

## **Belgium: Selected Issues**

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INTERNATIONAL MONETARY FUND

BELGIUM

**Selected Issues**

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Approved by the European Department

January 25, 2005

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## I. COPING WITH POPULATION AGING IN BELGIUM: AN UPDATE<sup>1</sup>

### A. Introduction

1. In 2002, in line with the broad policy recommendations of the Ecofin Council to its member states, the High Finance Council proposed a comprehensive strategy to cope with the adverse effects of population aging in Belgium (HFC, 2002). While it was recognized that an increase in potential growth could substantially mitigate the costs of aging, and a gradual rise in Belgium's comparatively low employment rates was implicitly banked upon, fiscal consolidation was at the center of the HFC's recommendations, especially as pension reforms had already curtailed benefits. It was considered that the envisaged cost of aging could be fully offset by savings on interest payments that would result from a swift up-front reduction of government debt. For the strategy to work, fiscal consolidation efforts needed to be stepped-up without delay in order to achieve a fiscal surplus of 0.7 percent of GDP in 2007, and a 1.5 percent surplus by 2010 which would then need to be maintained for a number of years in order to generate the required debt run-down.<sup>2</sup>

2. Two years later, it is clear that the actual developments in public finance are falling short of what is needed in terms of the debt reduction strategy, though cyclical weakness also played a role. Meeting the above-mentioned targets has become very difficult. Moreover, the government's medium-term priorities appear to have shifted towards preserving balanced budgets rather than building up surpluses. At the same time, the HFC has revised its projections of the cost of aging upward, with the cost now exceeding the interest bill. Since the pressures of aging will start to kick in shortly—at current retirement practices, it will be in the second half of this decade that the Belgian baby-boom generation starts to retire—time for accumulating the required fiscal savings is running out.

3. Against this background, this chapter argues that the aging strategy be broadened to include more explicitly the objective of raising employment rates to foster potential growth. While fiscal consolidation remains an indispensable element of a successful preparation for population aging, achieving sustainability solely through up-front fiscal adjustment would, at the current juncture, require a degree of spending restraint that is unlikely to be politically feasible. This makes the need for effective employment-enhancing policies all the more pressing, whereby a high premium should be put on policy options that would provide simultaneous relief of budgetary pressures.<sup>3</sup>

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<sup>1</sup> This chapter is prepared by David Hofman.

<sup>2</sup> For an in-depth discussion of the HFC strategy, see chapter II, *Fiscal Strategies for Population Aging*, in IMF Country Report 03/50.

<sup>3</sup> The need for labor market reform is recognized by the Belgian government in its recent "*Federale Beleidsverklaring*", which states that achieving the European Union's "Lisbon objectives" will be necessary to preserve current living standards when the population ages.

4. The remainder of this chapter is organized as follows: Section II will briefly revisit the challenges of population aging in Belgium, discuss the assumptions underlying the official aging projections, and present an alternative baseline scenario on the basis of unchanged policies. Building on the baseline established in the previous section, Section III will discuss the feasibility of strategies that rely exclusively on either fiscal or labor market adjustment and illustrate the benefits of a two-pronged strategy. Section IV will then briefly discuss the main areas of potential progress in the labor market. Section V concludes.

### **B. Challenge of Population Aging**

5. The challenge that population aging poses to Belgium is comparable to that elsewhere in Europe. In 2002, the Federal Planning Bureau projected that the share of elderly people in the total population would rise from about one fifth at the time to one third in 2050 (FPB, 2002). Consequently, the old-age dependency ratio (defined as those aged over 60 as a share of those between 20–59) would rise from about 40 percent to almost 70 percent over the same period, an increase that is similar to that expected in other European countries. In addition, like in many other European countries, the provision of pensions and health care—arguably the two most affected spending items—are almost entirely funded by public resources.

6. Regarding the magnitude of the fiscal costs, the FPB forecasted the costs of aging to rise by 6.2 percentage points of GDP between 2000 and 2050 split evenly between public pensions and health care. These costs would only to a limited extent be offset by possible savings on other committed spending items (notably child support and unemployment benefits). However, the expected costs of aging have subsequently been revised upward by more than 1 percentage point of GDP (HFC, 2004). For the largest part, this reflects the current spending increases in health care that follow from the government's decision to raise the budget ceilings for this sector by an annual 4.5 percent in real terms during 2004–07. But the costs of pensions have also been revised upward. Nonetheless, the impact of aging on the pension bill remains somewhat less than in other European countries, because the system is less generous.

7. The official aging cost projections are highly sensitive to the assumed economic growth over the forecast horizon: i.e., if growth falls short of expectations, the relative cost of aging will be higher. Indeed, a considerable portion of the cost (pensions, in particular) is not proportional to GDP.

8. In this context, it should be noted that the FPB's baseline macro projection is rather sanguine. It assumes average GDP growth of 1.9 percent during 2000–50 based on the underlying assumption of a 6.6 percent increase in the employment rate between 2000 and 2030, which boosts GDP growth during that period, and labor productivity growth of 1.75 percent per annum. Against the background of a falling working-age population, the rising employment rate in the official projections follows from an expected fall in unemployment towards the 50-year historic average by 2030, and a considerable

simultaneous increase in participation rates. What factors would give rise to this assumed improvement in labor market conditions, however, was left unspecified.<sup>4</sup>

9. Also, the labor productivity growth assumption in the official projections seems very high in light of an OECD multifactor productivity estimate of only 0.8 percent for the period 1985–2001. In the OECD data, even in their highest 5-year period (1985–90), productivity growth did not exceed 1.3 percent. Thus, considerable capital deepening is being assumed, which sits uneasily with the assumed increase in employment. All else equal, this would require moving less-than-average-productive workers into jobs.

10. To illustrate the importance of the employment and productivity assumptions, we start the analysis from a “baseline” growth scenario devoid of labor market reform and assuming a long-run rate of productivity growth of 1.56 percent (our estimate of the average of 1975–2002, see Annex 1) and a constant capital labor ratio (Figure 1). The development of age-related spending is based on official projections,<sup>5</sup> assuming that pension outlays follow the projected path in nominal terms while health care costs track it proportionally.<sup>6</sup> In the labor market, the unemployment rate is assumed to revert back to the NAIRU (estimated at 7.9 percent), which is reached in 2009 and held constant thereafter. Meanwhile, the participation rate continues to improve gradually from its current level of just below 80 percent of the population between ages 20–59 to 83.5 percent in 2025, reflecting the upward trend in female labor participation.<sup>7</sup> After 2025, the participation rate stabilizes. As a result of the expected decline of the working-age population, employment will fall by about 0.1 percent a year on average during the forecast period.

11. Against these baseline macro assumptions, even if the budget was balanced through 2011 (which would be broadly consistent with actual Belgian policies over the past few years), fiscal dynamics would be unsustainable. Balancing the budget would bring about some fiscal consolidation: it would lower the debt ratio from about 96 percent of GDP at present to 75 percent of GDP in 2011. In the process, annual interest payments would fall by  $\frac{3}{4}$  of a percentage point of GDP. While these savings would cover the projected increase in social spending over the same period, they would fail to provide for the subsequent decades

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<sup>4</sup> Indeed, the HFC (2004, p. 15) notes in passing that “active labor market policies” are needed to actually achieve this improvement.

<sup>5</sup> The latest HFC projections (2004) are used for the period 2003–30, complemented by rebased FPB (2002) projections for the years 2031–50.

<sup>6</sup> In other words, the official aging cost estimates are translated to our baseline scenario assuming that the income elasticity is zero for pension outlays, but unity for health spending.

<sup>7</sup> More specifically, the increase in the participation rate reflects a cohort effect. Participation rates among young women today are higher than they were for preceding generations. *Ceteris paribus*, this will cause an automatic increase in female (and overall) participation rates as older age cohorts in the labor force are gradually replaced by younger generations.

in which social outlays are expected to rise at a much faster rate than at present. After 2011, a deficit would reemerge at constant ratios to GDP of revenues and discretionary spending. Debt dynamics would make that government debt continues to fall initially, reaching a low of 63 percent of GDP around 2020. Thereafter, however, it would start to rise explosively, and by 2050, debt would have reached a level of more than 190 percent of GDP. By that time, the budget deficit would have deteriorated to over 13 percent of GDP. Of course, alternatively, one could continue to balance the budget after 2011 but that would defeat the notion of preparing for aging since under such a scenario, the costs of aging would have to be offset at the same time they occur—this option is not considered here.

### **C. Strategies to Cope with Aging**

12. Building on the baseline conditions that were presented in the previous section, three stylized scenarios are presented below with the objective of showing the limits of one-handed approaches to prepare for aging and the benefits of a more integrated approach. In a first scenario, an attempt is made to “save” for aging solely through up-front fiscal consolidation. A second scenario, in contrast, purports to show the extent of labor market reform that would be needed to preempt the need for any further fiscal consolidation. Finally, the third scenario combines the two approaches.

#### *Fiscal consolidation only*

13. Preparing for the envisaged costs of aging solely through fiscal adjustment is possible, but would require very restrictive fiscal policies during the next 11 years (Figure 3). Under the macroeconomic assumptions of the baseline scenario outlined above, real discretionary spending growth should be kept at no more than 0.3 percent a year during 2005–15 to generate enough room to absorb the cost of aging while maintaining debt sustainability in the long-term.<sup>8</sup> In that case, the favorable debt dynamics generated by the up-front adjustment would secure that the debt, and therefore interest payments, keep falling after 2015 when discretionary spending would again be allowed to grow in line with GDP. Debt would fall until around 2050, when a steady state is reached at a net asset position equal to 23 percent of GDP. In light of the very sharp initial adjustment of fiscal policies required under this scenario, its political feasibility seems low. Moreover, it is not clear that it is economically desirable, as public spending may have benefits and building public assets raises issues of where to invest efficiently.

#### *Labor market reform only*

14. Alternatively, one could try to deal with population aging solely through growth-enhancing measures—in particular labor market reform. Figure 4 shows how GDP growth

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<sup>8</sup> Discretionary spending is defined here as primary general government expenditure other than social security spending. Currently, discretionary expenditure amounts to about 25 percent of GDP, while social security spending is about 20 percent.



would be boosted if reforms were to succeed in bringing down unemployment to 3 percent of the labor force and increasing participation among those aged 20–59 from about 80 percent at present to 99 percent by 2030 under the assumption of a constant number of hours worked per person. Under these circumstances, GDP growth would average 2.4 percent over the period 2005–30, up from 1.6 percent in the baseline scenario. If this favorable growth performance could be realized, the higher GDP would reduce the relative impact of aging costs sufficiently for government debt to stabilize—at about 10 percent of GDP in 2050—without the need for further fiscal adjustment.

15. Of course, it is questionable whether the unemployment and participation objectives that underlie this scenario could be reached in practice. Indeed, a participation rate of 99 percent for any subset of the working-age population would seem unrealistically high. It must be noted that this participation rate is less extreme than it appears when it is considered that we—for reasons of consistency with the official forecasts—keep participation rates unchanged in two substantial segments of the labor market: those below age 20 and those over age 60. Clearly, when the labor force definition were to be broadened to also include those of ages 60 and above (as was done in a recent OECD study—see footnote 9), lower nominal participation rates could yield similar employment gains as the 99 percent does for the more restricted group. Similarly, an increase of the average number of hours worked per person could also yield comparable gains at lower participation rates. That said, an aging strategy that would rely exclusively on employment gains would remain virtually impossible to accomplish.

*Fiscal adjustment and labor market reform combined*

16. As was shown above, single-handed approaches to population aging tend to be highly demanding and may have limited political feasibility or economic desirability. Ensuring fiscal sustainability without placing excessive strain on either fiscal or labor market adjustment would therefore involve a strategy that combines simultaneous efforts in the two areas.

