Session 3

PUBLIC DEBT, AGEING AND FISCAL SUSTAINABILITY

LONG-TERM BUDGETARY IMPLICATIONS OF TAX-FAVOURED PRIVATE PENSION SCHEMES

Pablo Antolín, Alain de Serres and Christine de la Maisonneuve[*]

Introduction

In most OECD countries, governments promote the development of private pensions by means of tax incentives. In the most common regime, private pension savings can be deducted from the income tax base, and accrued return on investment is exempt from taxation, but pension benefits arising from these savings are taxed. Apart from providing a tax incentive to pension saving, this tax treatment also creates an implicit fiscal asset.

The central purpose of this paper is to provide estimates of the implicit fiscal asset, as well as of the evolution over time of fiscal costs and benefits related to tax-favoured pension regimes in several OECD countries, taking into account current and future contributions, asset accumulation and withdrawals, all of which will be strongly influenced by future demographic developments. The paper also examines whether governments should expect sizeable net tax revenues as large cohorts of workers who benefit from tax exemption reach retirement and begin relying on taxable pension benefits to finance consumption.

Section 1 discusses the methodology and main assumptions. Section 2 presents the main results of projecting net fiscal revenues arising from tax-favoured schemes over the period 2000-2050 and examines the extent to which alternative assumptions on saving diversion affect those results. Finally, Section 3 explores a number of policy options with a particular emphasis on factors potentially affecting the effectiveness of tax-favoured pension schemes in boosting private saving.

1. Net fiscal revenues and assets from tax-favoured plans: methodology

This section presents briefly the approach used to project the future profile of net fiscal revenues arising from tax-favoured private retirement plans, taking into account current and future contributions, asset accumulation and withdrawals, all of which will be strongly influenced by future demographic developments. The study

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This is an abridged version of Antolín, de Serres and de la Maisonneuve (2004). The authors would like to thank Jean-Philippe Cotis, Jorgen Elmeskov, Michael Feiner, Jagadeesh Gokhale, Chris Heady, Peter Jarrett, Vincent Koen, Willi Leibfritz, Giuseppe Nicoletti, Paul O'Brien, Juan Yermo and Kwang-Yeol Yoo for comments on earlier drafts, as well as Irene Sinha for secretarial assistance. They also thank participants at the 6th Banca d'Italia Workshop on Public Finance, *Public Debt*, held in Perugia on April 1-3, 2004. The views expressed in the paper are those of the authors and do not necessarily reflect those of the OECD or the governments of its Member countries. The authors are sole responsible of any errors.

focuses on schemes that generate tax deferral, in particular those where both the funds contributed and the accrual return on accumulated funds are exempted from taxation but where the benefits are treated as taxable income upon withdrawals. Such arrangements are commonly referred to as "exempt-exempt-taxed" (EET) schemes. The main aim is to provide estimates of the future flow of budgetary costs and revenues over time as well as their net present value as a measure of the implicit net fiscal asset associated with these schemes. Projections are conducted as an accounting exercise and take into consideration the direct effects from revenues foregone on contributions, revenues foregone on accrued investment income and revenues collected on withdrawals. The impact on fiscal revenues from consumption or corporate taxes as well as potential second-round effects from a change in saving behaviour is not taken into account in the calculations.

1.1 Framework[1]

Generating estimates of future costs and benefits of tax-favoured saving plans requires projecting forward a number of key variables including the number of contributors, total contributions, assets, accrued income from assets, and withdrawals, taking into account initial assets and that average income, contributions rates and tax rates vary across age groups.

Current and future net fiscal revenues and assets have been estimated for 17 OECD countries.[2] The country coverage has been primarily conditioned by the amount of information available to conduct the exercise in a meaning full way but as well on the importance of tax-favoured schemes in each country, both in terms of asset size and participation (Figure 1). The projections cover all the countries with accumulated assets in tax-favoured retirement saving schemes equivalent to at least 20 per cent of GDP.

Net fiscal revenues (*NFR*) are calculated for each year on a cash-flow basis as the net sum across all generations of the revenues collected on withdrawals, revenues foregone on contributions and revenues foregone on accrued income:

$$NFR_t = \mu_b \cdot \sum_g B_{t,g} - \sum_g \mu_{c,g} \cdot C_{t,g} - \mu_a \cdot i \cdot \sum_g A'_{t-1,g} \qquad (1)$$

Revenues collected on withdrawals (first term) are determined by the tax rate on withdrawals, μ_b, and total withdrawals made by age group g, ($B_{t,g}$), which depend on total assets accumulated in tax-favoured retirement saving plans at the

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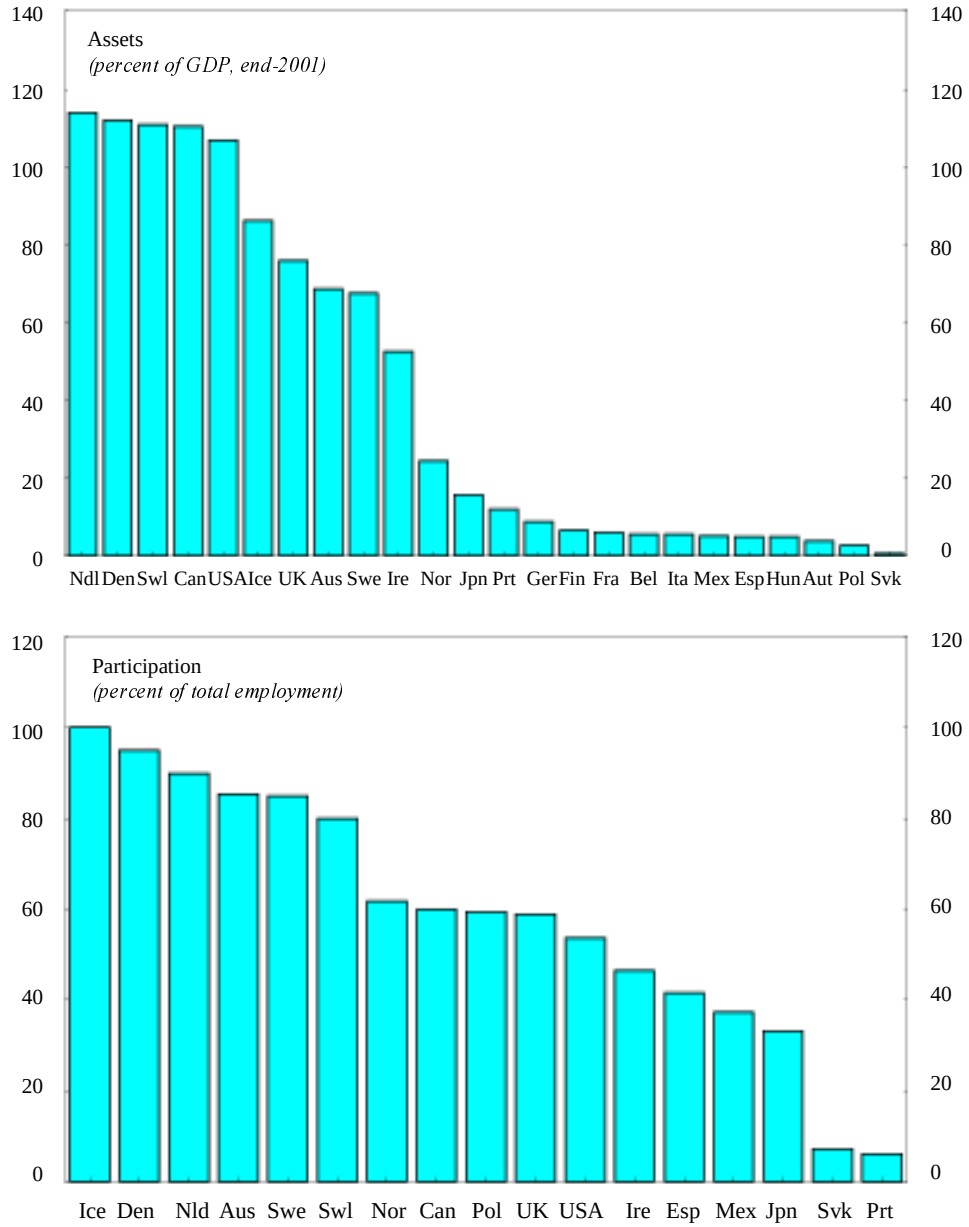
1 See Antolín, de Serres and de la Maisonneuve (2004) for a complete description.

2 The countries included are Australia, Canada, Denmark, Iceland, Ireland, Japan, Mexico, the Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom and United States.

Figure 1

Assets and Participation in Tax-favoured Retirement Saving Plans
(percent)



Source: International Pension Funds and their Advisors (2003), national sources and OECD.

time of retirement. Assets accumulate according to the (nominal) rate of return on previous period assets *i*, new contributions, ($C_{t,g}$), and withdrawals:

$$A_{t,g} = (1+i)A_{t-1,g} + C_{t,g} - B_{t,g} \tag{2}$$

Withdrawals are modelled on the assumption that the total amount of assets accumulated until the age of 65 is run down according to a constant annuity formula until full exhaustion at the age of 85. In the cases where sufficient information was available, early withdrawals between the age of 55 and 65 are allowed, using withdrawal rates per age category observed in recent years.

As contributions can generally be fully deducted from taxable income, *revenues foregone on contributions* (second term in equation 1) made by each age group are the product of the age-specific marginal income tax rate on contributions $\mu_{c,g}$ and the total amount contributed in age group *g*, C_g. Total contributions per age group are calculated using employment projections, age-income profiles, average wages, participation rates and contribution rates per participants.

Employment projections are based on population and labour force participation rate projections from Burniaux *et al.* (2003) combined with assumptions regarding the future evolution of unemployment rates. Data on the age-income profile come from national sources and OECD. The simulation exercise assumes that the age-income profile observed in 2000 will remain constant over the projection period. The average (nominal) wage in the total economy grows at a constant rate of 3.7 per cent *per annum*, reflecting the assumptions of a productivity growth rate of 1.7 per cent and 2 per cent inflation.

The age-specific rates of participation in tax-favoured schemes are based on current rates of participation in tax-favoured schemes per age group. They are assumed to remain constant in the future in all cases except Mexico, Poland and the Slovak Republic where participation raises gradually over time to reach full participation in the cases of the former two countries, consistent with the mandatory nature of their schemes, and to around 50 per cent in the case of Slovak Republic.

Foregone tax revenues on accrued income from investment (third term in equation 1) measure taxes that would have been collected on investment income if private savings had been invested in a benchmark saving vehicle. It is measured as the net present value of taxes paid on a stream of investment earnings in proportion to pre-tax cumulative investment earnings. It thus depends on the tax rate on accrued income from alternative savings, the nominal rate of return on assets, and the amount of assets accumulated. Note that in contrast to the calculation of revenues collected on withdrawals, the relevant stock of assets in this case is not total assets invested in the scheme but only those accumulated from diverted savings. The reason for including only a subcomponent of total assets in the calculation of revenue losses on investment income is that contributions to tax-favoured retirement saving plans comprise the tax subsidy (foregone tax revenues on contributions) and personal saving. The latter can in turn be split into diverted saving and new saving.

Since neither the new saving nor the tax subsidy components would have generated investment income in absence of the scheme, they need to be excluded from the calculation of tax revenue losses.

1.2 Tax parameters

The relevant tax rates used to estimate revenues foregone on contributions and accrued investment income, as well as revenues collected on withdrawals are calculated based on a number of assumptions.[3] First, the current tax treatment of standard savings vehicles in each country is taken as the benchmark tax system. In all cases, this is some version of the comprehensive income tax regime (TTE). Second, marginal tax rates corresponding to different levels of income and family status are derived from a tax model reflecting the current tax code in each country (OECD, 2002). In all countries where contributions to private pension plans can be used to lower taxable income, these effective marginal tax rates measure the fiscal revenue foregone on a unit of contribution.

Third, as concerns taxation of investment income, detailed information on the tax treatment of specific non-pension savings vehicles included in the benchmark portfolio is used to derive implicit tax rates on the return to investment (see Yoo and de Serres, 2004). Fourth, given the lack of sufficient information about the overall income of private pension beneficiaries, the general rule has been to set the tax rate applied on benefit withdrawal from private pension at 5 percentage points below the average tax rate (across age groups) used to calculate revenues foregone on contributions.[4] Finally, the pre-tax nominal rate of return on assets is set at 6.5 per cent *per annum*, including 2 per cent inflation.

2. Results

The baseline projections presented in this section are conducted as an accounting exercise and are based on the assumption that contributions to private pension plans do not affect the overall level of national savings. In other words, private consumption is assumed to remain unchanged following the introduction of a tax-favoured scheme. Hence, while contributors are assumed to save the amount corresponding to the value of the tax break, they do not provide new saving, *i.e.* that would be financed by a reduction in current consumption. The potential implications of allowing for new saving are discussed in Section 2.2.

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[3] A detailed exposition of the calculation of relevant tax rates and related assumptions can be found in Yoo and de Serres (2004).

[4] The motivation for having a lower tax rate on withdrawals is that tax deferral often creates the scope for tax smoothing, suggesting that the effective tax rate is likely to lie somewhere between the marginal and average tax rates corresponding to the amount of pension benefits. Give that a proper calculation would require adequate information about the level and various sources of taxable income of pensioners who have contributed, a simple rule was adopted.

2.1 Base case results

The base case projection provides, for each five-year period between 2000 and 2050, estimates of fiscal revenues foregone and collected in per cent of GDP. In addition, the stream of future net fiscal revenues over the period 2000-2050 is also discounted (using the rate of return on assets as the discount rate) to provide a measure of the implicit net fiscal assets as of 2000. The main results can be summarised as follows:

- Net fiscal assets are negative for all countries, and in the majority of them, even the flow of net fiscal revenues remains negative throughout the projection period, owing largely to foregone revenues on accrued investment income (Figure 2).
- In all countries except Sweden and Denmark, the flow of net fiscal revenues is projected to decline over the next 10 to 20 years, but to increase significantly thereafter in the majority of cases.
- By the end of the projection period, an improvement in the budget contribution relative to 2005 is expected in several countries. The improvement is particularly pronounced in Denmark, Iceland, the Netherlands and Sweden. In contrast, net fiscal revenues are expected to remain below their 2005 level at the end of the projection period in Ireland, Japan, Poland, Portugal, Slovak Republic, Switzerland and the United.

