | F1+                        | F1+                          | B/C        |
| Medium-sized              | Helaba                            | Total                     | 8.5         | 10.2         | 237.4   | 11.0         | AAA                       | A+                          | F1+                        | F1+                          | -          |
|                           |                                   | o/w Hesse                 | 6.1         | 7.4          | 195.2   | 9.1          |                           |                             |                            |                              |            |
|                           | NORD/LB                           | o/w Thuringia             | 2.4         | 2.9          | 42.3    | 2.0          |                           |                             |                            |                              |            |
|                           |                                   | Total                     | 9.6         | 11.6         | 198.9   | 9.2          | AAA                       | A                           | F1+                        | F1                           | C          |
|                           |                                   | o/w 2/3 of Lower Saxony   | 5.3         | 6.5          | 123.3   | 5.7          |                           |                             |                            |                              |            |
| HSH Nordbank AG           | o/w Saxony-Anhalt                 | 2.5                       | 3.0         | 45.8         | 2.1     |              |                           |                             |                            |                              |            |
|                           | o/w Mecklenburg-W. Pomerania      | 1.7                       | 2.1         | 29.8         | 1.4     |              |                           |                             |                            |                              |            |
|                           | Total                             | 4.6                       | 5.5         | 145.3        | 6.8     | AAA          | A                         | F1+                         | F1                         | C                            |            |
| Smaller                   | LB Rheinland-Pfalz<br>Bremer LB   | o/w Hamburg               | 1.7         | 2.1          | 78.8    | 3.7          |                           |                             |                            |                              |            |
|                           |                                   | o/w Schleswig-Holstein    | 2.8         | 3.4          | 66.5    | 3.1          |                           |                             |                            |                              |            |
|                           | Sachsen LB<br>LB Berlin<br>SaarLB | Rheinland-Pfalz           | 4.1         | 4.9          | 95.4    | 4.4          | AAA                       | A                           | F1+                        | F1                           | C          |
|                           |                                   | Total                     | 3.3         | 4.0          | 85.2    | 4.0          | AAA                       | A                           | F1+                        | F1                           | C          |
|                           | Germany                           | o/w Bremen                | 0.7         | 0.8          | 23.6    | 1.1          |                           |                             |                            |                              |            |
| o/w 1/3 of Lower Saxony   |                                   | 2.7                       | 3.2         | 61.6         | 2.9     |              |                           |                             |                            |                              |            |
| Saxony                    |                                   | 4.3                       | 5.2         | 79.8         | 3.7     | AAA          | A-                        | F1+                         | F1                         | C/D                          |            |
|                           | Berlin                            | 3.4                       | 4.1         | 77.9         | 3.6     | AAA          | BBB+                      | F1+                         | F2                         | -                            |            |
|                           | Saarland                          | 1.1                       | 1.3         | 26.1         | 1.2     | AAA          | A                         | F1+                         | F1                         | D                            |            |
|                           | Germany                           | 82.5                      | 100.0       | 2,150.0      | 100.0   |              |                           |                             |                            |                              |            |

Source: Fitch Ratings, BankScope, and LBs annual report.

Table 5. Opportunity Costs of LBs: Sensitivity Analysis

|                                | Assumptions (Average after-tax ROE, percent) |                  | Results (Percent of GDP) 1/ |                                     |                              |
|--------------------------------|--|------------------|-----------------------------|-------------------------------------|------------------------------|
|                                | Landesbanken                                 | Comparator banks | Opportunity cost            | Intertemporal net worth improvement | Public sector debt reduction |
| Main calculation (actual data) | 2.3  | 14               | 0.26                        | 10                                  | 19                           |
| Alternative assumptions I      | 5.2  | 14               | 0.20                        | 8                                   | 14                           |
| Alternative assumptions II     | 2.3  | 10               | 0.17                        | 7                                   | 13                           |
| Alternative assumptions III    | 2.3  | 20               | 0.39                        | 15                                  | 29                           |
| Alternative assumptions IV     | 6.9  | 10               | 0.07                        | 3                                   | 5                            |
| Alternative assumptions V      | 6.9  | 20               | 0.29                        | 11                                  | 21                           |

Source: BankScope, banks' annual reports, and staff calculations.

1/ See the text for a more detailed description of these three columns.