17. There are many combinations of fiscal and labor market adjustment that could yield sustainable outcomes, leaving considerable flexibility with regards to the precise policy mix. A complete set of such combinations is given in Figure 6, which plots the improvement in the employment rate, to be achieved between now and 2030, against the required degree of discretionary primary expenditure restraint in the next ten years. It also shows the implied net asset or debt position that remains in the steady state—reached at the end of the forecast horizon. The fiscal gains of increased employment are particularly high during the first 10 percentage points increase in the employment rate. The reason for this is that the gains of labor market reform initially translate into a decline of the unemployment rate, which apart from its positive effect on growth also allows unemployment spending to fall. These gains

are exhausted when employment reaches its post-reform NAIRU, here assumed to be 3.2 percent in 2030.

18. To illustrate, the full dynamics of one policy combination is shown in Figures 7 and 8. The scenario chosen is the one in which budgetary gains from reducing the NAIRU are maximized by 2030. In addition, we assume an increase in the participation rate (again for those aged 20–59) of about 6 percentage points. Under the assumption of constant hours worked per person, the improved labor utilization results in an average GDP growth of 1.8 percent between 2005 and 2030. Under this relatively favorable growth outlook, long-run fiscal sustainability could be ensured by limiting discretionary spending growth to 1.4 percent per year between 2005 and 2015. In combination with the higher GDP growth and savings on labor market spending, this up-front fiscal consolidation would create favorable debt dynamics that would continue to improve the fiscal position after 2015, eventually resulting in a steady state with an all but eliminated debt stock and a balanced budget.

#### **D. Potential for Labor Market Reform**

19. As the above analysis illustrates, a viable aging strategy will require that fiscal consolidation be complemented by labor market reforms that boost labor supply and enhance the growth potential of the economy. Moreover, the two objectives are intertwined and can reinforce each other when synergies between labor reforms and fiscal consolidation are sensibly exploited.

20. The potential benefits of labor market reforms are large. Current employment rates in Belgium are among the lowest in the OECD, both in terms of persons and, more relevant, hours (Table 1). Consequently, the upward potential of employment levels is significant. Indeed, the recent experience in countries such as Spain, Ireland, and the Netherlands—which each started out at a similarly low employment level—suggest that inroads of the magnitude assumed in the combined “consolidation and reform” scenario above are feasible and can even be accomplished in a considerably shorter time span than the scenario allows for.

21. Recent developments in employment in Belgium have been mixed. Over the past cycle, the employment rate increased by 4 percent when measured in persons—mainly reflecting an increase in women’s participation. However, a simultaneous decline in the average number of hours worked largely offset these gains, leaving only a small positive effect on potential output. Clearly, in light of the challenges of aging, more progress is needed, requiring measures on several fronts.

22. One fundamental area for reform is the current wage-setting mechanism that ties Belgian labor cost developments directly to those in the three neighboring countries (Germany, France, and the Netherlands). This setup seems to effectively prevent hard-won cuts in labor taxes and labor supply improvements from translating into lower wages and, thus, in increased labor demand and employment. This issue is analyzed in depth in

Chapter II. Also, increased wage differentiation would facilitate the employment of low-productivity workers that are currently priced out of jobs, as is evidenced by the especially high unemployment rates among the young, the old, and the lower skilled in general.

23. Another key area is early retirement. It is well documented that a considerable part of Belgian inactivity is concentrated in the group aged 55–64. With an effective retirement age of about 57½, this group has an employment rate of only 25 percent, compared to an OECD average of 48 percent. Therefore, reform of early retirement schemes and the removal of other incentives for early departure from the labor force could yield significant gains. A recent OECD study shows that abolishing early retirement schemes could increase the overall participation rate by 0.8 to 2.1 percentage points by 2025.<sup>9</sup> At the same time, fiscal savings would be obtained as according to the HFC (2004), the fiscal cost of the main early retirement scheme amounts to 0.4 percent of GDP. Even slightly higher gains could be made by shifting towards an actuarially neutral pension system. According to the OECD, the additional participation rate increase of this reform would be on the order of 1.1-2.4 percentage points by 2025.

24. Finally, increased female participation in the labor force would also help. While inactivity among women is of less dramatic proportion than that among the elderly and the young, it too is relatively high in comparison to other OECD countries. Women's participation can be encouraged from the supply side—notably by decreasing fiscal disincentives for women to work and by stimulating the provision of child care. The OECD estimates that effective policies with regards to female labor participation could help raise the overall employment level by 2.3 percentage points.

### **E. Concluding Remarks**

25. Single-handed strategies to deal with population aging are likely to put undue strain on either fiscal policies or labor market reform. A combination of fiscal adjustment and labor market measures, however, would be feasible and, indeed, recommendable. When such a two-pronged strategy is applied, an adequate preparation for aging remains within reach. In fact, adjustment could still take shape along the broad lines that were set out by the HFC in 2002. However, it needs to be recognized that the relatively high growth rates that are assumed in the HFC exercise cannot be taken for granted and require substantial changes in the labor market in order to be attainable. Thus, a broadening of the aging strategy to explicitly include labor market policies is needed.

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<sup>9</sup> The participation rate in this OECD study is calculated as the labor force as a percentage of the population aged 15 and above. This differs from usual definitions, which are based on a working-age population comprising only those between 15 and 64 years. It is different still from the definition that is used in the FPB and HFC studies, and—consequently—in the above-presented scenarios, which defines the working-age population as those between 20 and 59 years. Due to the larger denominator, the OECD results quoted above are likely to somewhat underestimate the potential gains when compared with the participation rate definition used in the scenarios in this paper.

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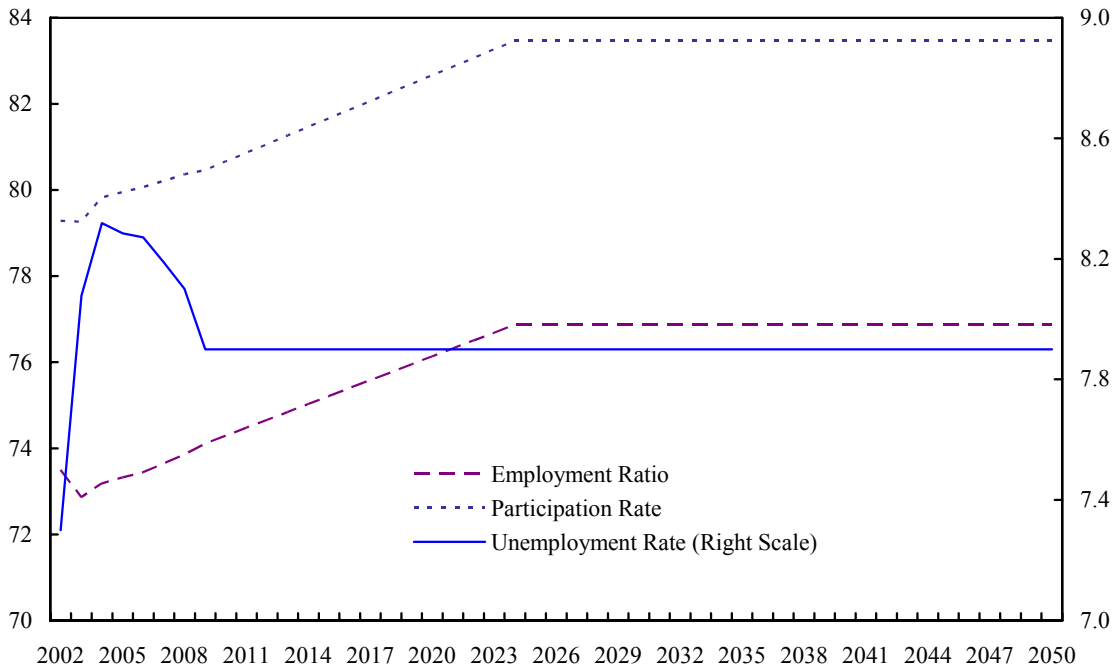
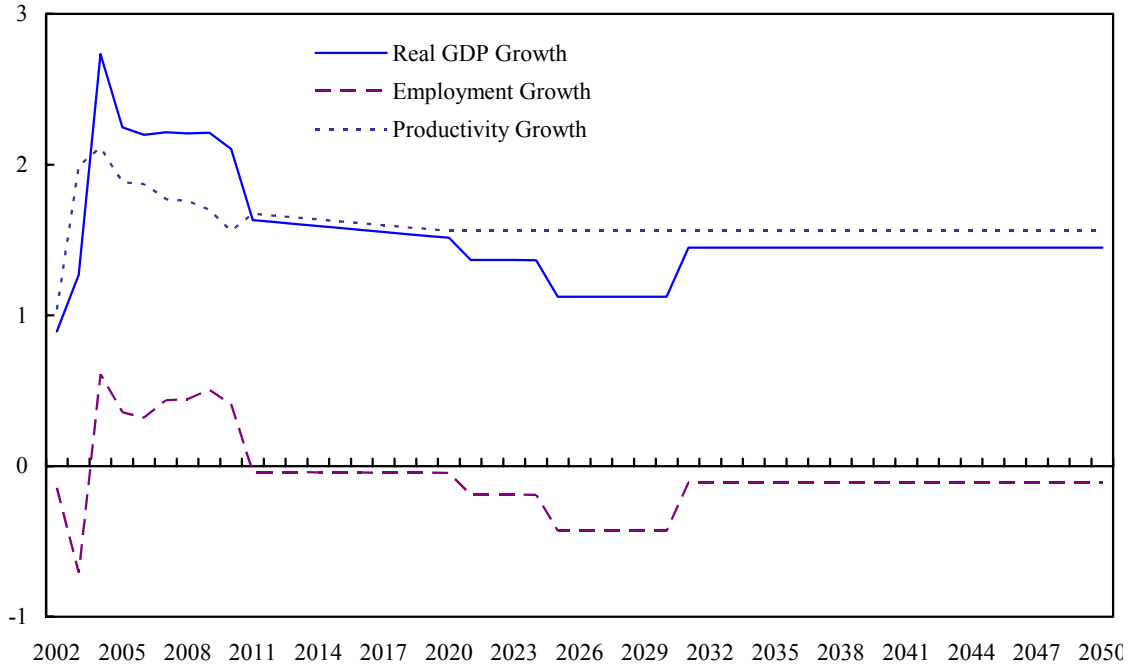
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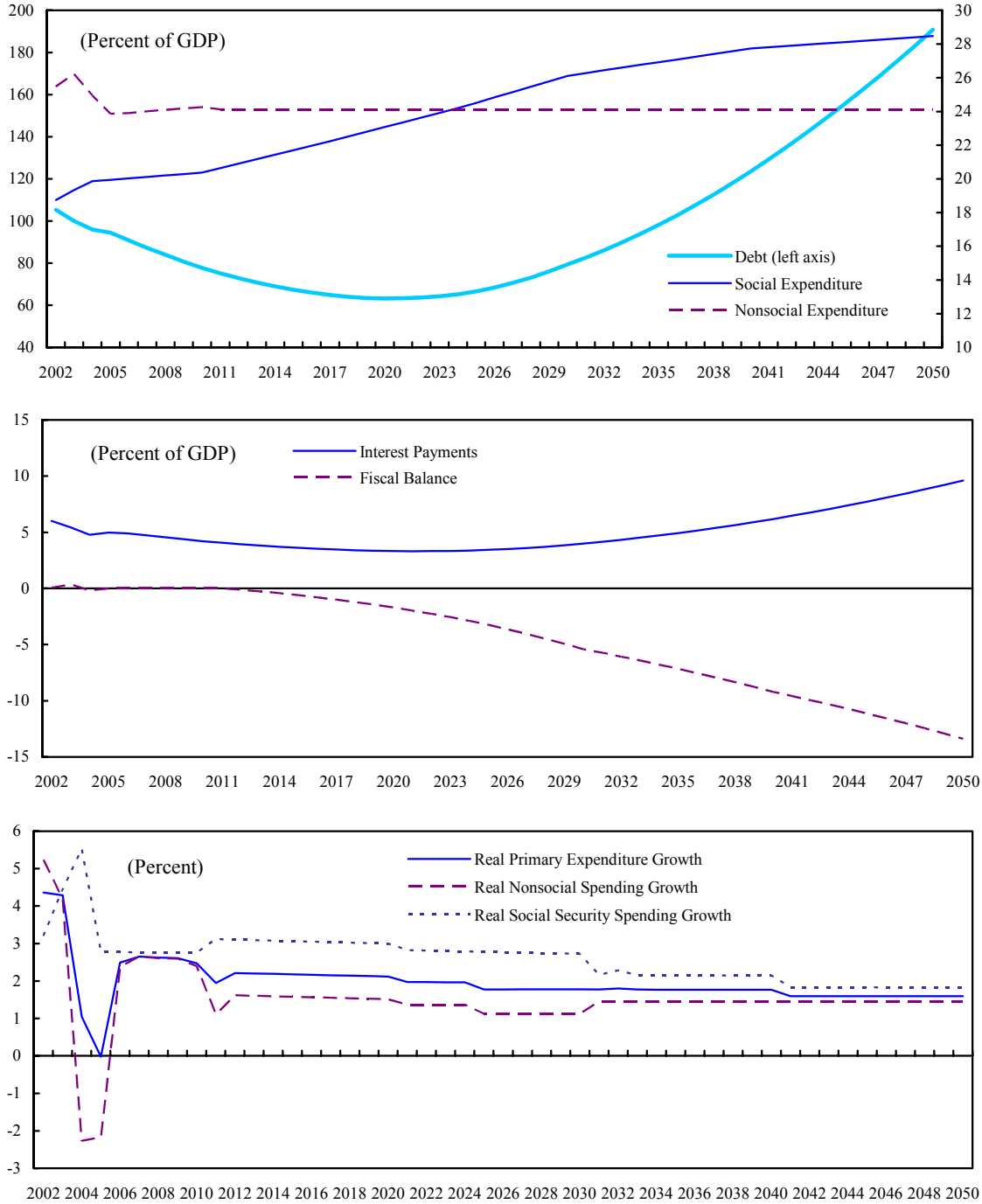
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Figure 1. Belgium: The Baseline Growth Scenario