These results may look surprising in the face of arguments that governments should expect a windfall from tax-favoured schemes over the next decades (see Annex 1 in Antolín, de Serres and de la Maisonneuve, 2004). These claims notwithstanding, the above findings should not be seen as counter-intuitive. In the absence of new savings, each currency unit invested in an EET pension scheme entails a net fiscal cost over the whole life span of the investment, owing mainly to the non-taxation of investment income. Moreover, the effective tax on withdrawals is generally lower than the marginal tax on contributions. For the aggregate cost to turn into a net benefit, total withdrawals would have to exceed total contributions by a sufficient margin to at least compensate for the revenue losses due to the non-taxation of investment return.[5]

In fact, simple calculations suggest that under the set of assumption made and given the respective tax rates, withdrawals would have to exceed contributions by a factor of 16 (Japan) to slightly over one (Denmark) in order to bring net fiscal revenues to balance at a given point in time (Figure 3).[6] Consistent with the results shown above, the required ratio of withdrawals to contributions to balance net fiscal

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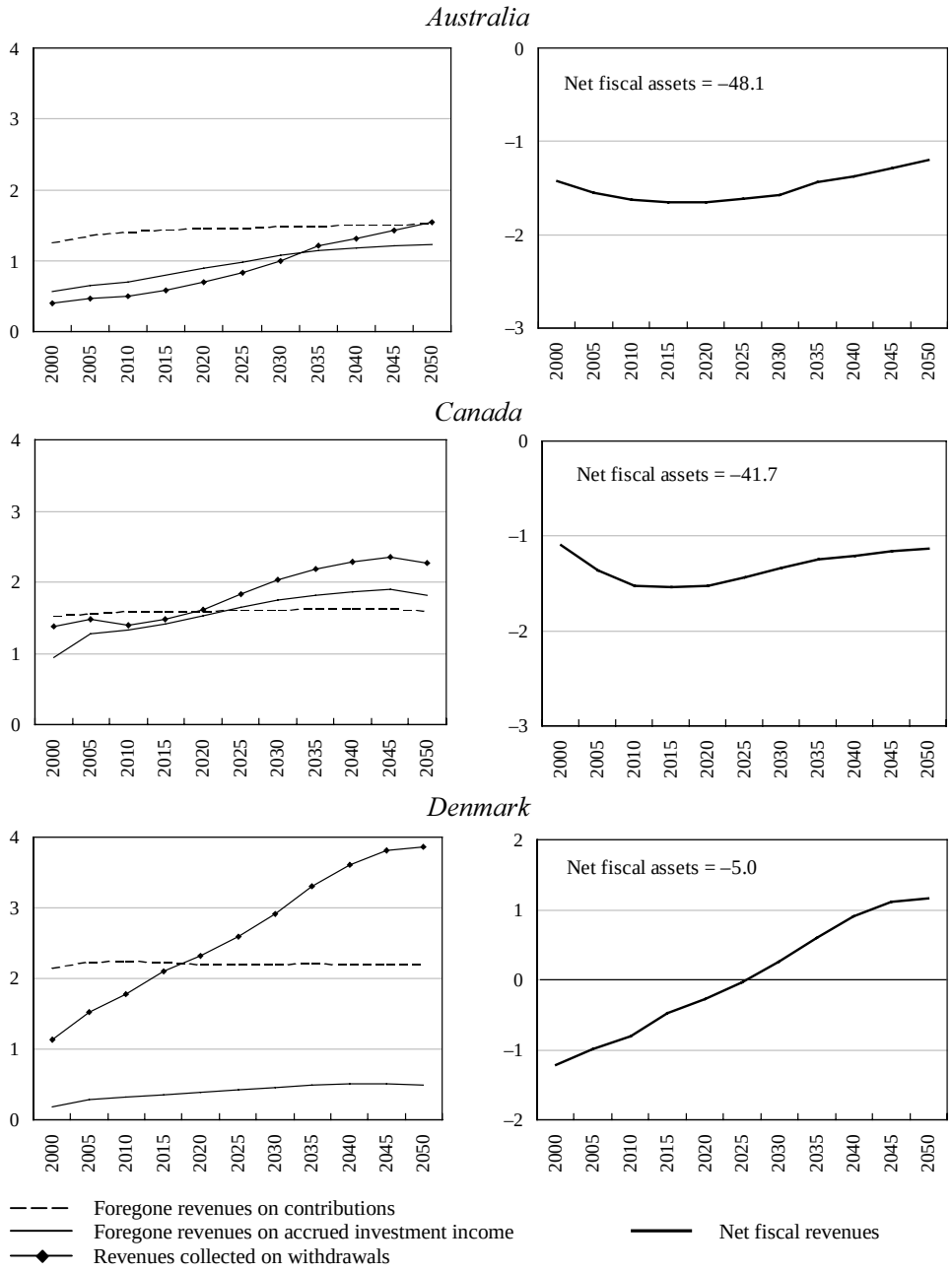
[5] Assuming that the tax rates on contributions and withdrawals were the same, the revenues collected on future withdrawals would, in present value terms, just offset the revenues lost from contributions. In such a case, the net fiscal cost would correspond to foregone revenues on accrued income from investment, which rises with the accumulation of assets.

[6] Since these required ratios depend on the amount of assets, they are calculated for the year during which the projected withdrawal to contribution ratio reaches its peak. In most cases, this is near the end of the projection period, *i.e.* between 2035 and 2050 depending on the country. Further details on these calculations are provided in Antolín, de Serres and de la Maisonneuve (2004).

Figure 2

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)

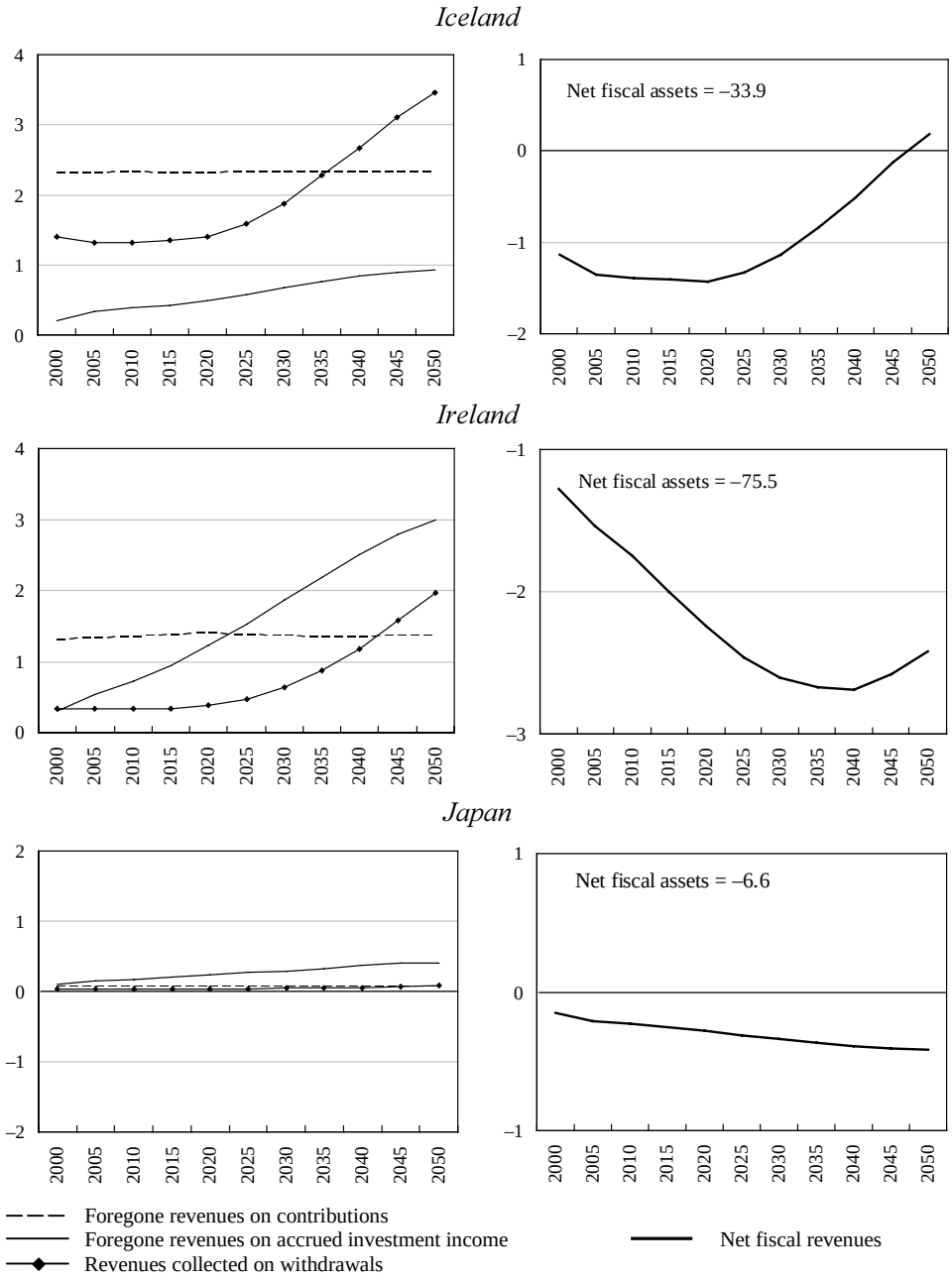


1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

Figure 2 (continued)

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)

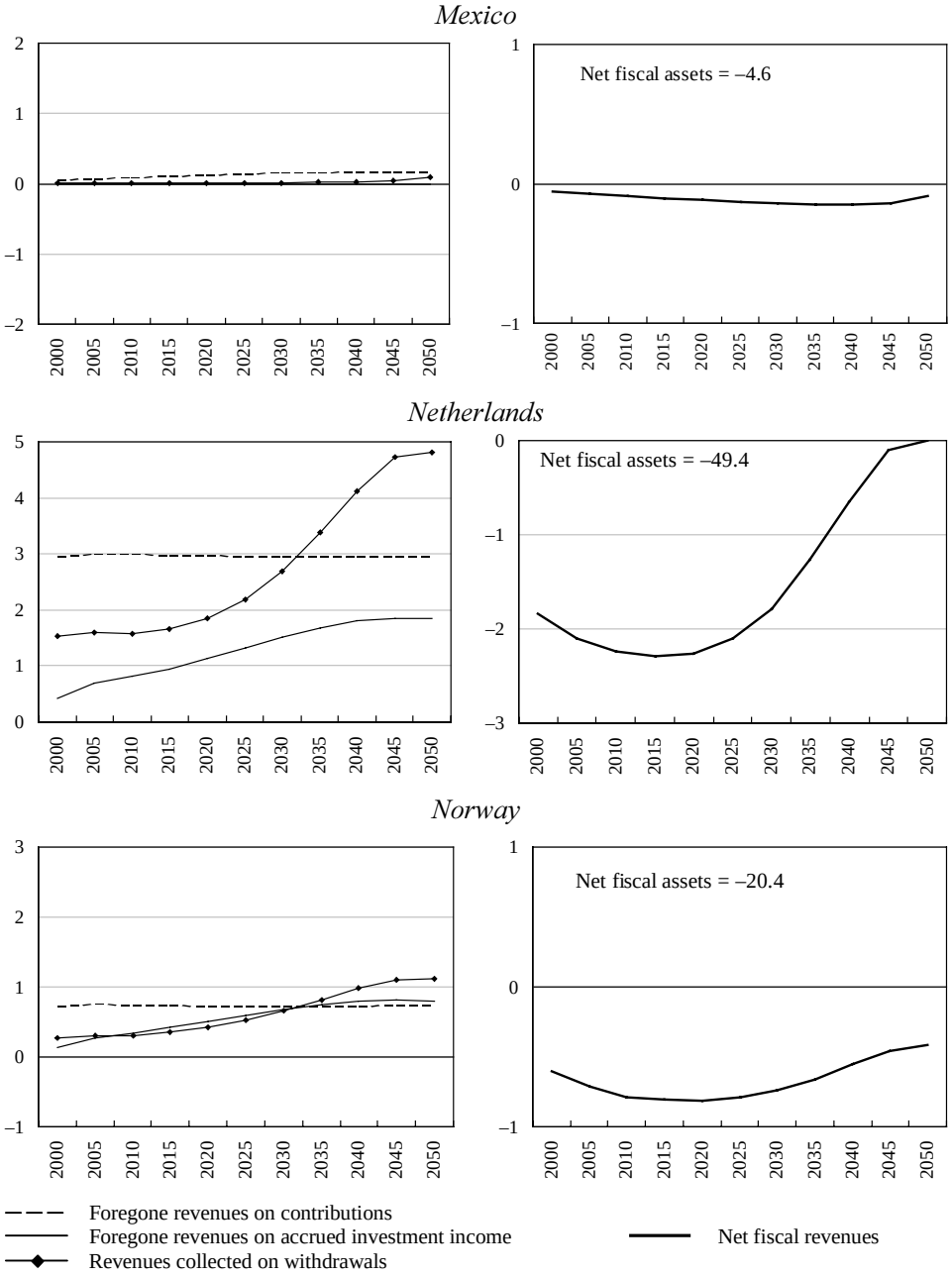


1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

Figure 2 (continued)

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)

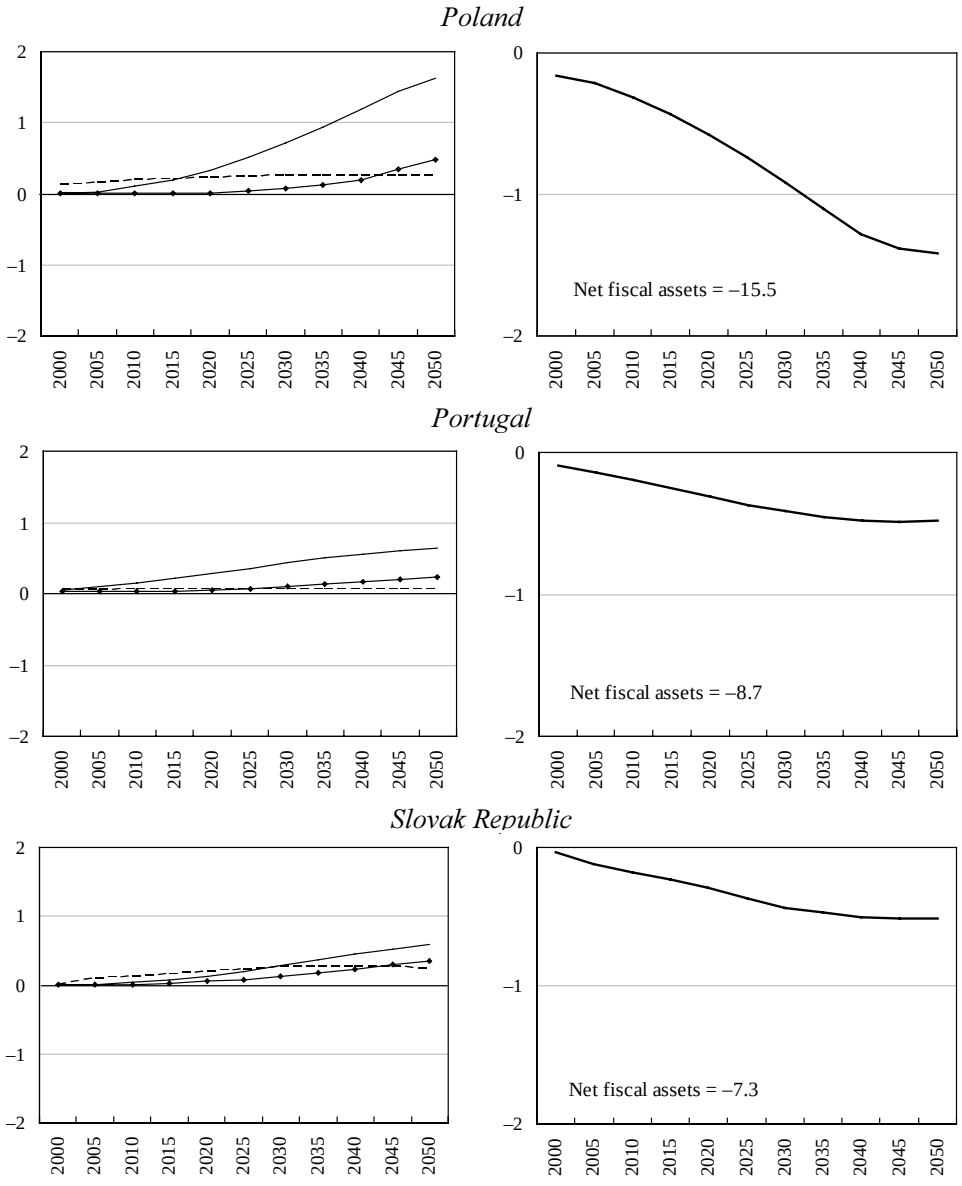


1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

Figure 2 (continued)

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)