Table 6. Pre-Tax Return on Equity in EU Private Commercial Banks and in LBs, 1990–2004

|                             | Average 1/ | Standard Deviation 1/ | Average / Standard Deviation 2/ | Average / Standard Deviation 3/ |
|-----------------------------|------------|-----------------------|---------------------------------|---------------------------------|
| EU private commercial banks | 14         | 6.2                   | 9.9                             | 2.3                             |
| LBs                         | 2.5        | 6.7                   | 1.4                             | 0.4                             |
| LBs (excl. West LB)         | 5.2        | 3.4                   | 1.8                             | 1.5                             |

Source: BankScope, and staff calculations.

1/ Calculated for each bank from annual data for 1990–2004; average across banks.

2/ The ratio of average ROE to standard deviation of ROE for each bank; average for banks in the group.

3/ Ratio of the average and standard deviation of ROE as calculated in the second and the third column.

Table 7. Capitalization, ROAs, and Z-Scores in EU Private Commercial Banks and in LBs, 1990–2004 1/

|                             | Average Capital to Assets Ratio<br>(%) 1/ | Average Pre-Tax Return on<br>Assets (ROA, %) 1/ | Standard Deviation of ROA (%<br>points) 1/ | Z-score 2/ |
|-----------------------------|---|---|--|------------|
| EU private commercial banks | 4.98                                      | 0.59  | 0.07                                       | 81.3       |
| LBs                         | 2.52                                      | 0.08  | 0.10                                       | 25.9       |
| LBs (excl. West LB)         | 2.61                                      | 0.13  | 0.05                                       | 50.5       |

Source: BankScope, and staff calculations.

1/ Calculated for each bank from annual data for 1990–2004.

2/ Calculated as  $z = (k + \mu) / \sigma$ , where  $k$  is equity capital as percent of assets,  $\mu$  is average return as percent on assets, and  $\sigma$  is standard deviation of return on assets as a proxy for return volatility. The Z-score measures the number of standard deviations a return realization has to fall in order to deplete equity, under the assumption of normality of banks' returns. A higher Z-score corresponds to a lower upper bound of insolvency risk—a higher Z-score therefore implies a lower probability of insolvency risk.

Table 8. Comparative Financial Soundness Indicators in Landesbanken, 1999-2005  
(In percent)

|   | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|------|------|------|------|------|------|------|
| <b>Capital adequacy</b>                             |      |      |      |      |      |      |      |
| Regulatory capital to risk-weighted assets          |      |      |      |      |      |      |      |
| Landesbanken  | 10.5 | 10.7 | 11.3 | 12.7 | 14.5 | 14.0 | 12.1 |
| Sparkassen  | 10.9 | 10.7 | 10.8 | 11.2 | 11.5 | 12.1 | 12.5 |
| Commercial banks (Germany)                          | 12.4 | 13.0 | 13.6 | 14.4 | 14.4 | 13.6 | 11.6 |
| EU-15 banks (excluding Germany)                     | 12.3 | 11.8 | 11.9 | 12.1 | 13.2 | 13.2 | 12.9 |
| <b>Asset composition and quality</b>                |      |      |      |      |      |      |      |
| Loan to households and non-financial enterprises 1/ |      |      |      |      |      |      |      |
| Landesbanken  | 27.1 | 27.7 | 27.6 | 26.4 | 26.1 | 24.9 | 23.5 |
| Sparkassen  | 81.4 | 82.1 | 81.2 | 80.5 | 81.2 | 80.2 | 79.8 |
| Commercial banks                                    | 53.3 | 49.9 | 46.7 | 44.4 | 41.7 | 40.0 | 38.0 |
| EU-14 banks   | 63.5 | 60.9 | 59.6 | 56.6 | 55.9 | 55.1 | ...  |
| NPLs to gross loans                                 |      |      |      |      |      |      |      |
| Landesbanken  | 2.5  | 2.7  | 2.8  | 3.7  | 4.4  | 4.3  | 2.9  |
| Sparkassen  | 5.7  | 5.6  | 5.9  | 6.4  | 6.8  | 7.0  | 6.6  |
| Commercial banks (Germany)                          | 5.0  | 5.5  | 5.1  | 5.1  | 5.1  | 4.7  | 3.3  |
| EU-15 banks (excluding Germany)                     | 4.0  | 2.9  | 2.7  | 2.6  | 2.5  | 2.2  | 2.2  |
| NPLs net of provisions to capital                   |      |      |      |      |      |      |      |
| Landesbanken  | 26.0 | 29.6 | 27.9 | 31.6 | 34.9 | 35.5 | 25.0 |
| Sparkassen  | 51.6 | 49.2 | 52.2 | 53.6 | 58.1 | 55.3 | 50.6 |
| Commercial banks (Germany)                          | 37.2 | 39.6 | 49.8 | 47.6 | 55.5 | 42.7 | 30.7 |
| EU-15 banks (excluding Germany)                     | 19.2 | 18.2 | 15.5 | 15.0 | 13.2 | 12.3 | 11.2 |
| <b>Earnings and profitability</b>                   |      |      |      |      |      |      |      |
| Return on average equity (after-tax)                |      |      |      |      |      |      |      |
| Landesbanken  | 5.9  | 4.2  | 4.0  | 1.9  | -5.2 | -0.8 | 5.6  |
| Sparkassen  | 6.1  | 6.1  | 5.1  | 4.7  | 4.0  | 5.0  | 5.6  |
| Commercial banks (Germany)                          | 7.0  | 7.3  | 4.2  | 0.0  | -6.6 | -1.4 | 15.5 |
| EU-15 banks (excluding Germany)                     | 17.8 | 17.3 | 14.4 | 11.9 | 13.3 | 14.9 | 16.7 |