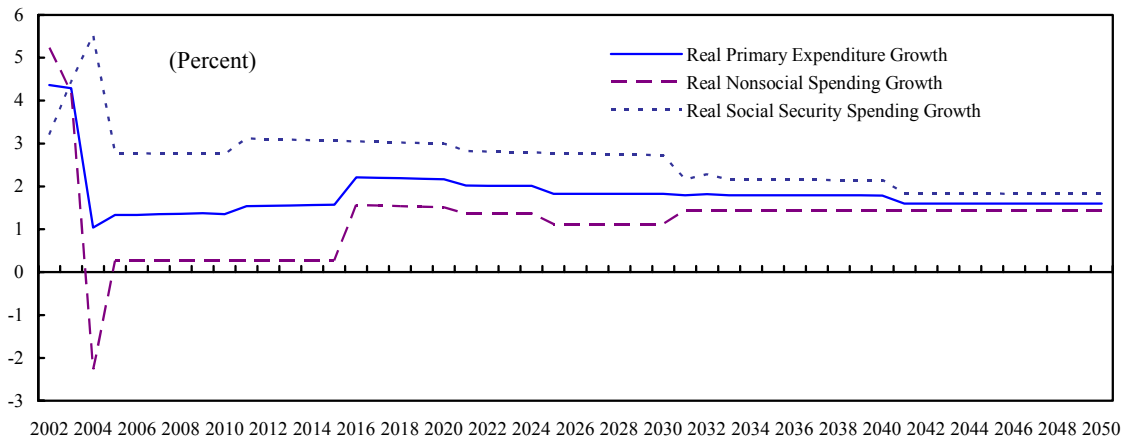
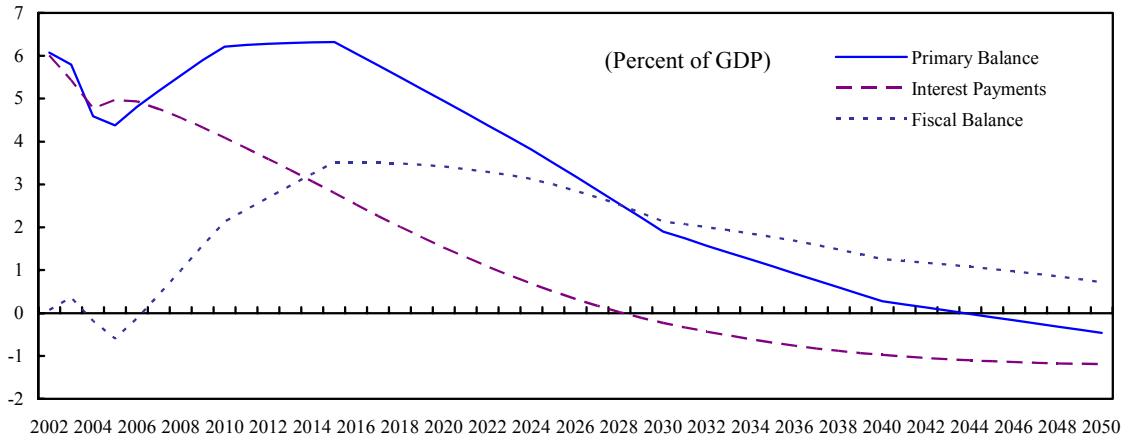
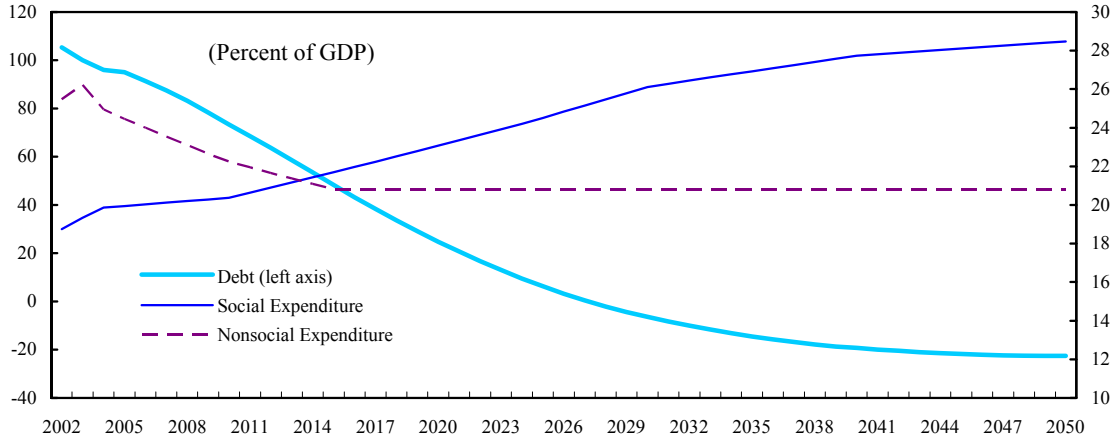
Source: Fund staff calculations.

Figure 2. Belgium: Balanced Budget Through 2011 Scenario



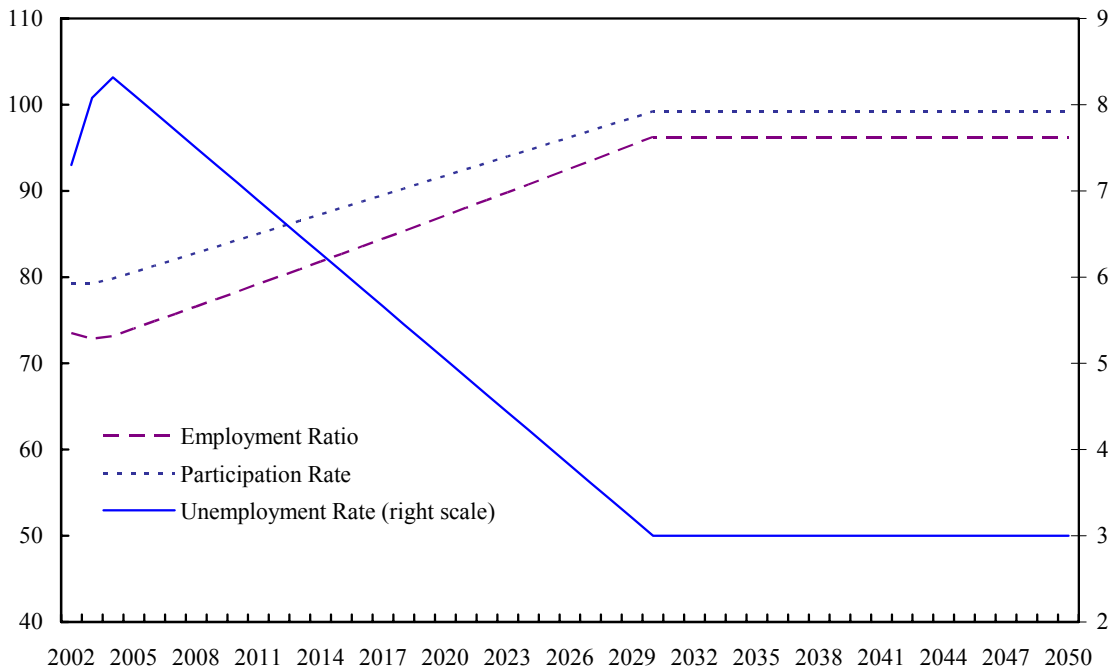
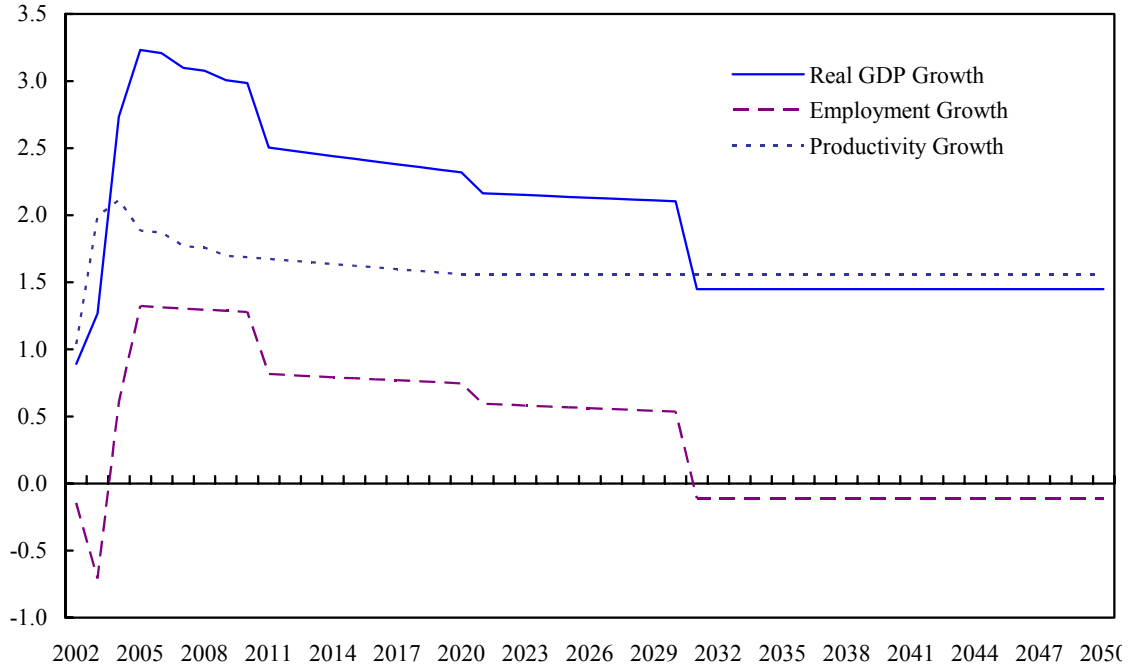
Source: Fund staff calculations.