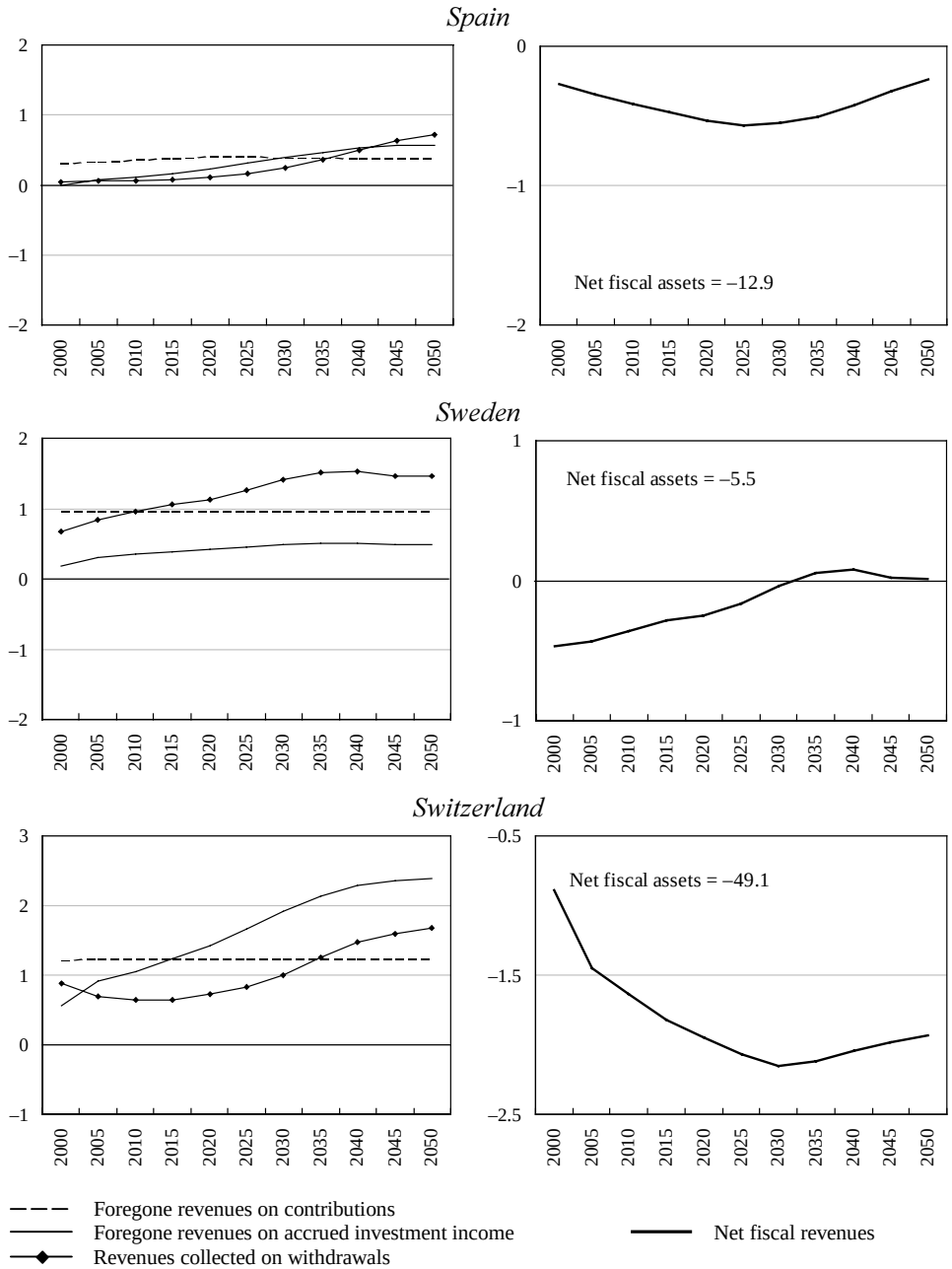


1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

Figure 2 (continued)

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)

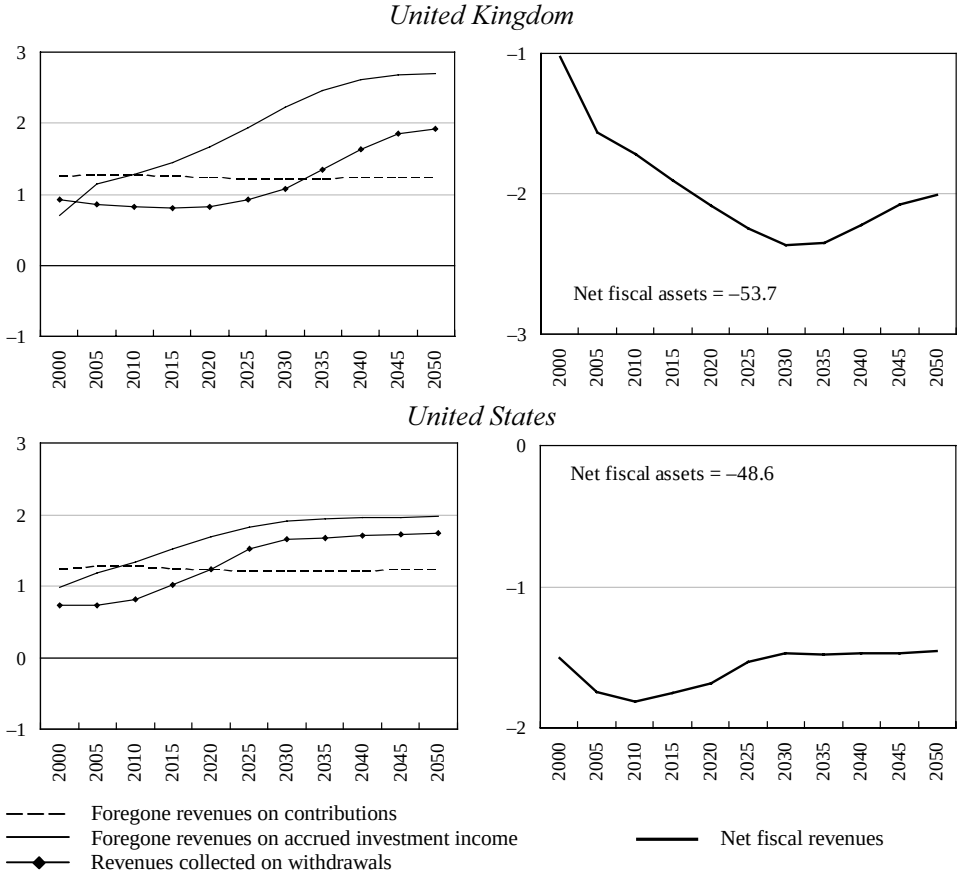


1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

Figure 2 (continued)

Projected Net Fiscal Revenues and Their Components, 2000-2050[1]

(percent of GDP)



1. Net fiscal assets reported on the right-hand side graphs for each country are the discounted stream of future net fiscal revenues from 2000 to 2050.

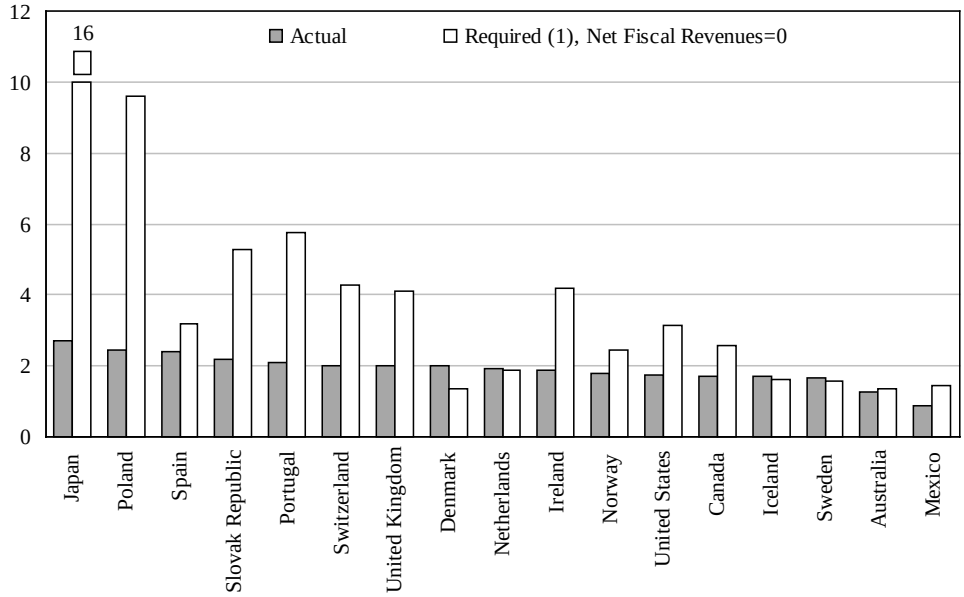
revenues is larger than the projected one, except in the cases of Denmark, Sweden and Iceland.

2.2 The importance of new saving in lowering the cost of tax-favoured schemes

The projections shown above have revealed that the budgetary cost of tax-favoured schemes in terms of revenues foregone is likely to remain significantly larger than revenues collected despite the sharp rise in the latter resulting from population ageing. However, as mentioned earlier, this result partly depends on the

Figure 3

Projected and Required Ratio of Withdrawals to Contributions



(1) This is the ratio of withdrawals to contributions that would bring net fiscal revenues to 0. They are calculated for the year during which the projected withdrawals-to-contributions ratio reaches its peak (between 2035 and 2050 in most countries).
Source: OECD.

assumption that tax incentives lead to saving diversion rather than creation.[7] This sub-section highlights how saving creation could help closing the gap between costs and revenues stemming from private pension arrangements.

The extent to which tax incentives create rather than divert saving is ambiguous in theory and still unresolved empirically, despite the large amount of studies addressing the question, in particular in the United States.[8] As reviewed in more details in Antolín, de Serres and de la Maisonneuve (2004), little consensus has emerged from the empirical literature on the effectiveness of tax-favoured

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7 Clearly, to assume that these incentives fail to generate any new saving as is done in the base case projections reported above may be seen as an extreme view, even though one can not exclude *a priori* the possibility that national saving decline as a result of the tax incentive. This would be the case if contributors were to consume part of the tax subsidy.

8 The theoretical ambiguity arises from the uncertainty as to which of the familiar substitution or income effects on saving dominates in the long run.

saving plans in the United States despite intensive research focusing on 401(k) plans and individual retirement accounts (IRAs).[9]

In any case, to give a feel for the potential impact on net fiscal revenues and assets of allowing for new saving, alternative projections have been generated under two scenarios, one where new saving finances around 25 per cent of total contributions and another one where that proportion is set at around 50 per cent, as assumed in Boskin (2003). Any proportion of total contributions in private pension that is financed by new – as opposed to – diverted saving lowers the budgetary cost arising from foregone revenues on accrued investment income given that these funds would not have been saved elsewhere in the first place. This direct income tax effect from additional national saving is taken into account in the alternative scenarios presented here (Figure 4).

As expected, increasing the proportion of total contributions that is financed by new saving has a substantial impact on estimated net fiscal assets and the level of net fiscal revenues (Figure 4). The impact is particularly large in countries where investment income in non-pension savings instruments is taxed at a relatively high rate (United States, United Kingdom, Canada and Australia). Under the more optimistic assumption of high new saving (50 per cent), net fiscal revenues would turn positive in a majority of countries. In light of these results, and given that a growing number of countries have decided in recent years to implement tax-favoured plans or expand coverage of existing plans, it is important to assess how they can best stimulate private saving.

3. Policy issues

3.1 The link between distribution across income levels and effectiveness of tax-favoured plans

One of the factors potentially affecting the effectiveness of tax incentives to generate new saving is the distribution of participants across categories of income. Recent empirical studies looking at the impact of 401(k) plans on saving patterns across income levels have found a significantly stronger impact of incentives on new saving among low- and middle-income earners or savers (Poterba, 2003; Engen and Gale, 2000; Benjamin, 2003). Hence, the higher is the proportion of upper-income individuals in total participation in tax-favoured schemes, the less new saving is likely to be generated. Furthermore, given the progressive nature of the tax system prevailing in most countries, the cost of the incentive rises with the income of participants, just as the effectiveness may well be declining.

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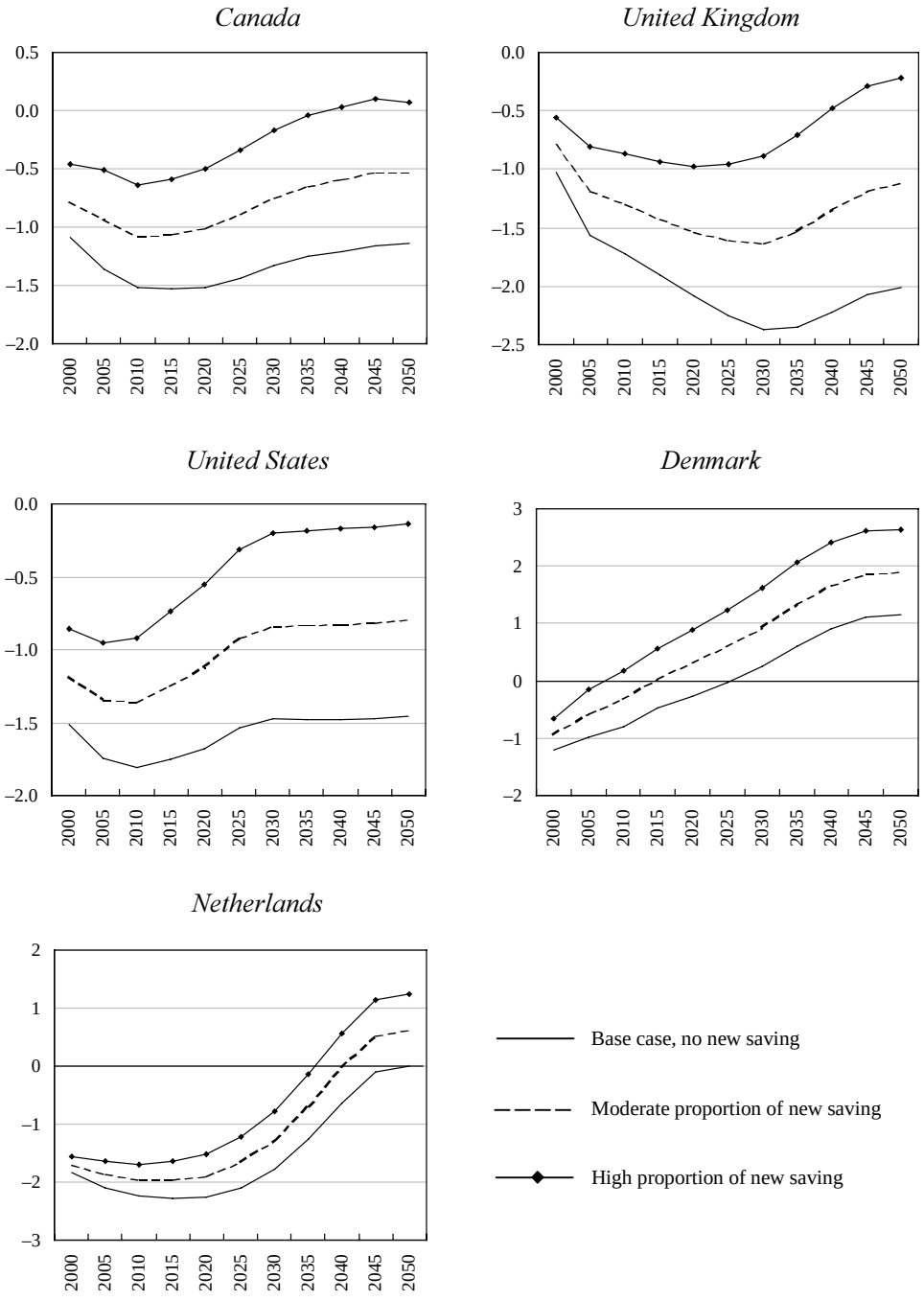
[9] The range of estimates found, even in the most recent papers, still goes from almost one extreme to the other. Nevertheless, the weight of evidence would suggest a proportion of new saving in total contributions of between 25 to 40 per cent at most.