Source: Deutsche Bundesbank, International Financial Statistics, and staff estimates.

1/ As percent of all lending by the banks.

## References

- Altunbas, Y., Evans, L., P. Molyneux, 2001, "Bank Ownership and Efficiency," *Journal of Money, Credit, and Banking*, Vol. 33(4), pp. 926–54.
- Boyd, John H., and David E. Runkle, 1993, Size and Performance of Banking Firms, *Journal of Monetary Economics*, 31, 47–67.
- Brunner, Allan, Jörg Decressin, Daniel Hardy, and Beata Kudela, 2004, "Germany's Three-Pillar Banking System: Cross-Country Perspectives in Europe," IMF Occasional Paper No. 233 (Washington, DC: International Monetary Fund).
- Danmarks Nationalbank, 2004, "Market-Based Risk Measures for Banks," in *Financial Stability 2004* (Copenhagen: Danmarks National Bank).
- De Nicoló, Gianni, Robert Corker, Alexander F. Tieman, and Jan-Willem van der Vossen, 2005, "European Financial Integration, Stability and Supervision," in IMF Country Report No. 05/266, August, pp. 113–146.
- D'Souza, Juliet and William L. Megginson, 1999, "The Financial and Operating Performance of Privatized Firms during the 1990s," *Journal of Finance*, Vol. LIV, No. 4 (August), pp. 1397–438.
- Ferestieri, Giancarlo, 1993, "Economies of Scale and Scope in the Financial Services Industry: A Review of the Recent Literature," in OECD (ed.), *Financial Conglomerates*, OECD Paris, pp. 63–123.
- Group of Ten, 2001, *Report on Consolidation in the Financial Sector*.
- Hauner, David, 2004, Explaining Efficiency Differences Among Large German and Austrian Banks, *Working Paper* No. 04/140 (Washington: International Monetary Fund).
- International Monetary Fund, 2005a, "Germany: 2005 Article IV Consultation - Staff Report", IMF Country Report No. 06/16 (Washington: International Monetary Fund).
- , 2005b, "Germany: 2005 Article IV Consultation – Selected Issues", IMF Country Report No. 06/16 (Washington: International Monetary Fund).
- La Porta, R., Lopez-de-Silanes, F., and A. Shleifer, 2002, "Government Ownership of Banks," *Journal of Finance*, vol. 57(1), pp. 265–301.
- Megginson, L. William and Jeffrey M. Netter, 1999, "From State to Market: A Survey of Empirical Studies on Privatization," *Fondazione eni Enrico Mattei Nota di Lavoro* (Italy); No. 1.99 (January), pp. 1–75.

Sinn, Hans-Werner, 1999, "The German State Banks" (Cheltenham, U.K.: Edward Elgar).

Stiglitz, Joseph and Andrew Weiss, 1981, "Credit Rationing in Markets with Imperfect Information," *American Economic Review*, Vol. 71(3), pp. 393–410.