Figure 3. Belgium: Fiscal Consolidation Only



Source: Fund staff calculations.

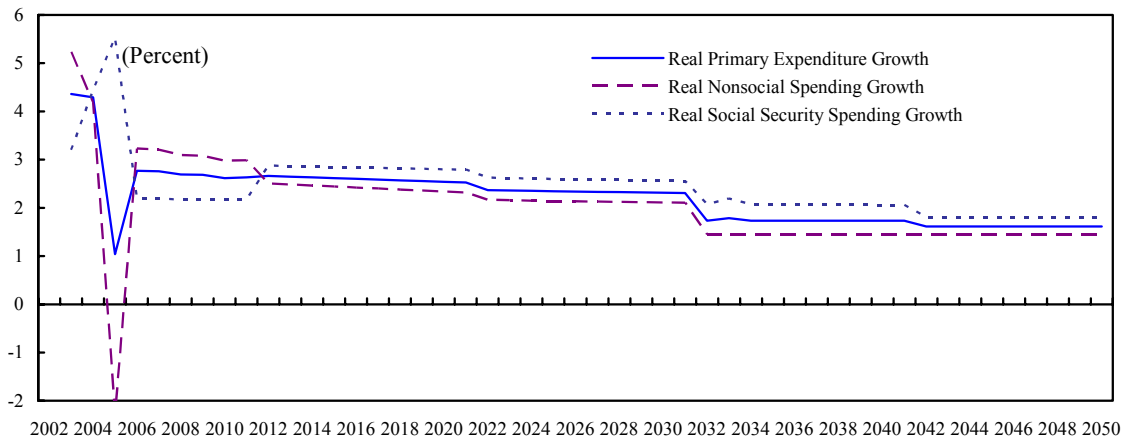
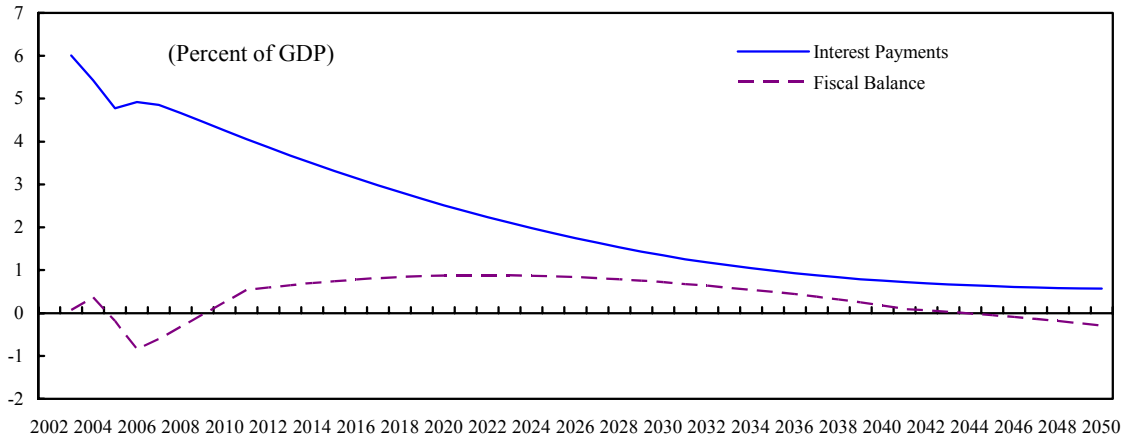
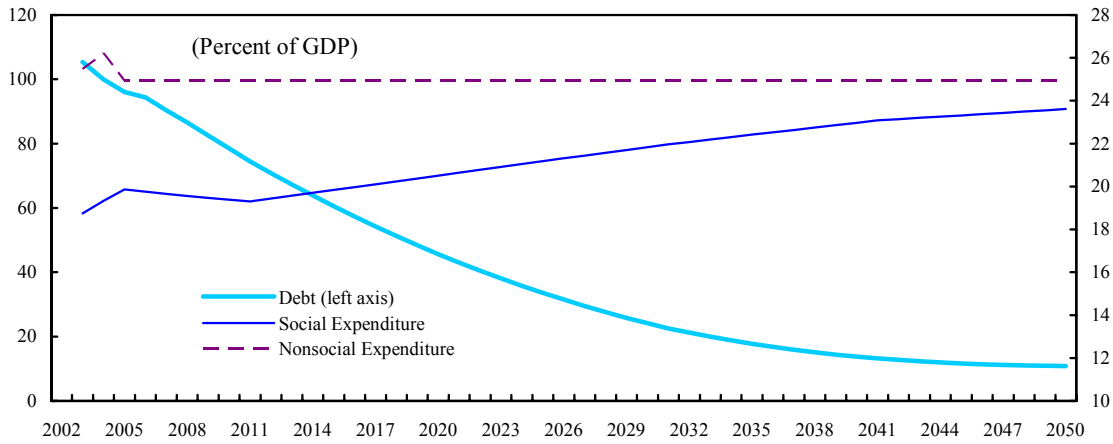
Figure 4. Belgium: Growth Scenario with Labor Market Reform Only



Source: Fund staff calculations.