Figure 4

Net Fiscal Revenues Under Alternative Assumptions on New Savings
(selected countries)



A look at income profiles of participants compared with that of all employees in Canada, the United Kingdom and the United States indicates that at least in countries where participation is voluntary, tax-favoured schemes indeed tend to be used disproportionately by upper income individuals (Table 1). First, the average income of participants exceeds that of employees by 28, 33 and 45 per cent in the United States, United Kingdom and Canada, respectively. Second, participation and the average amount contributed are higher among high-income individuals. While individuals earning 2 times or more of the average wage represent 13 per cent of all employees in the United States, they account for around 20 and per cent of total participants and nearly 50 per cent of total contributions, whereas their share of total salaries is 38 per cent. Similar figures are found in the case of Canada. Considering the size of the tax break in these countries, not only is such a skewed distribution of participants potentially expensive, but it also has implications for income redistribution. In this regard, encouraging a more balanced participation across income levels may not only be desirable from a strict equity perspective but, as suggested above, it may also lead to better results in terms of boosting private saving, which is the primary goal of tax-favoured plans.

3.2 Factors affecting the distribution of participants across income levels

Possible explanations for the weaker participation and contribution rates from low and middle-income groups focus on two aspects: variations in workers' access to occupational pension plan membership and differences in the set of incentives and options faced by eligible employees.

Table 1

Income of Participants in Private Pension Schemes

Panel A	Canada	U. K.	U. S. A.
Average income per participant (percent of average income)	145	133	128

Panel B	Share of Employees		Share of Participants		Percent of Contributions		Percent of Income	
	Canada	U.S.A.	Canada	U.S.A.	Canada	U.S.A.	Canada	U.S.A.
Percentage of people earning								
Less than 2 times AW	86	87	73	80	53	53	60	62
More than 2 times AW (80K+)	14	13	27	20	47	47	40	38

Source: Antolín, de Serres and de la Maisonneuve (2004).

Eligibility plays a significant role. In fact, data on sponsorship of pension plans by US firms indicate that for various reasons, lower-income workers are less likely to be employed by a firm that offers membership (Copeland, 2003).[10] One possible reason is that low-skills, low-paid jobs may be more highly concentrated among small and medium-sized firms who may not as easily absorb the administrative costs of pension plans sponsorship.[11] Another possible contributing factor, at least based on some evidence from Canada and the United States, is the relative decline in manufacturing jobs – and along with it the decline in unionisation.[12]

Furthermore, it appears that where eligible workers do have a choice of whether to join or not, participation is also weaker at lower income levels. One basic reason is that for individuals living on very low income, saving may be neither accessible nor optimal, in particular for those whose income prospects have clear chances of improving over time. Relatively high replacement rates in countries with a highly redistributive public pension pillar may also reduce incentives to participate in tax-favoured schemes for low-income earners.

Perhaps more importantly, given that in most countries the tax relief on contributions takes the form of a deduction, the value of the incentive diminishes when income levels fall and may be of little value for workers with low taxable income. In addition, given that in many countries the basic state pension and other transfers are often income-tested, the marginal effective tax rate on benefit withdrawals may be very high for individuals whose pension income is expected to hover around the income-testing threshold. For instance, calculations based on the US tax and social security systems suggest that depending on the assumed rate of return, contributing to 401(k) plans may actually raise lifetime tax payments for families earning $50,000 or less (Gokhale and Kotlikoff, 2001). In contrast, one factor contributing to the generosity of the tax incentive for high income individual is that tax-deferred schemes (EET or ETT) are generally designed in a way that creates the scope for significant tax smoothing, especially in countries with very progressive tax schedules.

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[10] According to data on plans sponsorship by various characteristics, less than 50 per cent of workers with an annual income below $50,000 are employed by a firm that sponsors a plan, whereas the sponsorship rate rises to 75 per cent for workers with earnings above that level.

[11] The numbers for 2002 indicate that while the sponsorship rate is around 68 per cent in large US firms (over 100 employees), it falls to 28 per cent among smaller firms (less than 100 employees). Viewed from another angle, while small and medium-sized firms account for 50 per cent of employees, they account for less than 30 per cent of total eligible workers.

[12] In the United States, the sponsorship rate is higher in manufacturing (63 per cent) than wholesale and retail trade or personal services (around 45 per cent on average). In Canada, the decline in occupational pension plan participation during the Nineties has been largely attributed to two factors: the relative decline of manufacturing sectors and the rise in administrative costs (Morissette and Drolet, 2001).

3.3 Policy options to increase participation of workers at low- and middle-income levels

Several countries have achieved rates of participation in tax-favoured private pension plans that are both high and uniformly distributed across income levels, but they have done so by means of compulsion or quasi-compulsion, either *de jure* or *de facto*.[13] Compulsion – aside from ensuring a uniformly high participation rate across the income distribution – allows reducing the budgetary cost given that the tax concession need not be as generous, even if encouraging contributions beyond the compulsory threshold may remain an objective. Indeed, countries with compulsory or quasi-compulsory schemes generally tend to offer less generous tax breaks. For instance, three of them (Australia, Denmark and Sweden) tax the accrued return on investment in private pensions, albeit at a favourable rate relative to the taxation of non-pension saving instruments.

These advantages notwithstanding, some countries may find difficult to justify compulsion in the case of private pensions, not least when those are supplementary to one or two layers of mandatory public schemes. In such cases, the discussion in the previous sections suggests that in order to maximise the creation of new saving, the value of incentives may need to be strengthened for low and middle-income workers. One way to do so – in the context of EET or ETT schemes – would be to replace the deduction from taxable income with a non-wastable tax credit (or a subsidy) that would be set at a flat rate. Currently, only a few countries apply a tax credit for contributions to tax-favoured schemes (Austria, Belgium and Portugal) or a subsidy (Czech Republic, Germany and Mexico).

3.4 Impact of alternative tax treatment on net fiscal revenues

The previous discussion has identified two ways in which net fiscal revenues from tax-favoured plans could be increased: introducing a flat tax on accrued investment income, which would seem particularly appropriate in countries with mandatory schemes; and replacing tax deductions with tax credits or subsidies. Both these measures would have repercussions on behaviour, at least in countries where participation is voluntary. Indeed, introducing a tax credit would be expressly designed to improve incentives for low- and middle-income participation to tax-favoured schemes, thereby increasing new saving. However, the projection model used in this paper cannot account for such behavioural changes. Nonetheless, this section examines, for illustrative purposes, the potential impact on net fiscal revenues and net fiscal assets of replacing the deduction of contributions by a tax credit or of taxing investment income.

To this end, the rate of tax credit is assumed to be equal to the effective tax rate on benefit withdrawals. Even though the effect would be to lower the incentive

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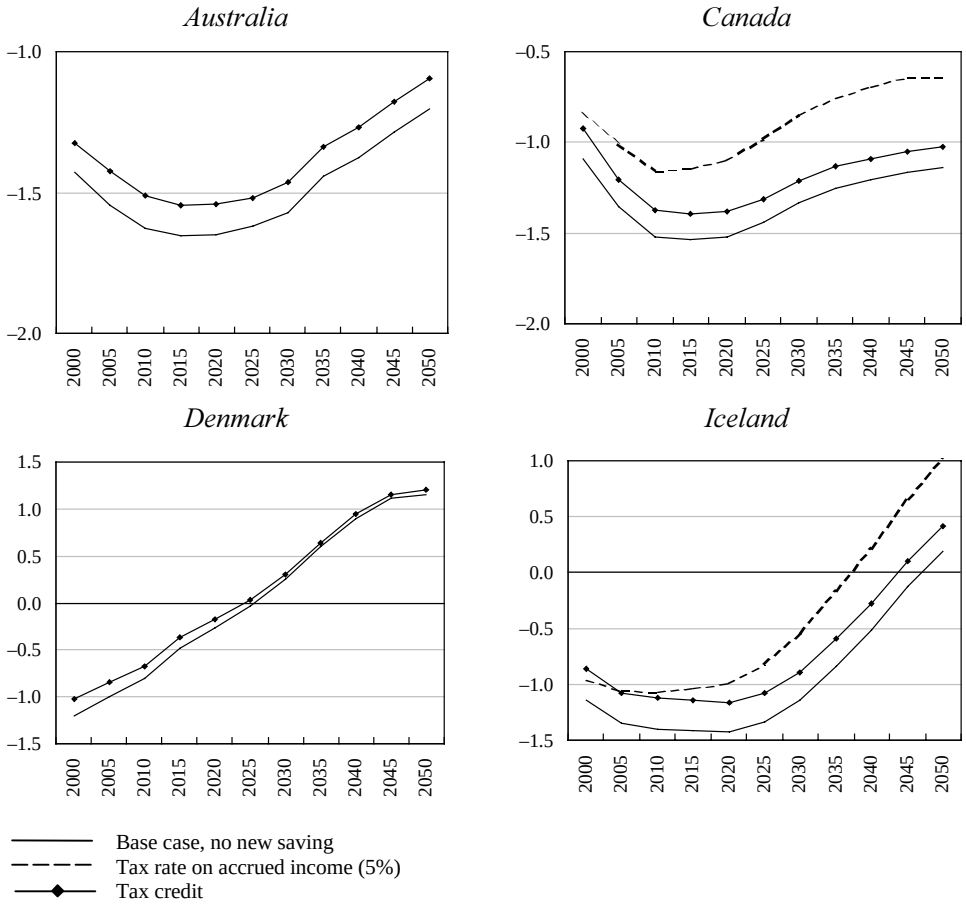
[13] Australia, Denmark, Hungary, Iceland, Mexico, Poland, the Netherlands, Sweden and Switzerland.

on average, it would be raised for low-income groups in a number of countries, in particular, those with steeper tax schedules. As for the flat tax rate on accrued investment income, it is fixed at a modest 5 per cent across the board. The effects on net fiscal revenues from these measures can be substantial, especially in the case of the flat tax rate on accrued investment income in countries accumulating a large amount of assets (Figure 5). By comparison, the effect of a tax credit would be

Figure 5

Net Fiscal Revenues Under Alternative Tax Treatments[1]
(percent of GDP)

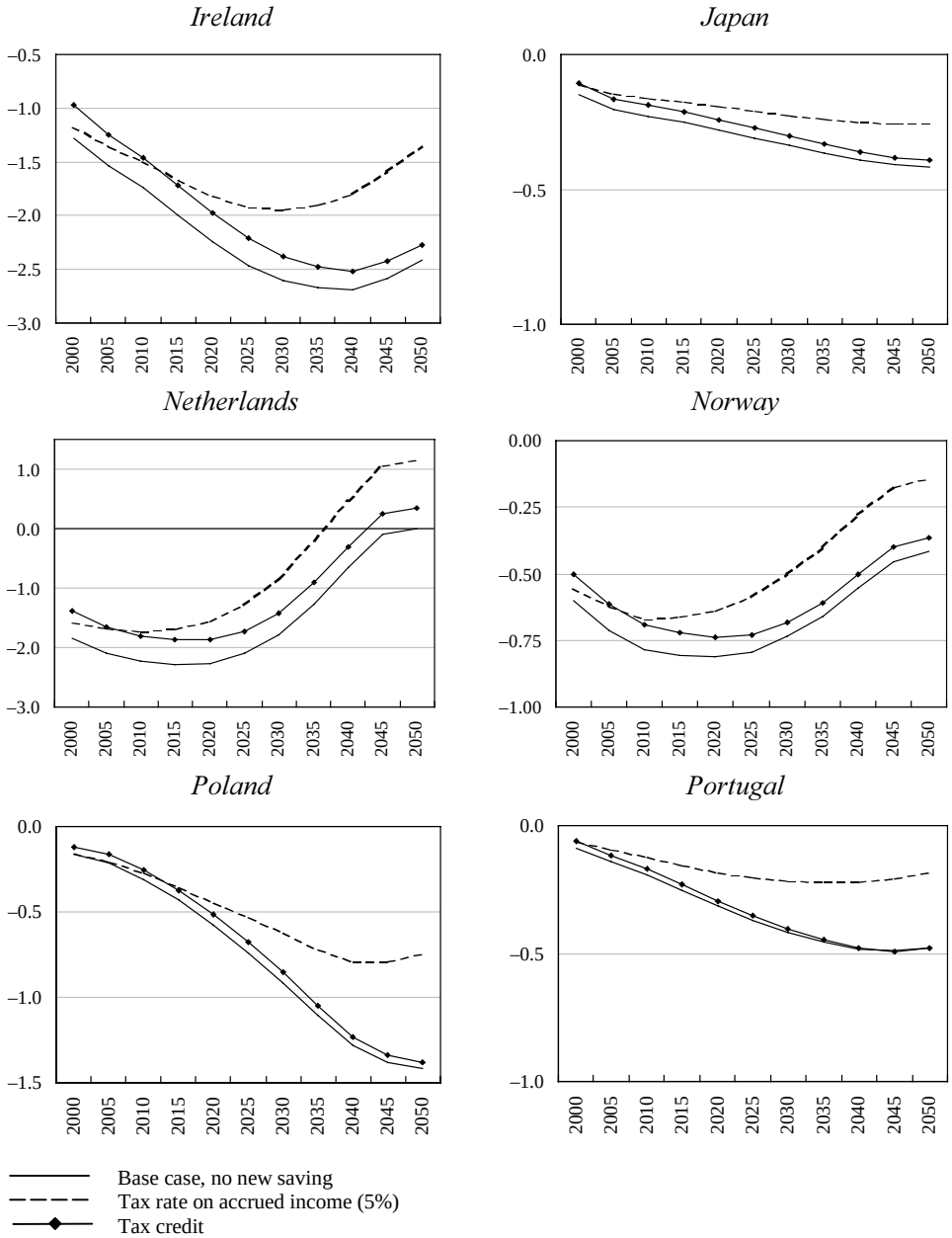


1. Given that Portugal already applies a tax credit, and that Sweden and Denmark already tax-accrued investment income, they are left out from the respective simulations.
Source: OECD.

Figure 5 (continued)

Net Fiscal Revenues Under Alternative Tax Treatments[1]

(percent of GDP)



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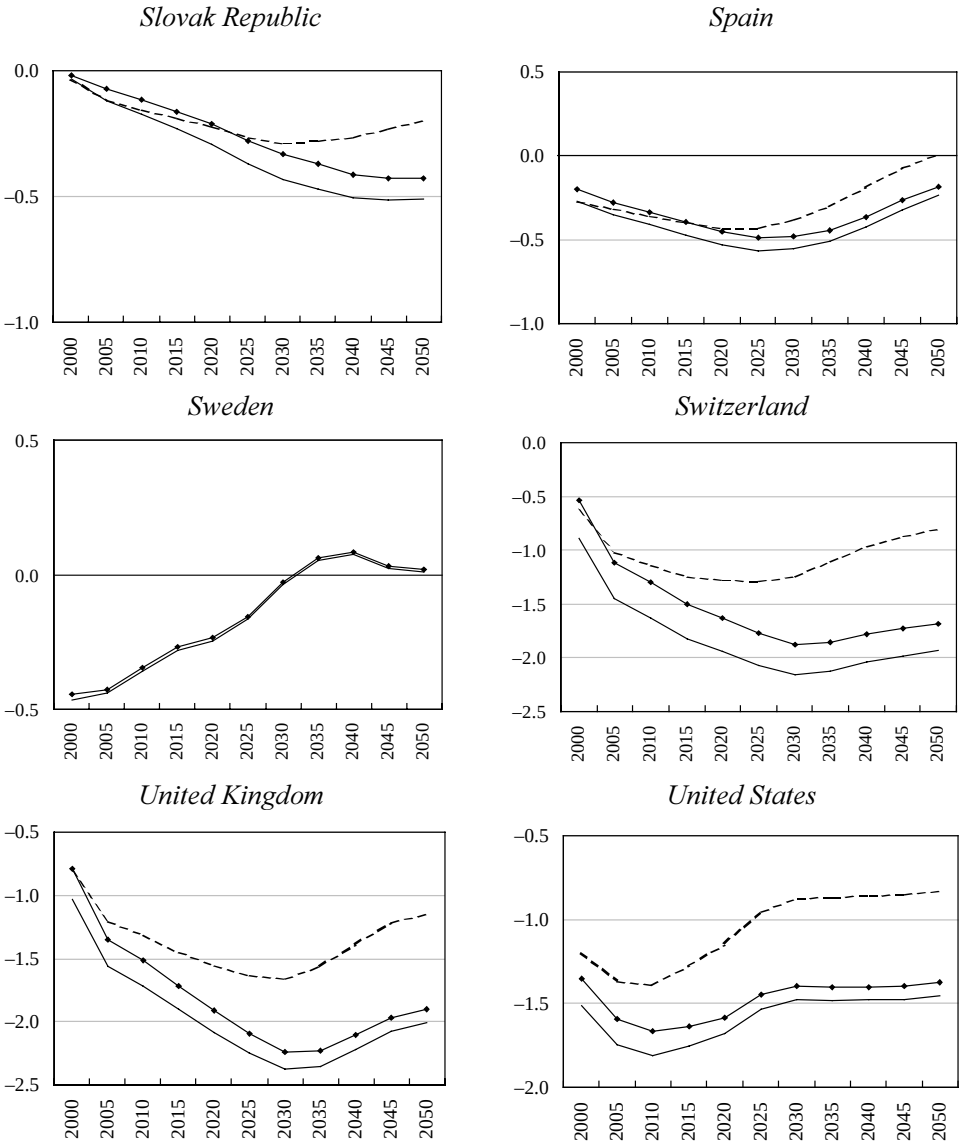
Net Fiscal Revenues Under Alternative Tax Treatments[1]

(percent of GDP)



1. Given that Portugal already applies a tax credit, and that Sweden and Denmark already tax-accrued investment income, they are left out from the respective simulations.

Source: OECD.

significantly smaller, inducing generally a modest upward shift in the profile of net fiscal revenues.[14]

4. Conclusions

This paper has provided estimates of the implicit fiscal asset, as well as of the evolution over time of fiscal costs and benefits related to tax-favoured pension regimes in 17 OECD countries. The main findings and conclusions are:

- Tax-favoured private pension schemes are likely to remain costly over the next 50 years, despite the increase in tax revenues resulting from population ageing. However, relative to the current level, the net budgetary cost will decline over time in the majority of countries examined in this paper.
- Budgetary costs would be significantly reduced if tax incentives were to lead to additional savings.
- The main policy issue is therefore that to assess how tax-favoured schemes can be best designed so as to stimulate personal and national savings and thus increase their cost-effectiveness.

The existence of tax-favoured pension arrangements does not seem to be questioned. In fact, more and more countries are either introducing them or extending their coverage. Three factors could help motivate their existence:

- The shift towards long-term retirement saving may be an objective worth pursuing, not least to stimulate the demand for long-term financial instruments.
- The need to establish a framework for encouraging private pension in order to ease the impact of reductions in public pension benefits on the income level of future retirees.
- One could argue that tax-favoured retirement-saving plans have played a useful role in allowing governments to shift important fiscal revenues to a period in the future where the fiscal impact of ageing will peak. Without such a shift, it is not clear that governments would have resisted political pressures to spend these revenues rather than using them to build assets so as to meet the future cost of populations ageing.

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[14] This partly reflects the relatively high rate chosen for the tax credit in this experiment as well as the fact that the potential impact on participation across age groups and on saving creation is not taken into account.

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PUBLIC-PRIVATE PARTNERSHIPS: IMPLICATIONS FOR PUBLIC FINANCES

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Introduction

Public-private partnerships (PPPs) refer to arrangements where the private sector supplies infrastructure assets and services that traditionally have been provided by the government. PPPs are involved in a wide range of social and economic infrastructure projects, but they are mainly used to build and operate hospitals, schools, prisons, roads, bridges and tunnels, light rail networks, air traffic control systems, and water and sanitation plants. PPPs can be attractive to both the government and the private sector. For the government, private financing can support increased infrastructure investment without immediately adding to government borrowing and debt, and can be a source of government revenue. At the same time, better management in the private sector, and its capacity to innovate, can lead to increased efficiency; this in turn should translate into a combination of better quality and lower cost services. For the private sector, PPPs present business opportunities in areas from which it was in many cases previously excluded.

The main purpose of this paper is to provide an overview of some of the issues raised by PPPs, with a particular focus on their fiscal consequences. Following a brief discussion of country experience with PPPs in section 1, section 2 describes the main characteristics of PPPs. Section 3 covers some economic analysis that is relevant to the major issues raised by PPPs, and section 4 focuses on the institutional framework that is needed for their success. A key to success is risk transfer to the private sector, and section 5 addresses the challenges involved in assessing who bears PPP risks and the implications of limited risk transfer. Section 6 covers the important topic of fiscal accounting and reporting, and offers interim guidance while an internationally accepted accounting and reporting standard for PPPs is being developed.

1. Experience with PPPs

A number of advanced OECD countries now have well-established PPP programs. Perhaps the best-developed program is the United Kingdom's Private

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The views expressed in this paper are those of the authors and do not necessarily represent those of the IMF or IMF policy. This paper is a condensed version of a background paper prepared for an IMF Board discussion on Public Investment and Fiscal Policy held on April 2, 2004. All documents discussed at that meeting are available on the IMF external website: http://www.imf.org/external/np/fad/2004/pifp/eng/031204.htm.

Finance Initiative (PFI), which began in 1992. The PFI is currently responsible for about 14 per cent of public investment, with projects in most of the key infrastructure areas. Other countries with significant PPP programs include Australia (and in particular the state of Victoria) and Ireland, while the United States has considerable experience with leasing. Many continental European Union (EU) countries, including Finland, Germany, Greece, Italy, the Netherlands, Portugal and Spain, now have PPP projects, although their share in total public investment remains modest.[1] Reflecting a need for infrastructure investment on a large scale, and weak fiscal positions, a number of countries in Central and Eastern Europe, including the Czech Republic, Hungary, and Poland, have embarked on PPPs. There are also fledgling PPP programs in Canada and Japan. PPPs in most of these countries are dominated by road projects. Similarly, the recently announced EU Growth Initiative envisages the use of PPP-type arrangements primarily to develop a trans-European road network (European Council, 2003).

In the rest of the world, PPPs have made fewer inroads. However, Mexico and Chile have pioneered the use of PPPs to promote private sector participation in public investment projects in Latin America. In Mexico, PPPs were first used in the Eighties to finance highways and, since the mid-Nineties, a growing number of public investment projects in the energy sector. There are plans to extend the use of PPPs to the provision of other services. Chile has a well-established PPP program that has been used mainly for the development of transportation, airports, prisons, and irrigation. Some other countries, most notably Brazil, are planning significant use of PPPs. There is also a proposal for a regional approach to infrastructure development in Latin America that would involve PPP-type arrangements, much as in the EU.[2] While PPPs are also beginning to take off in Asia, especially in Korea and Singapore, progress elsewhere is limited, although there is strong interest in PPPs in some countries, including South Africa.

While a number of countries have developed PPP programs, it is too early to draw meaningful lessons from their experiences. The U.K. government has recently published a comprehensive assessment of the PFI (HM Treasury, 2003), informed in part by the results of independent studies, which is favorable both in terms of procedures and outcomes. Otherwise, while there are particular aspects of country experiences that support some of the points made in the paper, there are as yet few general lessons that can be drawn, especially from the experiences of emerging market economies and developing countries.

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[1] There is evidence that PPPs are growing especially rapidly at the subnational level. Torres and Pina (2001) report that about 30 per cent of the services provided by larger EU subnational governments are delivered through PPPs.

[2] The proposal is part of a wider development financing strategy being discussed by the Rio Group of Latin American countries. The Rio Group was set up in 1986 to enhance consultation and coordination between Latin American countries on political, economic, and social issues.

2. Characteristics of PPPs

There is no clear agreement on what does and what does not constitute a PPP. A PPP has recently been defined as "the transfer to the private sector of investment projects that traditionally have been executed or financed by the public sector" (European Commission, 2003, p. 96). But in addition to private execution and financing of public investment, PPPs have two other important characteristics: there is an emphasis on service provision, as well as investment, by the private sector; and significant risk is transferred from the government to the private sector. Other ways in which the role of government in the economy has been reduced over the last 20 years – including privatization, joint ventures, franchising, and contracting out – share some or all of these characteristics.[3] However, in their typical form, PPPs are distinct from these in that they represent cooperation between the government and the private sector to build new infrastructure assets and to provide the related services. As is discussed below, concessions and operating leases – which have also been used to reduce the role of government in the economy – are forms of PPP.

2.1 Basic features

A typical PPP takes the form of a design-build-finance-operate (DBFO) scheme. Under such a scheme, the government specifies the services it wants the private sector to deliver, and then the private partner designs and builds a dedicated asset for that purpose, finances its construction, and subsequently operates the asset and provides the services deriving from it. This contrasts with traditional public investment where the government contracts with the private sector to build an asset but the design and financing is provided by the government. In most cases, the government then operates the asset once it is built. The difference between these two approaches reflects a belief that giving the private sector combined responsibility for designing, building, financing, and operating an asset is a source of the increased efficiency in service delivery that justifies PPPs.

The government is in many cases the main purchaser of services provided under a PPP. These services can be purchased either for the government's own use, as an input to provide another service, or on behalf of final consumers; a prison, a school, and a free-access road would fall into these respective categories. Private operators also sell services directly to the public, as with a toll road or railway. Such an arrangement is often referred to as a concession, and the private operator of a concession (the concessionaire) pays the government a concession fee and/or a share of profits. Typically, the private operator owns the PPP asset while operating it under a DBFO scheme, and the asset is transferred to the government at the end of

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[3] Joint ventures are usually set up to exploit the commercial potential of existing government assets, franchising involves competition between private companies to be a monopoly supplier (often in a local market), and contracting out refers to the outsourcing of supply to the government. The terms franchising and contracting out are often used interchangeably.

the operating contract, usually for less than its true residual value (and often at zero or a small nominal cost).

The term PPP is sometimes used to describe a wider range of arrangements. In particular, some PPPs exclude functions that characterize DBFO schemes. Most common in this respect are schemes which combine traditional public investment and private sector operation of a government-owned asset. This arrangement sometimes takes the form of an operating lease, although in cases where the private operator has some responsibility for asset maintenance and improvement, this is also described as a concession.[4] Operating leases and similar arrangements are typically regarded as PPPs. However, private sector involvement in asset building alone – which can take the form of a design-build-finance-transfer (DBFT) scheme or a financial lease – is not strictly speaking a PPP, since it does not involve service provision by the private sector. While this paper does not seek to explicitly exclude any type of arrangement from the definition of a PPP, including cases where the public sector partner is a public enterprise rather than the government, it pays most attention to PPPs which involve both investment and service delivery by the private sector, and private financing and ownership. Hence the focus is on DBFO schemes.[5]

2.2 Financing

The private sector can raise financing for PPP investment in a variety of ways. Where services are sold to the public, the private sector can go to the market using the projected income stream from a concession (e.g., toll revenue) as collateral. Where the government is the main purchaser of services, shadow tolls paid by the government (*i.e.* payments related to the demand for services) or service payments by the government under operating contracts (which are based on continuity of service supply, rather than on service demand) can be used for this purpose. The government may also make a direct contribution to project costs. This can take the form of equity (where there is profit sharing), a loan, or a subsidy (where social returns exceed private returns). The government can also guarantee private sector borrowing.

PPP financing is often provided via special purpose vehicles (SPVs). An SPV is typically a consortium of banks and other financial institutions, set up to combine

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[4] Operating leases are discussed in more detail in section 5.

[5] Among the many design-build-finance-operate (DBFO) variants are build-own-operate (BOO), build develop operate (BDO), and design-construct-manage-finance (DCMF). In all such schemes, the private sector designs, builds, owns, develops, operates and manages an asset with no obligation to transfer ownership to the government. In other schemes, such as buy-build-operate (BBO) and lease-develop-operate (LDO), the private sector buys or leases an existing asset from the government, renovates, modernizes, and/or expands it, and then operates the asset, again with no obligation to transfer ownership back to the government. Finally, in the most common schemes such as build-operate-transfer (BOT), build-own-operate-transfer (BOOT), and build-transfer-operate (BTO), the private sector designs and builds an asset, operates it, and then transfers it to the government when the operating contract ends, or at some other prespecified time. The private partner may subsequently rent or lease the asset from the government.

and coordinate the use of their capital and expertise. Insofar as this is their purpose, an SPV can facilitate a well-functioning PPP.[6] However, an SPV can also be a veil behind which the government controls a PPP either via the direct involvement of public financial institutions, an explicit government guarantee of borrowing by an SPV, or a presumption that the government stands behind it. Where this is the case, there is a risk that an SPV can be used to shift debt off the government balance sheet. Private sector accounting standards require that an SPV should be consolidated with an entity that controls it; by the same token, an SPV that is controlled by the government should be consolidated with the latter, and its operations should be reflected in the fiscal accounts.[7] [8]

Where a government has a claim on future project revenue, it can contribute to the financing of a PPP by securitizing that claim. With a typical securitization operation, the government would sell a financial asset – its claim on future project revenue – to an SPV. The SPV would then sell securities backed by this asset to private investors, and use the proceeds to pay the government, which in turn would use them to finance the PPP. Interest and amortization would be paid by the SPV to investors from the government's share of project revenue. Since investors' claim is against the SPV, government involvement in the PPP appears limited. However, the government is in effect financing the PPP, although recording sale proceeds received from the SPV as revenue masks this fact.[9]

3. The economics of PPPs

PPPs themselves have not been subject to extensive economic analysis. However, there is a good deal of analytical work that can be brought to bear on the issues that are raised by PPPs.

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6 SPVs are specific to individual PPP projects, and should therefore be distinguished from institutions set up to facilitate PPPs and infrastructure investment in general. The National Development Finance Agency in Ireland and Infrastrutture SpA in Italy are examples of the latter.

7 The International Financial Reporting Interpretations Committee (IFRIC) of the International Accounting Standards Board (IASB) identifies four criteria for consolidation: SPV operations are decided by the originator; the originator controls the SPV; the originator benefits most from the SPV; and the originator assumes SPV risk (see IFRIC,1999).

8 While there are as yet no obvious examples of problems created by SPVs set up in connection with PPPs, SPVs have been a concern in other spheres. A recent proposal to establish an SPV to facilitate the leasing of 100 Boeing aerial refueling tankers by the United States Air Force is a case in point. The Congressional Budget Office concluded that the SPV would, in effect, be substantially controlled by the federal government, and that its transactions should therefore be reflected in the federal budget (see United States Congressional Budget Office, 2003).

9 For further discussion of securitization, see Chalk (2002) and IMF (2003). While they are not connected to PPPs, securitization operations in Italy have raised questions as to their appropriate accounting treatment. In one case, the government sold real estate at below market price to an SPV to use as collateral in issuing bonds on its own account to pay the government. Eurostat decided that the bonds should be counted as debt and the sale of the real estate should be recorded on budget, because the risks and rewards related to ownership had not been transferred to the SPV.

3.1 Ownership and contracting

The standard arguments for and against government ownership are relevant to PPPs. As a general rule, private ownership is to be preferred where competitive market prices can be established. Under such circumstances, the private sector is driven by competition in the product market to sell the goods and services at a price consumers are willing to pay, and by the discipline of the capital market to make profits. However, various market failures (natural monopoly, externalities etc.) can justify government ownership, although government failure can simply substitute for market failure.[10] At a fairly general level, these arguments can be used to motivate PPPs as a means of combining the relative strengths of government and private provision in a way that responds to market failure but minimizes the risk of government failure.

Recent advances in the theory of ownership and contracting provide a more specific analytical justification for PPPs. The trade-off facing a government seeking to arrange for the provision of a particular service is between quality and efficiency. The government has the capacity to achieve a desired quality standard, but it may have difficulties doing so while also containing costs. The private sector can use its better management skills and capacity for innovation to more actively pursue opportunities to reduce costs, but service quality may be compromised in the process. However, private provision may be workable if the government can write a fully specified, enforceable contract with the private sector. Hence PPPs would be well suited to situations where the government can clearly identify the quality of services it wants the private sector to provide, and can translate these into measurable output indicators. The government can then enter into a contract with the private sector which links service payments to monitorable service delivery. This being the case, PPPs tend to be better suited to cases where service requirements are not expected to vary substantially over time, and technical progress is unlikely to radically change the way in which the service is provided.