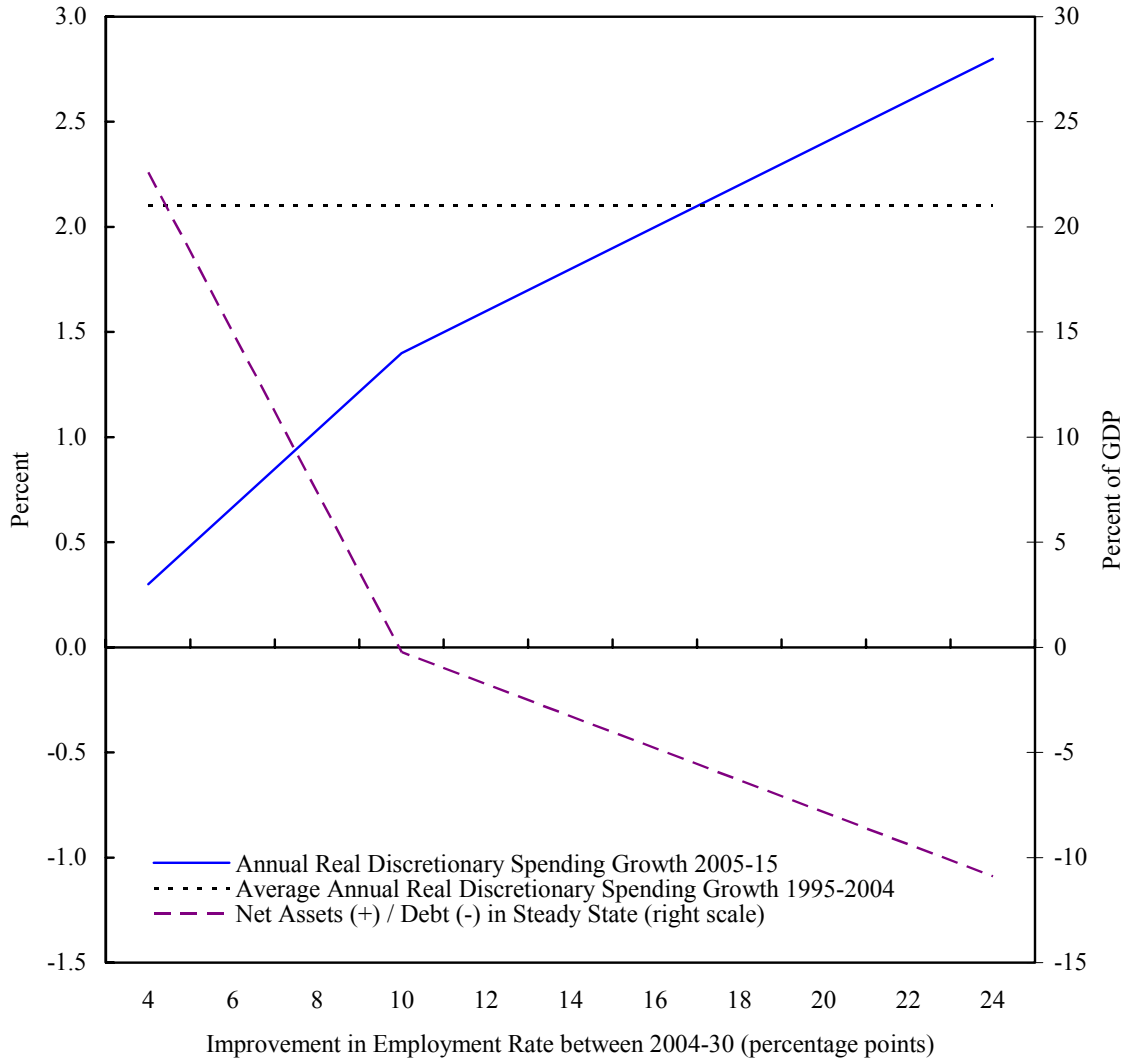


Figure 5. Belgium: Labor Market Reform Only Scenario



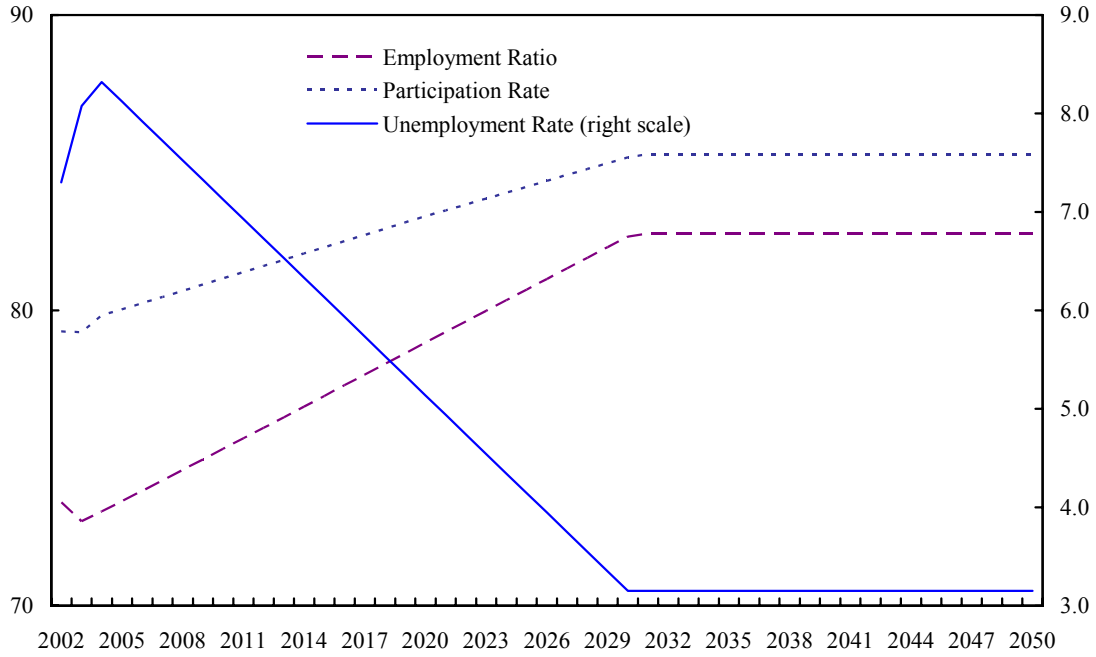
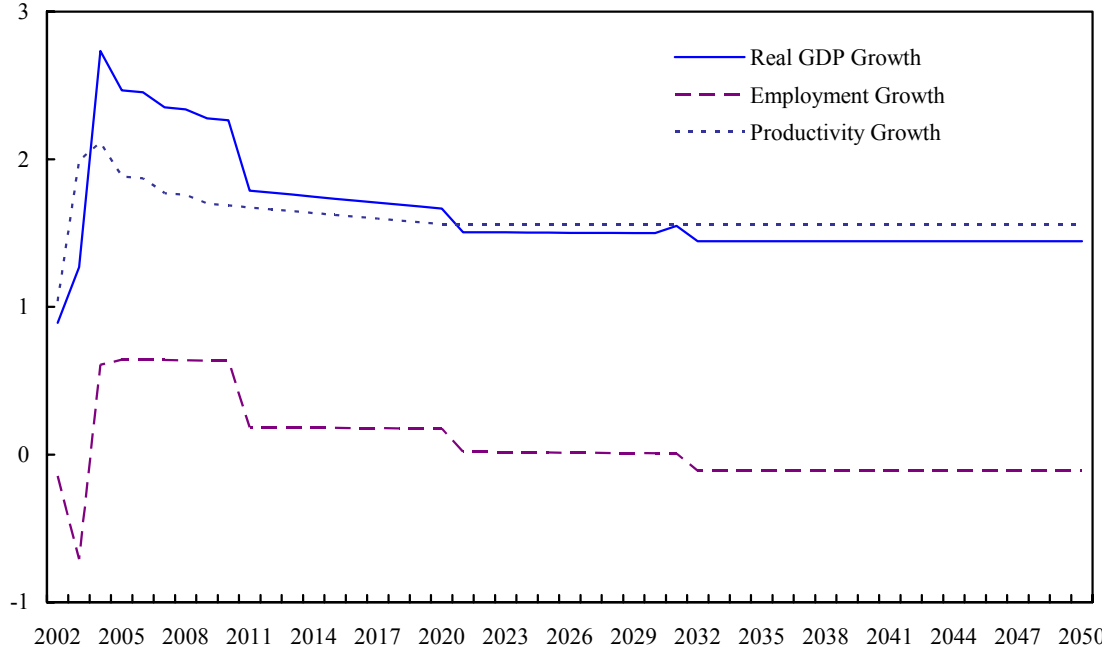
Source: Fund staff calculations.

Figure 6. Belgium: Sustainable Combinations of Fiscal Effort and Employment Gains



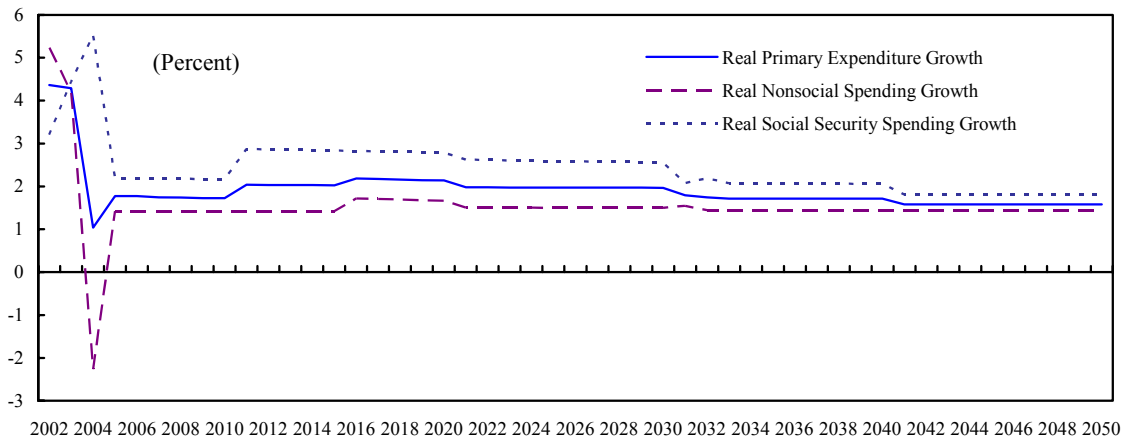
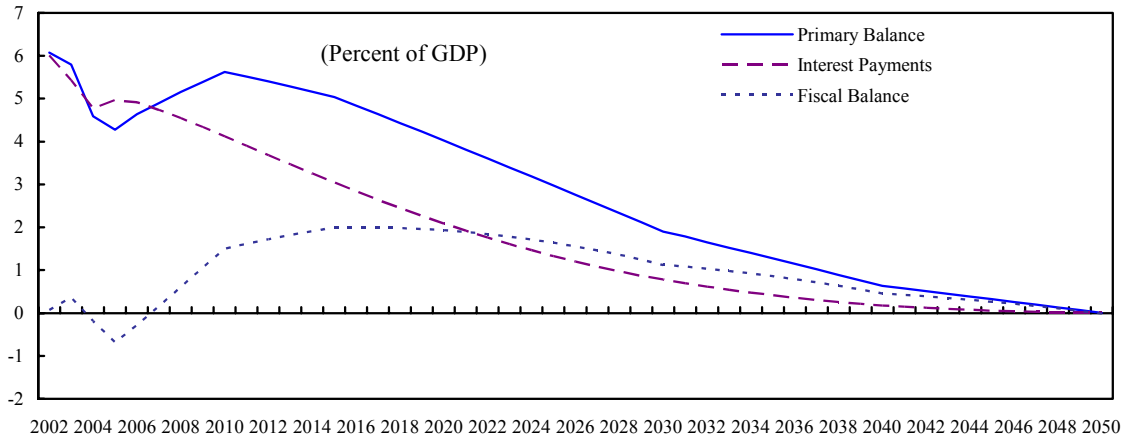
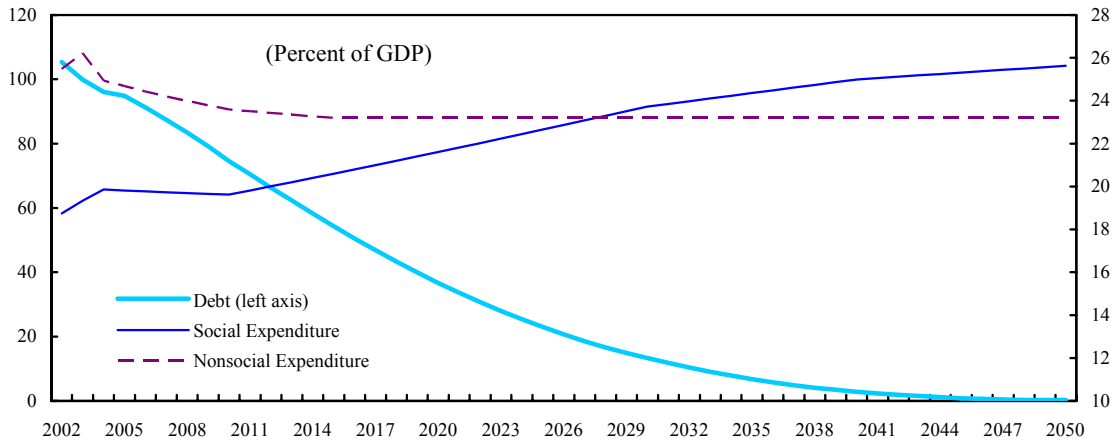
Source: Fund staff calculations

Figure 7. Belgium: Feasible Labor Market Reform



Source: Fund staff calculations.

Figure 8. Belgium: Fiscal Adjustment and Reform



Source: Fund staff calculations.

Table 1. Belgium: Average Employment Rates 1/  
Percent of population between age 15-64

	Previous Cycle	Last Cycle	Difference
<i>In persons</i>			
Belgium	57.9	61.9	4.0
Denmark	73.7	76.4	2.7
Finland	61.1	67.7	6.6
France	59.4	63.5	4.1
Germany	68.5	70.0	1.5
Greece	55.5	56.9	1.4
Ireland	53.1	66.9	13.9
Italy	53.8	54.8	1.1
Netherlands	57.3	64.9	7.6
Spain	49.8	58.8	9.0
Sweden	75.6	72.7	-2.9
United Kingdom	70.0	72.1	2.1
United States	61.9	63.6	1.7
<i>In hours</i>			
Belgium	50.5	51.4	0.9
Denmark	60.2	61.7	1.5
Finland	57.8	63.2	5.4
France	53.0	53.3	0.3
Germany	58.2	55.9	-2.3
Greece	58.7	59.4	0.7
Ireland	53.0	61.1	8.1
Italy	48.1	48.0	-0.2
Netherlands	43.0	47.7	4.7
Spain	49.4	58.0	8.6
Sweden	63.7	64.0	0.3
United Kingdom	66.8	66.9	0.2
United States	61.7	63.1	1.4

Sources: OECD Analytical Database; and Fund staff calculations.

1/ Cyclically corrected. The data in the first column refer to the three-year average employment rate during the previous cyclical peak around 1991-94. Likewise, the data in the second column refer to the last peak, around 1999-2000.

### Estimation of total factor productivity growth in Belgium

The production function was estimated in the first differences of the logarithm of the series, with total factor productivity (TFP) specified as a latent variable:

$$\Delta Y_t = \Delta A_t + \alpha \Delta L_t + \beta \Delta K_t + \varepsilon_t \tag{1}$$

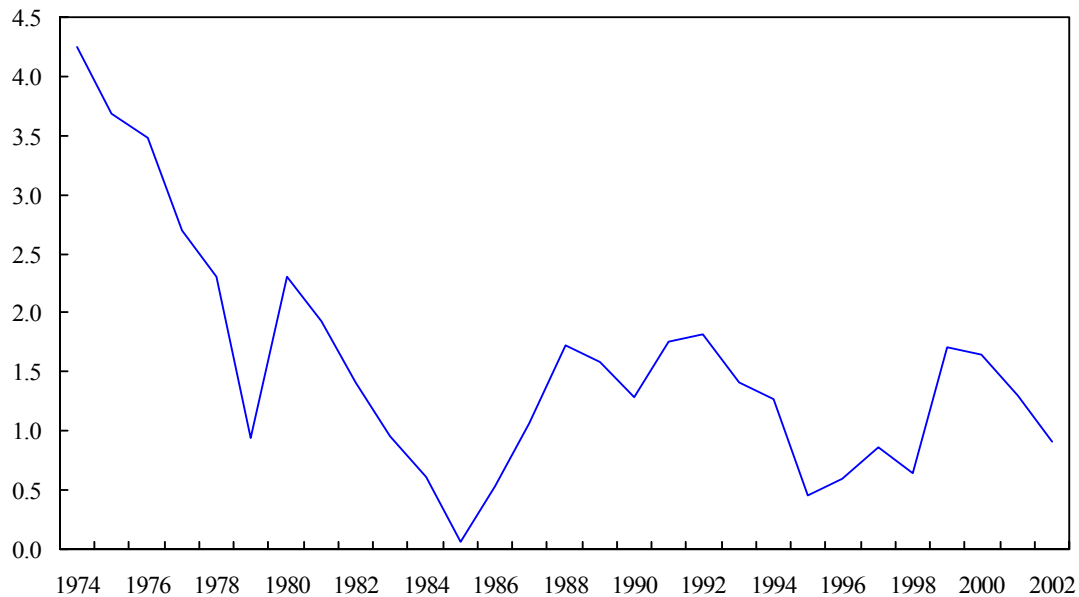
The unobserved variable  $\Delta A_t$  is assumed to follow a random walk, implying that shocks to total factor productivity growth have permanent effects. The estimation result for the period 1974–2002 for the constrained case (where labor and capital elasticities add up to one), based on the prediction error decomposition generated by the Kalman filter, is (standard error in parentheses):

$$\Delta Y_t = \Delta A_t + 0.612 \Delta L_t + 0.388 \Delta K_t \tag{2}$$

(0.084)

The actual labor share in value added (0.648) falls within the 5 percent confidence interval of the estimated labor elasticity. The estimated value of TFP growth during 1974–2002 is 1.56. As elsewhere in Europe, there has been a decline in TFP growth recently. For 1992–2002, the estimated value for Belgium was 1.15 percent.

Belgium: TFP-Growth, 1974-2002



## II. EMPLOYMENT EFFECTS OF REDUCTIONS IN LABOR TAXES IN A WAGE-BARGAINING MODEL<sup>10</sup>

### A. Introduction

26. **Employment rates in Belgium are among the lowest in the euro area, as are average hours worked in the market sector** (Figure 1). The causes of the lower labor utilization are well understood. Low employment rates appear largely to be the result of disincentives to work and high labor costs. Indeed, Belgium has an unusually wide safety net, with the number of beneficiaries exceeding the number of employed. Generous early retirement schemes discourage labor force participation of the old, while high replacement rates for the low paid and generous unemployment benefits keep the low-skilled and young on benefits. High labor costs also hurt labor demand. Moreover, limited geographical labor mobility has helped generate regional employment disparity, as Wallonia has exceptionally low employment rates.

27. **The tax wedge between labor costs and workers' take-home pay is the widest in the euro area, with likely adverse effects on employment.** It rose from 38 percent to 51 percent during 1960–2000 (Nickell, 2003). Based on the coefficients estimated by various studies, the 13 percentage point increase in the tax wedge could have raised real labor costs by about 20 percent and reduced the employment rate by as much as 4 percentage points. Belgium's average effective income tax rate at the average production worker (APW) salary is the highest in the OECD countries. The marginal effective tax rate on labor income is substantially higher than in its three neighboring countries (France, Germany, and the Netherlands) across all income ranges (Table 1).

Table 1. Belgium: Tax Wedge on Labor Income in 2003 1/  
(In percent of labor costs)

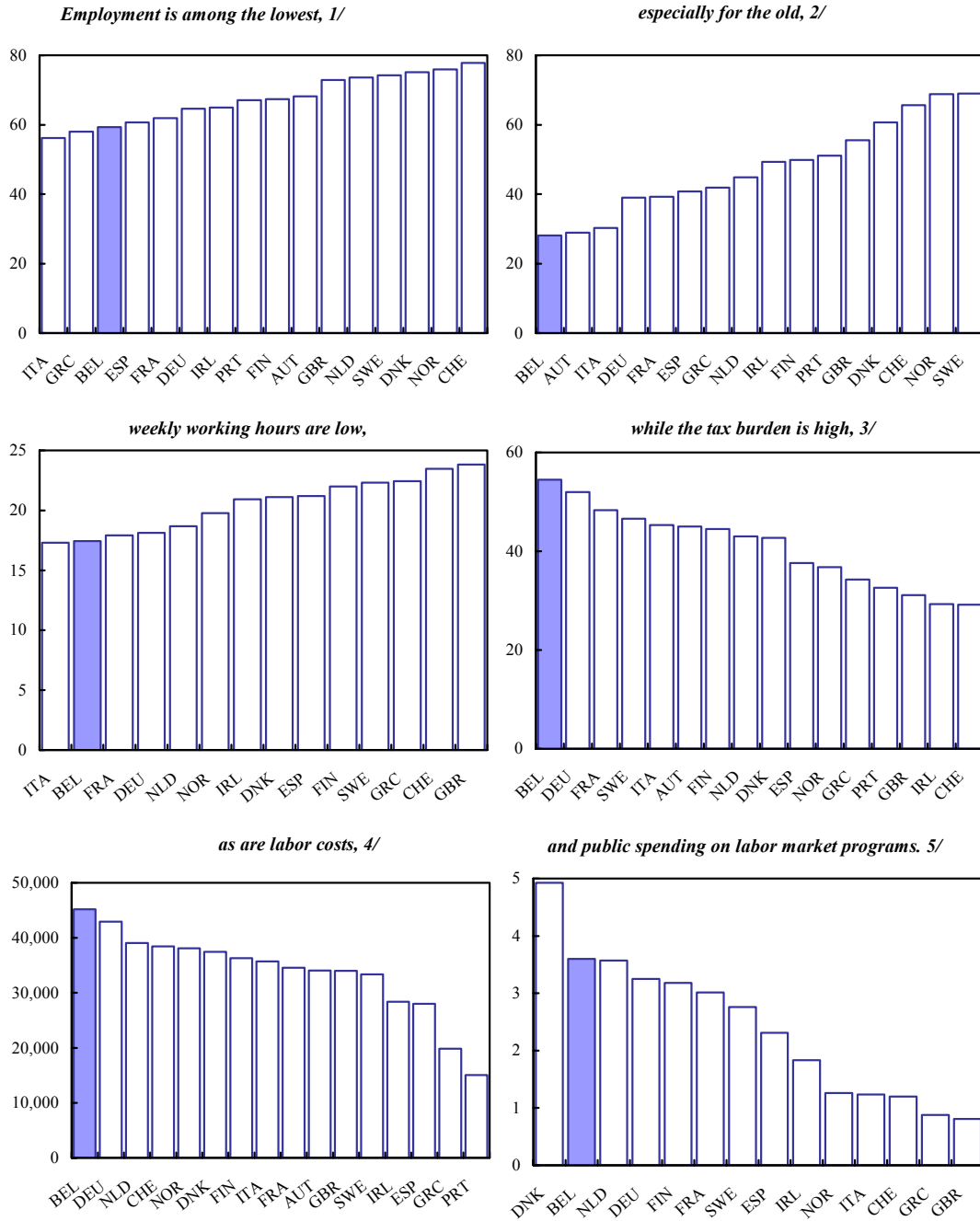
	Average rates				Marginal rates			
	% of APW				% of APW			
	67%	100%	133%	167%	67%	100%	133%	167%
Belgium	47.5	54.5	57.9	60.3	69.7	66.4	69.7	69.7
France	37.6	48.3	50.0	50.7	74.1	52.5	53.8	53.8
Germany	46.7	52.0	55.2	57.0	59.8	65.3	61.5	67.4
Netherlands	37.6	43.0	38.8	39.9	54.1	50.4	50.4	52.0
United Kingdom	26.2	31.1	33.5	34.2	40.6	40.6	40.6	31.7
United States	27.1	29.4	32.4	34.6	34.1	34.1	43.4	43.4

Source: OECD.

1/ Total tax wedge is defined as the combined central and sub-central government income tax plus employee and employer social security contribution tax, as a percentage of labor costs defined as gross wage earnings plus employer social security contributions. The tax wedge includes cash transfers.

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Figure 1. Belgium: Labor Market Indicators, 2003



Sources: OECD; and Fund staff estimates.

1/ In percent of population aged 15-64 years.

2/ In percent of population aged 55-64 years.

3/ Income tax plus employee and employer contributions as percent of labor costs (single persons without children).

4/ In dollars, PPP adjusted.

5/ Percent of GDP (1999-2002 average).



28. **Raising employment has been a priority of the government, and policy efforts have largely focused on labor market programs and tax cuts to promote employment** (Box 1). Including training programs, subsidized private employment, unemployment compensation and early retirement (which is funded through the unemployment system), public spending on labor market programs in Belgium is one of the highest within the euro area (Figure 1). Reducing direct taxes on labor has since the early 1980s been a centerpiece of the government strategy, which aims to lower replacement rates for social benefits over time to encourage labor supply and decrease labor costs to stimulate labor demand (Carey, 2003).<sup>11</sup> Changes in employers' social security contributions (SSC) affect the wedge between labor costs and labor income, while changes in employees' SSC and personal income tax modify the wedge between gross and net income. These tax cuts have often been targeted at the low-income earners,<sup>12</sup> as these types of measures are regarded as very effective in raising employment, because the tax wedge tends to have an especially negative effect on employment at the lower end of the labor market.

29. **These efforts have yet to raise labor utilization significantly.** The employment-population ratio did rise appreciably during 1988–2000. This increase largely reflected an increase in female participation in the labor force, whereas the employment-population ratio for men (aged 15–64) remained virtually unchanged (Figure 2). However, based on OECD data, employment measured by the average annual hours worked per person aged 15–64 in the market sector declined by 10 percent during 1983–2003 and by 4 percent during 1993–2003, despite a brief increase in 1995 and 1997.<sup>13</sup> Admittedly, this declining trend in working hours since the early 1980s is not a uniquely Belgian phenomenon, as it is also observed in many other EU countries, in particular, France, Germany, and the Netherlands. It is due to, among others, increasing female participation and the associated rise in part-time employment.

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<sup>11</sup> Policies to lower social security contributions were envisaged as early as in 1981. A detailed description is presented in Estevão (2001).

<sup>12</sup> For example, the substantial reductions in employers' social security contributions in 1999.

<sup>13</sup> Paid vacations, sick leave, and holidays are not accounted as working hours; neither is the time of someone working in the underground economy or in the home sector. There is a structural break in the OECD's annual working time series for Belgium, because in 1999, the NIS changed the ranking of the questions in the Labor Force Survey, which might explain the large drop in working time in 1999. The OECD has recently revised the data, which are yet to be published.

### **Box 1. Belgium: Reforms of Taxes on Labor Income Since 1983**

**1983–84:** The “*Plan plus un*” and the “*Plan d’insertion professionnelle des jeunes*” reduced employers’ SSC for the hiring of the unemployed and the young workers.

**1985:** Personal income tax reform (the “*Grootjans*” law) led to a 0.6 percentage point reduction in the marginal labor income tax rate. Reforms included (1) indexation of tax brackets and taxable threshold; (2) a slight decrease in tax rates; and (3) an increase in the taxable threshold.

**1988:** Personal income tax reform (the “*Maystadt*” law) led to a 2.2 percentage point reduction in the marginal labor income tax rate. Reforms included (1) indexation of tax brackets and taxable threshold; (2) reshuffling of the tax schedule; (3) separate taxation of labor income for married couples with two earners; (4) income-splitting for married couples with one earner; (5) tax rebates for replacement income; and (6) a new system of child burden rebates.

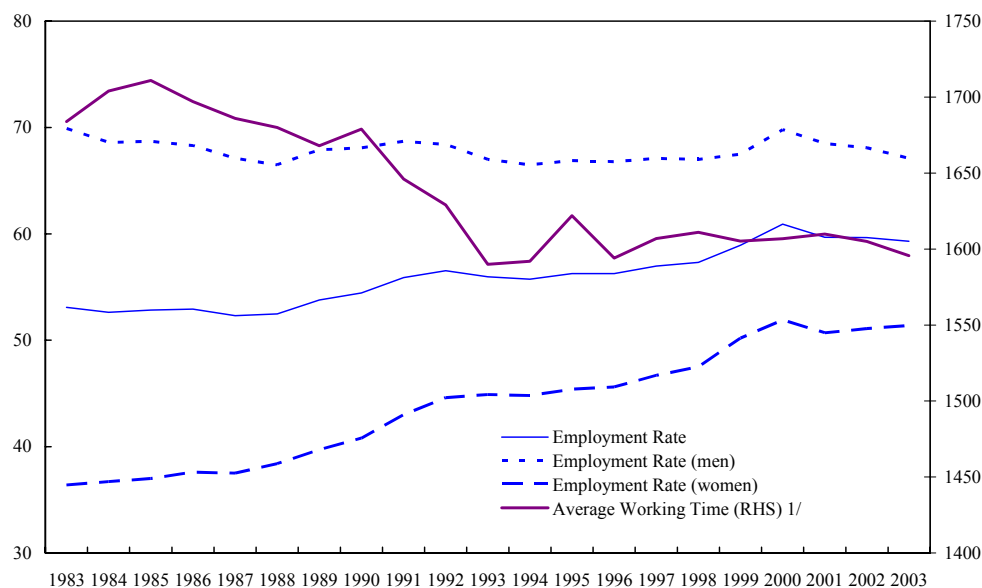
**1993–2000:** Employers’ SSC for targeted groups were lowered several times. Since 2000, employees’ SSC rates have been reduced slightly.