The case for PPPs is weaker where the government cannot write complete contracts because service quality is non-contractible. In general, services for which overall quality is inherently non-contractible (e.g., national defense, public law and order, diplomatic missions) are not candidates for PPPs, although contractible elements of these services are (e.g., building and maintaining military bases, police stations and courts, and embassies). However, even if service quality, or elements of quality, are non-contractible, the normal presumption should probably be that private ownership is to be preferred because of the potential efficiency benefits it offers (Shleifer, 1998). The onus should then be on those favoring government ownership to make the case in its favor, by reference to the considerations that argue against private ownership.

Even if the quality of service is contractible, build quality may be more problematic. The main concern in this connection is that shortcuts in construction

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[10] For an analysis of market and non-market failure, see Wolfe (1993).

can be hidden for many years, which creates future liabilities for the government and can necessitate costly renegotiation. Non-contractible build quality provides compelling justification for combining asset creation and operation, which is the defining feature of a typical PPP. This is because the private operator has clear interest in the quality of an asset, given its influence on the capacity to deliver a service effectively and efficiently (Grout, 1997).

3.2 Risk analysis

PPPs involve a range of different risks. These can be usefully divided into five, somewhat overlapping, categories: construction risk, which is related to design problems, building cost overruns, and project delays; financial risk, which is related to variability in interest rates, exchange rates, and other factors affecting financing costs; performance risk, which is related to the availability of an asset, and the continuity and quality of service provision; demand risk, which is related to the ongoing need for services; and residual value risk, which is related to the future market price of an asset.[11] These risks are present in public, private, and PPP projects. PPPs seek to transfer risk from the government to the private sector. While an inflow of private capital and a change in management responsibility alone can be beneficial, significant risk transfer is necessary to derive the full benefit from such changes. The impact of risk transfer on financing costs, and the pricing of risk to ensure efficient risk transfer, then have to be addressed.

3.2.1 Risk transfer and financing costs

Transferring project risk from the government to the private sector should not affect the cost of financing a project. This follows from the Modigliani-Miller theorem, which says that the cost of capital depends only on the risk characteristics of a project, and not on how it is financed. However, the source of financing can influence project risk. With complete markets in risk bearing, project risk is independent of whether it is borne by the government or the private sector. With incomplete markets in risk bearing, project risk depends on how widely that risk is spread. Since the government can spread risk across taxpayers in general, the usual argument is that this gives the government an advantage over the private sector in terms of managing risk (Arrow and Lind, 1970). But the private sector can spread risk across financial markets, which may not put it at a significant disadvantage, and private sector risk managers may be more skilled than those in government. The outcome is likely to be that project risk is lower in the private sector.[12]

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[11] These five main risks can be further subdivided. Detailed risk matrices, together with indications of who should bear each type of risk, are provided in South Africa and the State of Victoria, Australia.

[12] The government's ability to forcibly spread risk across taxpayers, while financial markets have to be provided with an incentive to accept risk, may put the private sector at more of a disadvantage as far as

(continues)

This result may appear to rest somewhat uneasily with the fact that private sector borrowing generally costs more than government borrowing. However, this mainly reflects differences in default risk. The government's power to tax reduces the likelihood that it will default on its debt, and the private sector is therefore prepared to lend to the government at close to the risk-free interest rate to finance risky projects. This being the case, when PPPs result in private borrowing being substituted for government borrowing, financing costs will in most cases rise even if project risk is lower in the private sector. Then the key issue is whether PPPs result in efficiency gains that more than offset higher private sector borrowing costs.[13] The impact of PPPs on efficiency is taken up below.

3.2.2 Pricing of risk

When considering the PPP option, the government has to compare the cost of public investment and government provision of services with the cost of services provided by a PPP. Since risk transfer is key to the increased efficiency of PPPs, the government wants to relieve itself of risks that it believes the private sector can manage better than the government. To do this, the government needs to price these risks, so that it knows what it has to pay the private sector to assume them. In this connection, it is important to distinguish between project-specific risk and market risk. Project-specific risk reflects variations in outcomes for individual projects or groups of related projects. Thus for a road project, specific risk could derive from interrupted supply of building materials, labor problems, or obstruction by environmental groups. Project-specific risk is diversifiable across a large number of government or private sector projects and does not need to be priced by the government. Market risk, which reflects underlying economic developments that affect all projects, is not diversifiable and therefore has to be properly priced.

The government and the private sector typically adopt different approaches to pricing market risk. The government tends to use the social time preference rate (STPR) or some other risk-free rate to discount future cash flows when appraising projects, while private bidders for PPP projects will include a risk premium in the discount rate they apply to future project earnings.[14] Given this mismatch, the government may reject reasonable bids by the private sector for a PPP project. As a consequence, the choice between public investment and PPPs may be biased in favor of public investment, which is counterproductive if the objective is to promote PPPs as a more efficient alternative to public investment and government provision of

large and very risky projects are concerned. The scope for the private sector to spread risk will also be somewhat limited in countries with less developed financial markets.

[13] The private sector may in some cases face lower borrowing costs than the government. This might be the case where there are serious concerns about government liquidity and/or solvency, and is also likely to be the case for foreign partners of many developing country governments.

[14] For example, under the capital asset pricing model (CAPM), which is widely used by the private sector, the expected rate of return on an asset is defined as the risk-free rate of return plus a risk premium, and the risk premium is the product of the market risk premium and a beta coefficient which measures the covariance between the returns on that asset and market returns.

services.[15] Moreover, even if the PPP route is chosen (maybe because of political preference), the allocation of risk between the government and the private sector may not be efficient, since the private sector may choose techniques of production or other project design features which are less efficient, simply because they carry lower risk.[16] Also, the private sector may respond to the underpricing of risk by compromising on the quality of construction and service supply to the extent possible without obviously violating its contract with the government. On the other hand, it is also possible that the government overprices risk and overcompensates the private sector for taking it on, which would raise the cost of PPPs relative to direct public investment. Finally, there may be incentives for the government to compensate for an underpricing of risk by extending guarantees, which may also end up costing the government more over the longer term.

3.3 Competition, regulation, and efficiency

Much of the case for PPPs rests on the relative efficiency of the private sector. While there is an extensive literature on this subject, the theory is ambiguous and the empirical evidence is mixed. But if a common theme emerges, it relates to the importance of competition as a source of efficiency in both the private and public sectors. This explains the use of franchising as means of having the private sector engage in repeated competition for a market which is inherently monopolistic yet still contestable (as distinct from having continuous competition in a market). However, the scope for competition in the activities undertaken by PPPs is more limited, because they tend to be less contestable for reasons mentioned above – social infrastructure is undervalued and economic infrastructure involves large sunk costs. But an area where competition is clearly feasible is in bidding for the award of construction and service contracts, and this is crucial if PPPs are to benefit from having the private sector put its capital at risk, and from its management skills and capacity to innovate.

Incentive-based regulation is also important. Where a private operator can sell to the public, but there is little scope for competition, the government usually regulates prices. However, the challenge is to design well-functioning regulation which increases output (towards the social optimum), holds down prices, and limits monopoly profit while preserving the incentive for private firms to be more efficient

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[15] In those cases where the government uses a discount rate that includes a market risk factor, this is usually arbitrary and low. It therefore changes the size of the bias but does not remove it. Grout (1997) concludes that the long-standing practice of using a STPR of 6 per cent in the United Kingdom, which includes a risk factor, has been biased against the PFI projects. However, this bias should be removed with a recent reduction in the STPR to 3.5 per cent and a requirement that there should be more systematic assessment of risk in comparing public investment and PFI options.

[16] While it is not strictly speaking a PPP, the privately financed Channel Tunnel Rail Link between the United Kingdom and France was chosen over a road tunnel – which the government considered building and operating itself, and which would have offered better service to users – because the private sector's higher discount rate led it to favor the option that was lower cost and offered quicker, more secure returns (see Kay, 1993).

and reduce costs. Of the two most common forms of regulation, rate of return regulation suffers from the problems involved in establishing appropriate cost benchmarks in a monopolistic situation. It is therefore weak on incentive grounds. The main alternative, price regulation, caps price increases, and therefore has potential for success on both counts. However, the fact that caps are often adjusted to reflect rate of return considerations means that rate of return and price regulation tend to be quite similar in their effects. Yardstick competition, in which rate of return regulation is based on costs in closely related domestic or in international firms, or a hypothetical efficient firm, has more promise, although it is informationally demanding. Finally, profit sharing between the government and the private partner is an alternative form of regulation which preserves incentives, although it could still lead to excessive profits. This being the case, it tends to work better where the government is the main purchaser of services (Laffont and Tirole, 1999).

4. Institutional framework for PPPs

Successful PPPs deliver high-quality services to consumers and the government at significantly lower cost than would be the case with public investment and government provision of the same services. The preceding discussion suggests that PPPs are more likely to result in efficiency gains that offset higher private sector borrowing costs if they have the following characteristics: the quality of services is contractible; there is adequate risk transfer to the private sector; and there is either competition or incentive-based regulation. These features should be reflected in the policy framework for PPPs, along the lines of that provided, for instance, by the State of Victoria, Australia.[17] However, an appropriate institutional framework is also needed if PPPs are to succeed. While the challenges in this connection are greater in emerging market economies and developing countries, and a PPP program should proceed with caution when such a framework is not in place, advanced OECD countries also face challenges in this regard. Although not exhaustive, the following are elements of such a framework.

Political commitment and good governance are prerequisites for success. A PPP is a major commitment on the part of the private sector, which needs to know that politicians are also committed to private involvement. Uncertainty in this regard gives rise to political risk that is not conducive to making long-term business decisions. At the same time, potential private partners need to know that the government is fair in its dealing with the private sector, and will meet the commitments it makes under PPPs. It is also important to establish clear channels of responsibility and accountability for government involvement in PPPs. Widespread corruption in government would be a serious obstacle to successful PPPs, in the same way that it prevented successful privatization (Lora and Panizza, 2003).

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[17] Based on Victoria (2000) and material available at the Partnerships Victoria website: http://www.partnerships.vic.gov.au/

An appropriate legal framework can provide reassurance to the private sector that contracts will be honored. In some cases this will require changes or additions to existing laws. For example, Italy and Spain have recently revamped legal frameworks that for many years have been an obstacle to PPPs. In the case of Italy, the 1994 Merloni Law has undergone a number of changes designed to facilitate private participation in infrastructure investment, while the 2001 Legge Obiettivo established a fast-track system for strategically important infrastructure projects.[18] In the case of Spain, the 2003 Concessions Law supplements a number of laws that already allow PPPs, by extending private financing options.[19] In both Italy and Spain, the new laws have also sought to secure creditor rights, and this has also been emphasized in Brazil and Chile, where reassuring investors that the government will honor its future commitments is judged crucial. In Brazil, a draft law has been presented to congress that would govern all aspects of PPPs. The legal framework for PPPs should be supplemented by clear, credible, and efficient dispute resolution mechanisms. Finally, it is important that PPPs should face non-discriminatory taxation and regulation regimes.

PPPs require the development of expertise in the government. This covers the full range of skills required to manage a PPP program. One common complaint about PPPs from the private sector is that bidding and contracting take much longer than in the private sector. Thus one of the functions of Partnerships UK, a specialized government agency in the United Kingdom, is to promote PFI projects within government by providing financial, legal, and technical advice and assistance to support contract negotiations and procurement. The Unità Tecnica per la Finanza di Progetto (UTPF) in Italy is by name a project financing unit, but in practice has a wider advisory and consultative role.[20] However, in both these cases, the focus is on facilitating new PPP projects, while managing a large stock of ongoing projects could represent an equal or more demanding challenge. Particular attention will also need to be paid to skill development by subnational governments, since in many countries the responsibility for spending in areas that are likely candidates for PPPs is devolved to them.

The government will also have to refine its project appraisal and prioritization. First and foremost, the decision whether to undertake a project, and the choice between traditional public investment and a PPP to implement it, should be based on technically sound value-for-money comparisons. It is particularly

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[18] The Merloni law deals specifically with concessions. One requirement of the law is that winner of a concession contract is required to set up an SPV, with a structure and capitalization established by the public agency that awards the contract. For further discussion, see De Pierris (2003).

[19] The law facilitates private financing by allowing a number of financing techniques, including securitization and shadow tolls. Concessions can also be used for practically any kind of infrastructure, and not only for roads as previously. See Montesinos and Benito (2000) and Acereite (2003) for further discussion of PPPs in Spain.

[20] The UTFP was established in 1999 and began operation in July 2000. This unit provides specific expertise to enable the public administration to identify projects that could attract private sector investment. Between 2000 and 2002, the UTFP analyzed some 800 PPP initiatives, but only a handful of projects has commenced.

important to avoid a possible bias in favor of PPPs simply because they involve private finance, and in some cases generate a revenue stream for the government.[21] The PPP Unit of the National Treasury of South Africa provides detailed guidance and technical assistance to agencies related to the feasibility and management of PPPs.[22] In Chile, project evaluation and prioritization involves a number of interested ministries and government agencies, including the Ministry of Finance which ensures that the future fiscal implications of PPPs are consistent with medium-term debt sustainability. More generally, PPPs should not complicate fiscal management, an objective which places a premium on proper accounting and reporting (as discussed in section 6).

5. Risk transfer, leasing, and ownership

Risk transfer from the government to the private sector has a significant influence on whether a PPP is a more efficient and cost-effective alternative to public investment and government provision of services. This is clearly something the government should consider in deciding whether to embark upon a PPP and in negotiating the terms of a PPP contract. It should also be a focus of those seeking to assess whether a PPP will indeed yield the benefits that are claimed for it, and in particular whether it is being favored mainly to move public investment off budget. Risk transfer is also relevant to determining the proper accounting and reporting treatment of PPPs, indeed the discussion of risk transfer that follows draws on material that is part of accounting standards. However, risk transfer is a self-contained topic that can usefully be discussed prior to addressing accounting and reporting issues.

5.1 Risk transfer and leasing

The private operator is typically the legal owner of a PPP asset for the period of the operating contract. However, if the government bears the risks (and derives the rewards) that are normally associated with ownership, it is in effect the economic owner of the asset. When this is the case, PPP investment is largely indistinguishable from traditional public investment, except that the payment profile for the government is different. Instead of the government making an upfront payment to cover the cost of building an asset, the private sector bears this cost and the government covers the opportunity cost of capital as part of its service payment to the private sector. This is how PPPs can be used to record initially lower government borrowing and debt than with traditional public investment.

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[21] Partly in response to such concerns, in Chile and Italy the private sector is allowed to propose projects to be developed as PPPs.

[22] The PPP Unit was set up in 2000, and is used by the Treasury to exercise strict control over PPPs, which are unpopular with trade unions and not seen by the government to be a panacea. Hence, only eleven PPP projects have been implemented to date. See Fourie and Burger (2000, 2001) for further discussion.

In general, ownership of an asset and operating it entail different risks. Where the PPP contract distinguishes between the rights and obligations of the private partner in its capacity as the owner, as distinct from the operator, of an asset, risk transfer can be assessed by reference to the former. Private sector accounting standards provide guidance on how to do this for leases. A standard lease contract is between the owner of an asset (the lessor) and the user of an asset (the lessee). With an operating lease, which is similar to a rental arrangement in that a payment is made by the lessee to use an asset, the lessor bears the risks related to ownership. With a financial lease, which is a form of borrowing by the lessee to obtain the asset, the lessee bears these risks. Whether a lease is an operating or a financial lease depends on the substance of the transaction rather than the form of the contract. Factors that should influence a decision in this regard are discussed in a number of private sector accounting standards for leases, such as those issued by the IASB and the Financial Accounting Standards Board (FASB) in the United States.[23]

While PPPs can be specifically set up as operating leases, it is unusual for them to take the form of financial leases. Financial leases tend to be used by governments to obtain major items of capital equipment such as airplanes, and not to build infrastructure. Indeed, with a typical PPP such as a DBFO scheme, the PPP asset is legally owned by the private operator, and so on the face of it, since only one party is involved, this arrangement cannot be described as a lease. However, an examination of the substance of a PPP transaction may lead to the conclusion that the government, rather than the private owner, bears most of the risks associated with ownership. Where this is the case, the view can be taken that the asset is in effect being acquired by the government through a financial lease, and that the government is the economic, as distinct from legal, owner of the PPP asset.