**2001–05:** Income tax reform introduced in 2001 and to be implemented fully by 2004 is expected to lower the marginal labor income rate gradually by 3.2 percentage points between 2000 and 2005. In the context of an “employment conference” in 2003, new initiatives were developed, including reducing the tax wedge for high-skilled workers.

The 2001 tax reform consists of four pillars:

- ***first pillar—easing the tax burden on labor*** by (1) introducing an income tax credit (€500 per year) for low-income earners; (2) raising the flat-rate deduction for working expenses; (3) shifting tax brackets upward; and (4) abolishing the top two marginal tax rates;
- ***second pillar—introducing neutrality between married and unmarried couples***, particularly with regard to (1) the income floor for tax exemption; (2) the tax rebate for replacement incomes; and (3) separate taxation on nonlabor income;
- ***third pillar—improving tax treatment for those with dependent children*** by introducing (1) a refund for their income tax reductions; and (2) a supplementary tax reduction and a higher income ceiling for single parents, and by excluding part of the child support from the other parent for tax-related income assessment; and
- ***fourth pillar—introducing more environmentally sound taxation.***

Figure 2. Belgium: Labor Supply, 1983-2003  
(In percent of population; unless otherwise indicated)



Source: OECD and the Belgian Central Economic Council (CCE).

1/ Working hours per worker per year. Data for 1983-98 are based on OECD, while data for 1999-2003 are based on the CCE.

30. **Empirical evidence suggests that there is an overall adverse tax wedge effect on employment, hence reducing the tax wedge can be expected to raise employment.** There is an extensive research based on panel data for OECD countries, with many studies finding significant tax wedge effects on labor costs and employment. For instance, Prescott (2004) finds that virtually all the large differences between the U.S. labor supply and those of France and Germany are due to the differences in tax rates. Similarly, Daveri and Tabellini (2000) conclude that the increase in the tax wedge fully explains the increase in unemployment in Europe in recent decades and that a 10 percentage point increase in the tax wedge raises real labor costs by 5 percent in the long run for a group of countries including Belgium. Other studies find a somewhat smaller negative tax wedge effect on employment (Nickell and Layard, 1999; Elmeskov and others, 1998). Nickell (2003) concludes that a 10 percentage point increase in the tax wedge reduces employment by between 1 and 3 percent of the working-age population. For Belgium, Elmeskov and others (1998) finds that of the 1.7 percentage point increase in structural unemployment during 1990–95, about a third was due to the widening of the tax wedge during that period.

31. **The employment effect of tax cuts with different wage formation mechanisms has been examined in two recent studies on Belgium, both using general equilibrium macroeconomic models.** Burggraeve and Du Caju (2003) investigate the labor market and fiscal impact of a budget-neutral reduction in employers' social security contributions, taking into account the wage formation process in Belgium. Using the National Bank of Belgium's (NBB) quarterly macroeconomic model, they conclude that the impact of the tax reductions on employment depends on the outcome of the wage formation process. More recently,

Stockman (2004) assesses the impact of the 2001 personal income tax reform on wages and employment, using the Federal Planning Bureau's LABMOD model. When fully implemented, the 2001 reform is expected to lower the personal income tax rate (as a percent of gross wages) by about 3 percentage points in 2005. Stockman finds that the reform could raise employment by 0.6 percent (24,000 workers) in 2004 and by 59,000 workers in the long run under the right-to-manage wage bargaining model; however, the impact would be larger under the search model, with employment increased by about 86,000 workers in the long run.

32. **This paper analyzes the effect of tax changes on employment under different wage formation mechanisms.** Unlike the previous studies on Belgium, which focus on the changes in the average effective tax rates, this paper investigates the impact of changes in the marginal effective income tax rate on the Belgian employment. The theoretical part of the study derives the equilibrium employment under two wage-setting mechanisms: a competitive market model based on Prescott (2004) and a wage-bargaining model based on Nickell (2003). The effects of the tax wedge on employment under these models are assessed. In the empirical part of this chapter, both models are calibrated to simulate the effects of fiscal reforms during 1980–2001 on employment under different wage formation mechanisms.

33. The rest of the paper is organized as follows: Section B reviews the current wage formation process in Belgium. Section C outlines the theoretical models used for analysis. Model simulations and their implications are discussed in Section D. Section E concludes.

## B. Wage Formation in Belgium

34. **The wage-bargaining system in Belgium can be characterized as one with intermediate wage coordination, as opposed to centralized and decentralized wage formation systems.** Although firm-level agreements have gained considerable importance over the last few years, wages are predominantly determined at the sector level. The wage negotiation process has three key components: the Interprofessional Agreement (IPA) followed by sectoral negotiations; administrative extension of labor contracts; and indexation of wages to prices during the contract. The IPA is a product of negotiations within the joint committees (*comités paritaires*), which have equal employer and employee representation and are organized by sectors of economic activities.<sup>14</sup> The IPA determines a national wage norm and a national minimum wage, which serve as the upper and lower limits for the sectoral- and enterprise-level wage negotiations.

35. **The wage norm sets a ceiling for the growth of nominal hourly labor costs for Belgian enterprises (the Law of July 1996), with a view to preserving external competitiveness vis-à-vis France, Germany, and the Netherlands.** It is set every two years (usually in October) in the IPA for a two-year period by the social partners, based on estimates provided by the Central Economic Council (*Conseil central de l'économie*,

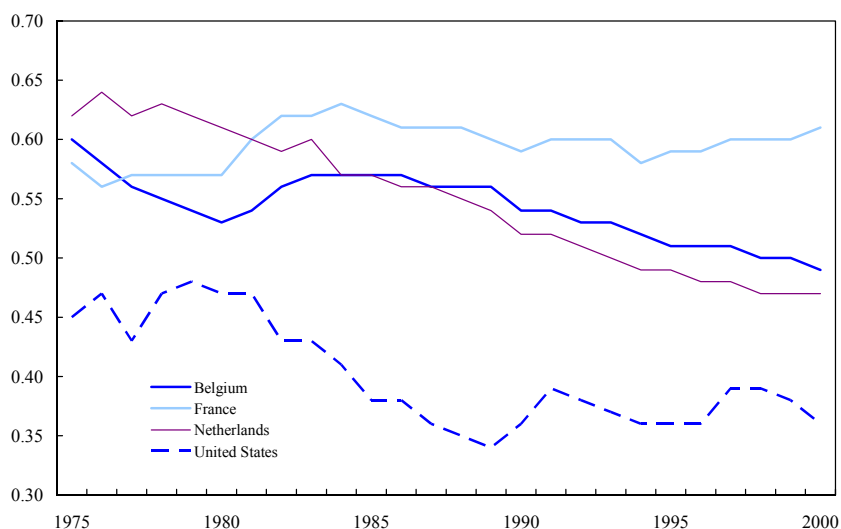
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<sup>14</sup> The number of joint committees now exceeds 100, because economic sectors are narrowly defined.

or CCE). In particular, the CCE estimates the nominal wage norm as the weighted average of the expected increase in nominal labor costs in Germany, France, and the Netherlands, according to projections published by the OECD's Economic Outlook and corrected for average working hours. In theory, the estimated margin can be lowered to reflect any excessive increases during the previous two-year period in Belgium vis-à-vis its three neighbors. The nominal wage norm is adjusted by projected inflation to determine the room for real wage increases.

36. **Legally-guaranteed minimum wages set the floor for wages.** Since the mid-1980s, national minimum wages in Belgium have declined steadily in relation to APW wages, broadly in line with rates in the Netherlands but lower than the rates in France (Figure 3). Nonetheless, the overall level of national (and sectoral) minimum wages still appears high, pricing the young out of jobs. OECD estimated that about 12 percent of full-time employees earn up to 115 percent of the statutory minimum wage (€1,131 per month). Moreover, the age-related sectoral and regional hourly minimum wages were well in excess of the national minimum wage, thus diminishing the effectiveness of fiscal and other measures to address inactivity traps.

Figure 3. Minimum Wages as Percent of APW, 1975-2000



Source: OECD.

37. **The wage indexation rule implies that nominal gross wages are automatically adjusted with the health index of consumer prices (HICP).**<sup>15</sup> The implementation of the indexation, however, is subject to sectoral negotiations. In some cases, wages are adjusted at certain intervals (e.g., every two, three, or four months); while in other cases, they are adjusted when the health index of consumer prices exceeds a certain threshold.

<sup>15</sup> Defined as the national index of consumer prices, excluding the prices of alcoholic beverages, tobacco, and motor fuels.

38. **In theory, intermediate wage formation tends to generate higher wage increases than centralized wage formation or decentralized wage bargaining** (Nickell and Layard, 1999; and Elmeskov and others, 1998). It tends to limit sectoral wage differentiation and result in insufficient centralization to account fully for macroeconomic spillovers of wage settlements, but enough to generate market power.<sup>16</sup> Both labor unions and business representatives have been dissatisfied with the process, including the estimate of the norm by the CCE: the labor representatives view indexation as nonnegotiable, and business representatives prefer a centralized process to resist wage demands. Moreover, if the wage norm is binding, tax cuts might not have the desired effect on gross wages. Hence, tax cuts affect employment only through higher demand due to higher disposable income. Similarly, if unions have strong bargaining power, they may more easily resist employers' attempts to reflect the higher payroll taxes in lower wages. Therefore, the effect of reducing the tax wedge may not be as significant as expected.

39. **In practice, the wage norm has not always been adhered to** (Table 2). Two factors seem to explain this outcome: first, the wage norm appears not to be binding in sectors with labor shortages; second, the norm may have served as a floor rather than a ceiling, thus pushing up the general wage level. Overruns of the wage norm, whether due to higher-than-anticipated inflation or due to wage drift, were not corrected in subsequent agreements despite a legal provision permitting such action. In addition, cuts in taxes and employer and employee social security contributions appear to have translated into higher take-home pay rather than lower labor costs.

Table 2. Belgium: Developments Under Interprofessional Wage Agreements, 1999-2004  
(Hourly labor costs, percent change)

	1999-2000	2001-02	2003-04
Wage norm	5.9	6.1	5.4
Actual change in hourly labor costs			
Three neighboring countries 1/	5.4	6.7	4.5
Belgium	5.3	7.5	5.9
Due to:			
Conventional wage increase	4.4	7.1	4.2
Indexation	2.6	4.8	2.8
Real increase	1.7	2.1	1.4
Employers' social security contributions	-1.5	1.0	-0.6
Wage drift	2.4	-0.5	2.2

Sources: Belgian authorities; and Fund staff estimates.  
1/ France, Germany, and the Netherlands.

<sup>16</sup> On the drawbacks of such an intermediate position, see the OECD *Employment Outlook*, July 1997, and Thomas (2002).

### C. Theoretical Framework

40. The basic competitive market model is taken from the standard theory used in Nickell (2003) and Prescott (2004). Using a representative agent model, the *household* faces a labor-leisure decision and a consumption-savings decision. The household's preferences are given by

$$\begin{aligned} \max \quad & E \left\{ \sum_{t=0}^{\infty} \rho^t [\ln C_t + \alpha \ln(1 - N_t)] \right\} \\ \text{s.t.} \quad & C_t + I_t = w_t(1 - \tau_t)N_t + (r_t - \delta)K_t + T_t \end{aligned}$$

where  $C$  is consumption,  $I$  investment,  $w$  real wage,  $r$  the real return on capital, and  $\tau_t$  is the tax wedge between the real labor cost per employee facing the representative firm and the real after-tax net wage.<sup>17</sup> The preference parameter  $\alpha$  measures the value of leisure relative to consumption. With the population of working age normalized to one,  $1 - N$  is leisure. Even though leisure includes time allocated to working in the nonmarket and underground market sectors, the important point is that these sectors are not taxed. All taxes are used for government consumption  $G$  and transfer payments  $T$  to the household.

41. Suppose  $W$  is the nominal labor cost per worker and  $P$  is the price of the firm's product. Assuming  $\tau^1$ ,  $\tau^2$ ,  $\tau^3$ , and  $\tau^4$  are employers' SSC, employees' SSC, income tax, and the consumption tax, respectively, the real after-tax consumption wage is given by

$$w^{\text{after-tax}} = w_t(1 - \tau_t) = \frac{W_t(1 - \tau_t^1)(1 - \tau_t^2)(1 - \tau_t^3)}{P(1 + \tau_t^4)}$$

and

$$\tau_t = \frac{(1 - \tau_t^1)(1 - \tau_t^2)(1 - \tau_t^3)}{(1 + \tau_t^4)}.$$

42. The *representative firm* determines labor demand by maximizing its profits for given factor prices:

$$\begin{aligned} \max \quad & \Pi = \sum_{t=0}^{\infty} \{\rho^t [P_t Y_t - W_t N_t]\} \\ \text{s.t.} \quad & Y_t = C_t + I_t + G_t = \lambda_t K_t^\beta N_t^{(1-\beta)} \end{aligned}$$

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<sup>17</sup> For simplicity, we assume no investment or capital income tax. Although introducing these parameters would affect the price of investment relative to the consumption good, it would not alter the price of consumption relative to leisure, which is the focus of the analysis.

Assuming a depreciation rate of  $\delta$ , the capital stock is

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

43. In *equilibrium*, the marginal rate of substitution between leisure and consumption is equal to their price ratio, and the marginal product of labor is equal to the real cost of labor

$$\frac{\alpha/(1-N)}{1/C} = w(1-\tau)$$

$$\frac{(1-\beta)Y}{N} = w.$$

These equations solve for the labor supply under a competitive market:

$$N_t = \frac{(1-\beta)}{(1-\beta) + \frac{C_t}{Y_t} \frac{\alpha}{1-\tau}} \quad (1)$$

$$dN_t / d\tau = \frac{-\alpha(1-\beta)}{[(1-\beta) + \frac{C_t}{Y_t} \frac{\alpha}{1-\tau}]^2 (1-\tau)^2} < 0.$$

In this model, the intratemporal factor affecting labor supply is captured by  $1-\tau$ , which distorts the relative prices of consumption and leisure at a point in time. The size of its impact on labor supply depends crucially on the preference parameter  $\alpha$ . The term  $C/Y$  captures intertemporal factors. Equilibrium  $C/Y$  is a function of future tax rates, productivity, and the current capital stock.

44. Now we consider a situation where wages are determined in a wage-bargaining model, which seems more suitable for Belgium (Estevão, 2001). In this model, unions and firms bargain over the wage level taking into account the labor demand curve. In particular, for each firm  $i$ , wages are determined by a Nash bargain that maximizes

$$[N_i(w_i)^\gamma (w_i(1-\tau) + Y_n - A)]^\theta \prod_i$$

subject to the labor demand derived from the firm's profit maximization:

$$\frac{(1-\beta)Y_i}{N_i(w_i)} = w_i, \quad (2)$$



where  $Y_n$  is real, after-tax, per capita nonlabor income,  $A$  is the expected alternative income if not employed in firm  $i$ , and  $\Pi$  is the firm's profit. The parameter  $\gamma$  measures the extent to which the worker takes into account the employment effects of the wage bargain. Collective bargaining is therefore associated with a higher  $\gamma$ . The parameter  $\theta$  captures the relative strength of the worker in the bargain.

45. Expected alternative income  $A$  for a representative worker consists of income generated by employment in another firm (with probability  $N$ ) and nonemployment benefits (with probability  $1-N$ ). Specifically,  $A$  is given by

$$A = N(1 - \tau)w_i + (1 - N)b(1 - \tau^b), \quad (3)$$

where  $b$  represents the after-tax nonemployment benefits, which are assumed to be subject to a much lower income tax rate  $\tau^b < \tau$  (in our example, we assume  $\tau^b = 0$  for simplicity). Hence,  $b/(1-\tau)w$  is the net replacement rate.

46. The first-order condition implies that real after-tax wages in the bargaining model are determined as a markup over the worker's alternative income. Specifically,

$$w(1 - \tau) = \left(1 + \frac{1}{B-1}\right)A, \quad \text{where } B = \frac{\theta\gamma + \beta}{\theta(1 - \beta)}. \quad (4)$$

This markup is larger when the bargaining power of the worker is stronger (higher  $\theta$ ) or when the bargaining process is more decentralized (lower  $\gamma$ ).

47. Assuming identical firms with  $w_i = w^b$ , equations (2) and (3) solve for employment and the real wage under the equilibrium ( $N(w^b)$ ,  $w^b$ ). It can be shown that  $\partial N/\partial \tau < 0$  so long as the after-tax benefits are less than the after-tax wage (otherwise no one would work). Moreover, the size of  $\partial N/\partial \tau$  depends on the features of labor market institutions, specifically the parameters  $\gamma$  and  $\theta$ .

#### D. Simulations

48. We first simulate the impact of changes in the tax wedge on employment under the **competitive market model**, using equation (1). Specifically, the capital share parameter  $\beta$  is set to 0.3224 and the preference parameter  $\alpha$  set to 1.54, based on Prescott (2004). This is consistent with the conjecture that across countries, idiosyncratic preference differences average out and households tend to have almost identical preferences. Employment is measured by hours worked per year per person aged 15–64.

49. To run the simulation, the marginal labor income tax rate is estimated based on the following equation:

$$\tau^{marginal} = 1.68 \tau^{income} + 1.13 \tau^{employerSSC} + \tau^{employeeSSC},$$

where factors 1.68 and 1.13 are selected based on the average and marginal rates for four different income groups published by the OECD (Table 1) and reflect the fact that marginal income tax rates are higher than the average tax rates.

50. **The results indicate that the impact of changes in the tax wedge on employment is much larger under a competitive market than within the current institutional setting** (Table 2). We look at the following two periods when fiscal reforms led to substantial reductions in tax wedge:

- 1985–91—the *Grootjans* law in 1985 and the *Maystadt* law in 1988, which reduced the marginal tax income rate by 3.6 percentage points; and
- 2000–03—the fiscal reform of 2001, which has lowered the marginal rate by 1.4 percentage points.

51. Simulation results indicate that in a competitive market, the income tax reforms of 1985 and 1988 would have increased employment by more than 12 percent during the period 1985–91 (Table 3). This seems to be consistent with Estevão’s (2001) finding that policy changes since the early 1980s have apparently not boosted employment. This result also holds when using the OECD data on tax wedges for simulation. Nonetheless, these estimates should be interpreted with caution. For example, the lack of an impact on employment during 2000–03 may simply reflect the slowdown in economic activity during this period.

Table 3. Belgium: Impact of Changes in Tax Wedge on Employment, 1985-2003

	1985-91	2000-03
Changes in marginal effective labor income tax 1/	-3.6	-1.4
Changes in average effective labor income tax 1/	-1.6	-0.9
Income tax	-2.9	-0.8
Employers' SSC	2.0	-0.3
Employees' SSC	-0.7	0.1
Predicted impact under a competitive market 2/	12.4	0.7
Actual employment changes 2/	1.8	-2.8

Source: Fund staff estimates.

1/ In percentage points.

2/ Percent change during the period.

52. The difference between Belgian labor supply and that of France and Germany appears due to differences in their tax wedges. For example, for the period 1993–96, with the same marginal tax wedge (about 60 percent), our predicted labor supply for Belgium is very similar to that in Germany and France as estimated by Prescott (2004).

53. Simulated effects of changes in the tax wedge on employment **under a wage-bargaining model** are based on a reduced-form employment equation derived from the first order conditions captured by equations (2), (3), and (4). This equation is then calibrated to reproduce the employment effect of tax reforms during the period 1985–91. Specifically, for the parameter  $\beta$ , a value of 0.5 is selected, and a value of 0.007 is chosen for the parameter  $\gamma$ , based on existing macroeconomic models for Belgium (Jeanfils, 2000).<sup>18</sup> Once the model has been calibrated, it is used to estimate the impact of the 2001 tax reform.

54. **Under the wage bargaining model, the 2001 tax reform would have a positive effect on employment; moreover, this effect is larger when the wage bargaining power is weaker** (Table 4). The 2001 tax reform is expected to lower the average and the marginal effective tax rates on labor by 2.0 and 3.2 percentage points, respectively, during the period 2000–05.<sup>19</sup> This would raise employment by 1.6 percent during this period and by 0.5 percent in 2003 alone—the latter is very close to the 0.6 percent estimated by Stockman (2004). The estimated effect under the wage bargaining model is much smaller than the effect estimated under the competitive market model discussed above (4.3 percent).

Table 4. Belgium: Employment Effects of Labor Tax Cuts in a Wage-Bargaining Model

	1985-91	2000-05
Changes in marginal effective labor income tax 1/	-3.6	-3.2
Changes in average effective labor income tax 1/	-1.6	2.0
Income tax	-2.9	1.8
Employers' SSC	2.0	0.3
Employees' SSC	-0.7	-0.1
Employment effect under the calibrated wage bargaining model 2/	1.8	1.6
Employment effect with the bargaining power reduced by half 2/	2.4	2.2
Actual employment changes 2/	1.8	

Source: Fund staff estimates.

1/ In percentage points.

2/ Percent change during the period.

## E. Concluding Remarks

55. **Since the early 1980s, reducing the tax wedge on labor has been an important component of the authorities' strategy to reverse the decline in employment rates.** Social security contributions were lowered several times, as were income taxes, most recently in the 2001 tax reform (the full effect of which will be felt in 2007). Budget

<sup>18</sup> The existing estimates of the long-run elasticity of labor demand in Belgium vary from -0.2 to -2.0.

<sup>19</sup> These are our estimates based on Stockman (2004) and OECD (2003).

constraints limited progress, however, even inducing reversals such as in 1993 when taxes were raised. Tax reductions were often targeted at low-income earners. These cuts, to the extent that they reduce labor costs, stimulate labor demand. They promote labor supply directly and probably also indirectly as net take-home pay rises compared to social benefits. Given empirical evidence that the rise in the labor tax wedge from 38 percent in 1960 to 51 percent in 2000 may have lowered the employment rate by up to 4 percentage points, such a strategy makes sense.

56. **Current labor market institutions impede the effectiveness of the tax cut strategy to raise employment.** The strong bargaining position of labor unions implies that reductions in social security contributions and income taxes end up mostly in take-home pay. Our estimates suggest that the 2001 tax reform (at a budgetary cost of 2 percentage points of GDP) will raise the employment rate by 1.6 percentage points by 2005. By comparison, if union bargaining power were reduced by half, the employment effect would be 2.2 percentage points, while a fully competitive market would deliver 4.3 percentage points.

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