5.2 Assessing risk transfer and ownership

Some criteria have been devised to assess the degree of risk transfer involved in PPPs. To a large extent, these derive from the private sector approach to classifying leases, indeed the International Federation of Accountants (IFAC) has issued a standard for the public sector on leases which is closely related to the IASB standard for the private sector.[24] However, IFAC acknowledges that the public sector may enter into a variety of arrangements for the provision of goods and services involving the use of dedicated assets where it is unclear whether a financial lease is involved. Some national standards include quantitative criteria to establish the existence of a financial lease. For instance, the state of Victoria in Australia focuses on three criteria to determine whether a Partnerships Victoria PPP contract should be classified as a financial lease: does the government finance 90 per cent or

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[23] See International Accounting Standard (1999).

[24] International Public Sector Accounting Standards (2001). IFAC is a global accountancy organization whose main purpose is to establish high quality accounting standards and to promote international convergence of standards. It also recommends accounting standards for the public sector through its Public Sector Committee (IFAC-PSC).

more of asset costs; does the service contract cover 75 per cent or more of the useful life of the asset; and does the contract include a "bargain basement provision" whereby the government can purchase the asset at the end of the contract for substantially less than its residual value?[25]

Where PPP contracts do not provide a basis on which to distinguish between the risks associated with ownership and operation, the extent of risk transfer can be assessed by reference to the overall risk characteristics of a PPP. This is done in the United Kingdom, where the specific aim, for both separable PFI contracts (with clear ownership and service elements) and non-separable contracts, is to determine whether the government or the private operator "has an asset in a PFI property". For non-separable contracts, the U.K. approach is based, first and foremost, on the balance of demand risk and residual value risk borne by the government and the private operator. Demand risk, which is an operating risk and is the dominant consideration, is borne by the government if service payments to a private operator are independent of future need for the service. Residual value risk, which is an ownership risk, is borne by the government if a PFI asset is transferred to the government for less than its true residual value.[26] Reference can also be made to various qualitative indicators, including government guarantees of private sector liabilities, and the extent of government influence over asset design and operation. The final conclusion is a professional judgment based on all relevant factors.

Eurostat also provides guidance on the classification of PPP assets based on risk transfer. To this end, Eurostat has recently issued a decision which says that a private partner will be assumed to bear the balance of PPP risk if it bears most construction risk, and either most availability risk (which is also referred to as performance risk) or most demand risk. While focusing on a few key risk categories for the purpose of assessing risk transfer is understandable, the Eurostat decision is problematic.[27] Since the private sector typically bears most construction risk and availability risk, the decision is likely to result in the majority of PPP assets being classified as private sector assets, even though the government will bear most demand risk. This being the case, the decision appears to be more liberal than Eurostat itself has been in classifying PPPs. Thus, in the case of Ireland, Eurostat indicated that early PPP projects involved insufficient risk transfer, and that

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[25] Since 1990, the United States Office of Management and Budget has used these three criteria, and three others – related to who owns the asset during the contract period, whether the asset is a general- or specific-purpose asset, and whether there is a private market for the asset – to distinguish an operating lease from a financial lease (or in U.S. terminology, a capital lease). See United States Office of Management and Budget (2002) and United States Congressional Budget Office (2003b) for more details.

[26] Residual value risk is borne by the government because the private operator reflects the difference between the expected residual value of the asset and the price at which the asset will be transferred to the government in the price it charges the government for services, or the revenue the government receives from a project. If the asset ends up being worth more or less than the amount reflected in the service payment or government revenue, any resulting gain benefits the government and any or loss is borne by the government.

[27] Eurostat (2004). It is nevertheless interesting that Eurostat does not place more emphasis on residual value risk, since this is a clear ownership risk. It was also highlighted in a Eurostat ruling on securitization in Italy, referred to in section 2.

investment in these projects would be classified as public investment. To date, all PPP investment in Ireland has been treated in this way. A concern is that the decision could open the door to PPPs that are intended mainly to circumvent the SGP.

Assessing risk transfer is likely to remain a difficult exercise. Certainly, full disclosure of the terms of original and renegotiated PPP contracts, along with some simplification and standardization, is essential. However, the legal complexity of PPP contracts means that they will always be hard to interpret, and this will complicate assessments of risk transfer even when the focus is on a few key risks. Moreover, the PPP contract may not tell the whole story, since it is only relevant to *ex ante* risk transfer. Political pressure for the government to bail out large projects (that are too big to fail), and providers of essential services, may mean that the government in fact bears more risk than the contract suggests.

6. Fiscal accounting and reporting

There is not yet a comprehensive fiscal accounting and reporting standard specifically for PPPs. While the accounting profession is taking steps to develop an internationally accepted standard, the eventual features of such a standard are not yet clear.[28] In the meantime, the current lack of a standard makes it difficult to close loopholes that enable PPPs to be used to bypass expenditure controls, and to move public investment off budget and debt off the government balance sheet.[29] Moreover, resort to guarantees to secure private financing can expose the government to hidden and often higher costs than traditional public financing. An internationally accepted accounting and reporting standard could promote transparency about the fiscal consequences of PPPs, and in the process make increased efficiency rather than a desire to meet fiscal targets their main motivation. In any event, as PPPs become more commonplace, market analysts and rating agencies are developing the expertise to assess the fiscal risks they involve, and in particular the consistency of future commitments under PPPs and contingent liabilities with debt sustainability. Thus any misuse of PPPs is unlikely to escape market scrutiny for long.

Existing standards provide a starting point to address the accounting and reporting treatment of PPPs. The 1993 System of National Accounts (1993 SNA) and the 1995 European System of Accounts (ESA 95) cover some operations that characterize PPPs, including leases, while ESA 95, supplemented by the ESA 95 Manual on Government Deficit and Debt, covers public infrastructure built and

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[28] This is being done under the auspices of the IFAC-PSC. A newly established Interagency Task Force on Harmonization of Public Sector Accounting, which held its first meeting in February 2004, is addressing this topic. With the exception of Donaghue (2002), little has been written about the accounting treatment of PPPs.

[29] Similar considerations led the Fund Board to include leases under the external debt limits of Fund-supported programs.

operated by the private sector.[30] The Government Finance Statistics Manual 2001 (GFSM 2001) fiscal reporting framework – which integrates flows and stocks, and shifts the emphasis toward accrual reporting and balance sheets – is also well suited to reporting on PPPs, although it does not currently provide comprehensive coverage of such operations.[31]

6.1 The current treatment of PPP operations

Eurostat addresses the accounting treatment of the following PPP operations: operating contracts, concessions and operating leases, financial leases, and the transfer of PPP assets to the government. This treatment is described below using the GFSM 2001 fiscal reporting framework.

- Operating contracts. Where a PPP asset is owned by the private operator, payments under operating contracts for services provided to the government are recorded in the government operating statement as an expense.
- Concessions and operating leases. Concession fees and other payments by private operators of concessions to the government (e.g., profit shares) are recorded in the operating statement as revenue.[32] When the government leases an asset it owns to a private operator, lease payments to the government by a private operator are also recorded as revenue.[33]
- Financial leases. The acquisition of an asset under a financial lease would be recorded in the operating statement at cost, together with incurrence of a lease liability to the private sector. The asset and liability would also be recorded on the government balance sheet. Subsequent depreciation of the asset, and interest and amortization payments on the lease, would then be recorded in the operating statement. As the lease liability is reduced, the PPP net asset value will build up on the balance sheet (provided that the liability is reduced at a faster rate than that at which the asset is depreciated). When the lease concludes, the asset will be recorded on the government balance sheet at its residual value.[34]
- Transfer of PPP assets to government. If there is provision for a PPP asset to be transferred at zero cost to the government, the asset transfer is recorded in the

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30 Although *ESA 95* is accepted only in the European Union, while the *1993 SNA* is internationally accepted, it is likely that a move in the direction of harmonizing the two standards will see the *1993 SNA* move in the direction of *ESA 95* as far as PPPs are concerned.

31 For a detailed discussion of *GFSM 2001*, see IMF (2001).

32 The treatment of concessions has been questioned, however. Since a concession involves the transfer of the government's monopoly power to the private sector, the view has been expressed that concessions should be considered non-financial assets. This treatment can be seen as an attempt to extend the discussion of the treatment of mobile phone licenses to concessions. However, in the case of mobile phone licenses, it was agreed that an underlying asset, the spectrum, existed, whereas in the case of concessions, no such asset exists.

33 When the government leases an asset from a private owner, lease payments by the government are recorded as an expense; however, as indicated in section 2, this is not usually regarded as a PPP.

34 As indicated in section 5, PPPs do not typically take the form of financial leases.

operating statement as the acquisition of a non-financial asset at its residual value, balanced by a capital transfer from the private owner. Any purchase price involved would be an expense, and the capital transfer is reduced by the corresponding amount.[35] The asset would also be recorded on the balance sheet at it residual value at the time the transfer takes place, and subsequent depreciation of the asset would be recorded in the operating statement.

The Eurostat treatment of the preceding PPP operations is a straightforward way to record them in the fiscal accounts.

It should be noted that many countries are still working with the cash-based predecessor of GFSM 2001, A Manual on Government Finance Statistics 1986 (GFSM 1986). Under this framework, which is the basis of traditional fiscal accounts, only cash flows are recorded. However, with the exception of depreciation, other non-cash transactions could be recorded in adjusted cash accounts. Since balance sheets are not part of GFSM 1986, PPP assets are not recorded as such, but the liability under a financial lease is recorded as government debt.

6.2 Accounting for limited risk transfer

When PPP projects involve limited risk transfer to the private sector, the practice of Eurostat and in a number of countries is to classify PPP assets as government assets. This is done with a view to recognizing that the government plays a role in the economy and conducts fiscal policy through PPPs. For accounting purposes, Eurostat treats PPP investment that exposes the government to significant risk as public investment, while the state of Victoria in Australia and the United Kingdom assume that the government is acquiring the PPP asset through a financial lease.[36] These two approaches are formally the same. It is likely that accounting for limited risk transfer will be paid considerable attention by the accounting profession as it seeks to develop a general accounting and reporting standard for PPPs. In this connection, the focus is likely to be on refining the approach to accounting when assessments of risk transfer suggest that the government bears the balance of risk and, as a consequence, PPP assets are treated as government assets.

It is questionable, however, whether classifying PPP assets as either government or private assets is an appropriate way of reflecting the extent of risk transfer. PPPs involve a range of risks, and government exposure to PPP risk will vary widely across projects. Ideally, an attempt should be made to gauge the risk to which the government is exposed under each PPP contract, and to assess the fiscal consequences of such risk. This, however, is extremely difficult to do, even in the relatively straightforward case of explicit guarantees. But classifying PPP assets as

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[35] If the government pays more than residual value for an asset, the asset is still acquired by the government at its true residual value, and there is also a capital transfer from the government to the private operator.

[36] In the case of the United Kingdom, this practice has resulted in 57 per cent of PFI assets being classified as government assets (HM Treasury, 2003).

either government or private assets instead is insensitive to the extent of risk sharing, and could discourage PPPs where the private sector is prepared to bear significant (but not most) risk and cover a sizable share of project costs. This being the case, the accounting profession, rather than refining the current approach to accounting for limited risk transfer, should seek to develop a workable approach to assessing and quantifying PPP risks borne by the government, and to disclosing these risks. Countries will then have to develop their own capacity to assess risk transfer under PPPs.

6.3 Contractual obligations and government guarantees

With many PPPs, the government has a contractual obligation to purchase services from a private operator. These payments have fiscal implications over the medium to long term which should be disclosed. At a minimum, the stream of future contract payments under agreed PPP contracts should be reported. This is done in the United Kingdom, to indicate the extent to which these payments limit fiscal policy flexibility in the future. However, there is an issue as to whether future contract payments should also be capitalized and counted as a liability. The argument for not doing so is that these payments are contingent on the satisfactory delivery of a service, and can anyway be changed over the life of an operating contract as service needs and demands, supply technology, etc., change. The counterargument is that taking on a contractual obligation does more than limit fiscal policy flexibility in the future. In particular, assessments of debt sustainability are affected in the same way as if the government had incurred debt to finance public investment and provide the service itself, in that larger primary surpluses or smaller primary deficits (exclusive of the PPP payments) have to be generated to ensure a desired debt path. This being the case, the net present value of future contract payments under PPPs less any contractual receipts from the private sector (e.g., concession fees), both discounted using a risk-free interest rate, should be added to government debt when assessing debt sustainability.[37] However, this should be an interim arrangement pending development of an internationally agreed approach to assessing, quantifying, and disclosing PPP risks, and to reflecting them in fiscal analysis (including debt sustainability analysis), as called for above.

Government guarantees provided in connection with PPPs are a major source of fiscal risk. The risks incurred by the private sector in connection with PPPs can be reduced or eliminated through explicit government guarantees. Most commonly in connection with PPPs, financing risk is reduced through loan guarantees, demand risk is reduced through guaranteed minimum payments for services sold to the

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[37] It should be noted that there is no basis to record the present value of future contract payments as a liability under *GFSM 2001* given that a commitment to pay for a service cannot be accrued until the service is delivered. Rather, an *ad hoc* adjustment has to be made to the nominal debt measure reported as a memorandum item to the balance sheet.

public, and residual value risk is reduced by the government guaranteeing the price at which it will purchase an asset when the operating contract ends.[38] [39]

The disclosure of government guarantees is widely called for. Thus the Fund's Code of Good Practices on Fiscal Transparency and the related Manual on Fiscal Transparency require statements as part of the budget documentation that describe the nature and significance of all contingent liabilities.[40] However, compiling the information required to comply with this practice presents a considerable challenge for most countries that currently lack a framework for managing guarantees. Good disclosure practice is to publish detailed information on guarantees. This should cover the public policy purpose of each guarantee or guarantee program, the total amount of the guarantee classified by sector and duration, the intended beneficiaries, and the likelihood that the guarantee will be called. Information should also be provided on past calls of guarantees. Best practice is to publish quantitative estimates of the potential fiscal impact of guarantees that, based on past experience, are likely to be called (*i.e.*, the expected value of guarantee payments). For example, the United States requires systematic estimates of the potential costs of loan and pension guarantees, deposit and other forms of insurance, and most other contingent liabilities.

Where the cost of calls on guarantees is potentially of fiscal policy significance, allowance should be made in the budget to meet the expected cost. In other cases, this can be handled through the general contingency appropriation. The expected value of guarantee payments should also be reflected in any discussion of the medium-term fiscal outlook, and taken into account when assessing debt sustainability. However, reflecting the difficulties involved in measuring the expected value of guarantee payments, this should not be treated as an expected liability which is added to the debt. Rather, the larger the expected liability associated with guarantees, the less favorably a particular debt path will be viewed. The formal incorporation of this liability into debt sustainability analysis should again await development of an approach to assessing, quantifying, and disclosing PPP risks and to reflecting them in fiscal analysis. To reduce the fiscal risks associated with guarantees, in addition to full disclosure, countries should take steps to control these risks (e.g., through careful screening of requests for guarantees, limits on individual and overall exposure, and charging risk-related fees).

The accounting treatment of those guarantees that are called is straightforward. There are two possibilities: either the government assumes the liabilities concerned and there is no financial claim on the original borrower, or the government lends to the borrower on the assumption that the borrower will repay at

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[38] The transfer of a PPP asset to the government at less that its residual value, which is discussed earlier, is akin to a guarantee even if it is not described as such.

[39] For a fuller discussion of guarantees and other contingent liabilities, see Brixi and Schick (2002).

[40] Disclosure is also required by the OECD Best Practices for Budget Transparency and IPSAS 19, Provisions, Contingent Liabilities and Contingent Assets, issued by IFAC, while contingent liabilities are reported as a memorandum item to the balance sheet in GFSM 2001.

a later stage. In the first case, the government records the full cost of called guarantees as an expense, and the assumption of a loan as a liability. In the second case, the government has a claim on the borrower, which is recorded as the acquisition of a financial asset. When the loan is repaid, interest is recorded as revenue, and amortization as a financial transaction.

6.4 Summary of disclosure requirements for PPPs

Considerable emphasis has been placed on disclosure as a means of making the fiscal consequences of PPPs fully transparent. In summary, the disclosure requirements for PPPs called for in this paper are the following.

- PPP contracts should be disclosed, and simplification and standardization should be sought.
- Operating contracts, concessions and operating leases, financial leases, and the transfer of PPP assets to the government should be recorded in the fiscal accounts according to the treatment used by Eurostat.
- The stream of future contract payments under existing PPP contracts should be reported.
- Government guarantees should be disclosed as called for by the Fund's Code of Good Practices on Fiscal Transparency.

Where a PPP program is of fiscal significance, a report on PPPs – covering all of the preceding disclosure requirements – should be included as part of the budget documentation.

7. Concluding remarks

This paper overviews some of the issues related to PPPs and their implications for public finances. After providing a brief survey of country experiences, the paper identifies some of the necessary conditions for PPP to be successful, stressing in particular the need for a sound institutional framework. Because of the intrinsic risks associated with PPPs, developing the capacity to analyze and assess these risks along with appropriate fiscal accounting practices and reporting standards remains a challenge. While such practices and standards continue to evolve, the paper emphasizes the need for strengthening disclosure requirements for all PPPs, in particular their underlying risks and contingent liabilities, in line with best fiscal transparency practices.

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FISCAL INSTITUTIONS AND SUSTAINABILITY OF PUBLIC DEBT IN GERMANY

Florian Höppner and Christian Kastrop[*]

Introduction

Safeguarding the sustainability of public finances is one of the key challenges for fiscal policy makers in the coming years. The stock of public debt that has been accumulated over the last decades has reached high levels in many countries and the process of ageing poses a significant risk to the sustainability of public finances in the majority of industrialised countries. Devising policy concepts that tackle these challenges is one of the main tasks for current fiscal and economic policy makers and advisors. The academic literature on the analysis of fiscal sustainability and possible remedies is therefore huge and diverse. Altogether this literature shows clearly that the problem is a multidimensional one and therefore can only be solved in a joint and coordinated attempt of fiscal, economic and social policy. Besides, reforms to strengthen economic growth and employment, far-reaching reforms of the social security system (and, in particular, of the pension system) and of the labour market are without doubt at the core of the agenda.

In the present paper we try to shed some light on a different issue that is yet closely connected to the issue of sustainable public finances. An interesting and still growing political economy literature has emphasised the importance of adequate fiscal or budgetary institutions for safeguarding sound public finances in the long run. Fiscal institutions in this context are understood as the entirety of formal and informal institutions that govern the decision-making process over public spending and revenues of a country. With this perspective in mind, we want to focus more closely on the "fiscalist" aspect of the problem of sustainability and pose the question of what the finance minister, in a more narrow view as being responsible for the budget, can contribute to a coherent political strategy to secure the long-run viability of public finances.

The present paper is divided into two main sections. Section 1 presents the past development of public debt in Germany as well as an outlook on the challenges that lay ahead due to the ageing of the population. In section 2 we discuss, from an applied perspective and quite selectively, existing fiscal institutions in Germany that are targeted at securing sound public finances and discuss approaches to improve these institutions.

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The authors present their personal opinions and not necessarily the opinion of the German Federal Ministry of Finance.

1. Public debt in Germany: the evidence

1.1 Look in the past: debt development in Germany

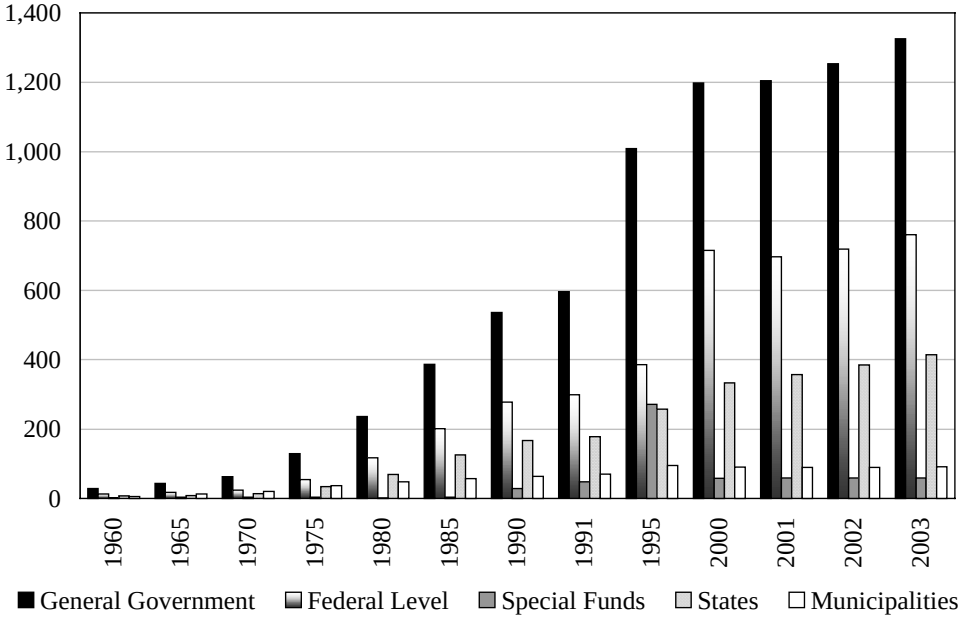
When analysing the development of public debt in Germany, it has to be taken into account that Germany is a federal state, consisting of the Federal level, the states (Länder) and the municipalities (Städte and Gemeinden). Every level of the federal republic has the right of issuing debt (for details see below under 3) and thereby contributes to the overall general government level of debt. Note that, associated with the federal level, are several "special funds", the most important ones being the German Unity Fund, the Equalisations of Burdens Fund and the ERP Special Fund.

Up to 1970, public debt remained at a rather low level, while from 1970 until today general government debt increased by about 1800 per cent. Note the uneven distribution over the whole period: while debt at the federal and at the state level increased by 2552 per cent and 2452 per cent, respectively, the municipalities increased their debt only by about 340 per cent.

From 1970 on, one can observe a steady increase in public debt at all levels of the federal state, while it is noteworthy that until 1976 the municipalities had a

Figure 1

Accumulated Debt at the Different Levels of Government
(billions of euros)



higher level of debt than the states. The increase of public debt in the Seventies basically was made possible by a softening of the legal-debt boundaries at the end of the Sixties on the one hand – the introduction of the comparatively soft "Golden Rule" into the constitution (Article 115 GG) –, on the other hand the passing of the new "Stability Law", which allowed the government to exceed the debt limit laid down by the constitution in the case of a disruption of the overall economic balance. As a consequence of active stabilisation policy, but also through an expansion of debt-financed social expenditure programs, in the Seventies the expenditure ratio as well as overall debt increased considerably. At the beginning of the Eighties, the general government debt ratio reached the level of 30 per cent GDP (see Table 1). During the following years, in particular, the federal government and the states increased their indebtness, while somewhat slowing the growth rate of debt compared to the Seventies.

German unification in 1990 constituted a substantial structural break in the overall course of economic policy in Germany. Some initial overoptimistic forecasts claimed that unification only needed an initial "knock-on financing" which could be refinanced by increased tax revenues of the following expected unification boom. However, after it became clear that an independent and self-financing upswing of the eastern economy was not within reach, public finances had to fill the gap by infusing a massive amount of public transfers to the east. The overall tax and social contribution ratio, as a consequence, rose to a record level of 44 per cent of GDP during the first half of the Nineties, the expenditure ratio increased again to almost 50 per cent and public debt approached the level of 60 per cent. Note that a significant part of the rise in the expenditure ratio was due to the increased claims on the German social security system. Between 1991 and 1995, around 70 per cent of total transfers were used for financing the deficits of the public social security system as well as for supporting the development of public administration and bureaucracy in the east of the federal republic. Around 30 per cent on the other hand were used for public investment and the financing of the "Treuhandanstalt", a trust agency that was in charge of the privatisation and restructuring of the east German economy. Until today, the fiscal consequences of unification are not cured, which is indicated by the comparatively high level of above 60 per cent of GDP at which public debt is remaining.

The debt level of the federal state, including the special funds, reached 778.6 billion € (59.02 per cent of GDP) at the end of 2002, where the special funds had a share of 59.2 billion €. Net new debt was at 32.7 billion € in 2002. Interest payments in that year amounted to 37.1 billion €, which was 14.9 per cent of total federal expenditure, coming down from a high of 16.6 per cent in 1999. In 2002, interest payments amounted to around 1.8 per cent of GDP. In addition to the federal level, in 2002 states and municipalities had reached a level of debt of 384.8 billion € and 82.7 billion € respectively (in 2002, net borrowing amounted to 29.3 billion € and 4.6 billion € respectively). Consolidation of the different levels into the general government gives a total amount of debt of 1,253.2 billion € at the end of 2002.

Table 1

Public Debt
(percent of GDP)

	General Government	Federal Level	Special Funds	States	Municipalities
1960	18.74	8.66	1.2	5.03	3.81
1965	18.38	7.63	1.5	3.70	5.57
1970	17.88	6.94	1.2	3.98	5.79
1975	24.11	10.22	0.6	6.32	6.96
1980	30.87	15.34	0.2	9.07	6.25
1985	40.49	21.00	0.3	13.18	5.98
1990	42.06	21.74	2.3	13.09	4.95
1995	56.03	21.41	15.1	14.29	5.27
2000	59.02	35.25	2.9	16.41	4.49
2001	58.06	33.63	2.8	17.25	4.33
2002	59.38	34.09	2.8	18.23	4.26
2003	62.26	35.72	2.8	19.49	4.30

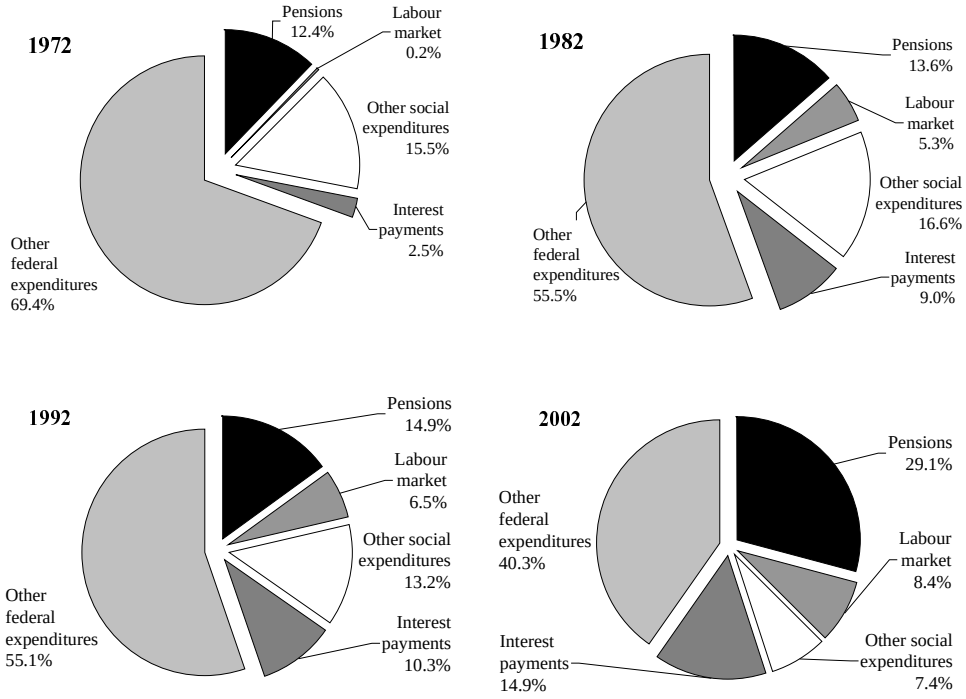
Source: Federal Statistical Office, own calculations.

1.2 Structure of the federal budget: increasing share of "tied" expenditures

To illustrate the diminishing room for manoeuvre for fiscal policy in Germany over time, Figure 2 presents the expenditure structure of the federal budget for selected expenditure categories for the years 1972/82/92/02. The figure suggests that the federal budget is getting more and more "past-oriented". An increasing share of public expenditure is spent for debts incurred in the past and for the social security system. Whereas, in 1972, 14.9 per cent of public federal expenditure went to interest payments and as federal subsidies to the public pension scheme, in 2002 this share already amounted to 44 per cent. Federal expenditure for pensions, labour market, other social expenses (child, parenting and living benefits, family policy among others) and interest payments, taken together, even amounted to 60 per cent of total expenditure in 2002, compared to 33 per cent in 1962. One key problem of this development is that an increasing amount of expenditure in the yearly federal budget is "tied", due to legal obligations of the state, the consequence being that it is almost impossible for the government to reduce this expenditures in the short run. Other expenditure categories that are more "future-oriented" are hence squeezed out and the government, as a consequence, is increasingly losing control over a significant part of its main fiscal policy instrument. It is self-evident that unless the

Figure 2

Structure of Expenditure of the Federal Budget
(shares in total expenditure)



government takes more countermeasures, the ageing of the society that lays ahead as the key challenge for fiscal sustainability in the future may easily worsen this process (see also below in section 1.3).[1]

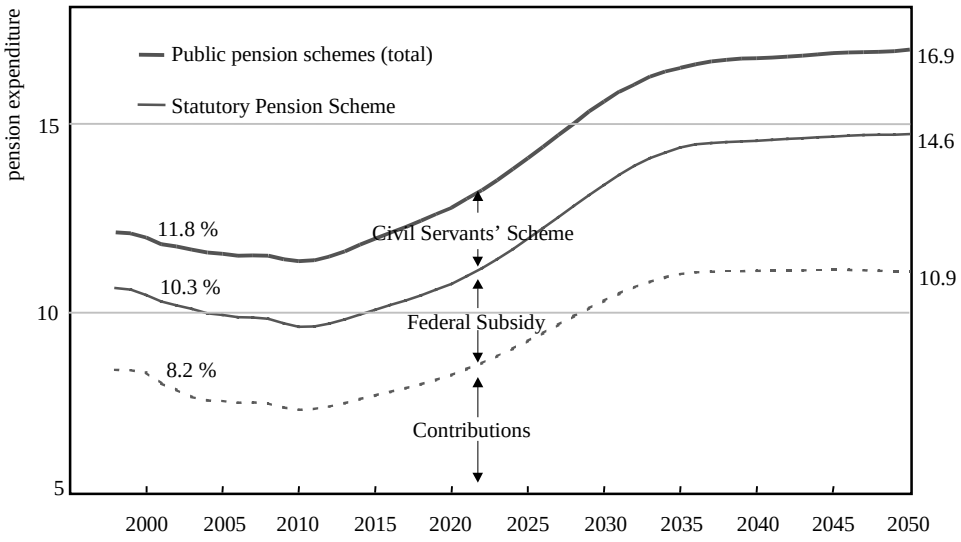
1.3 The look ahead: challenges to sustainability due to demographic factors

Germany is a country that will be strongly affected by the demographic challenges that lay ahead. All demographic projections available indicate the

[1] It has to be stressed that one can read only raw tendencies and trends from these kind of figures, as, due to changes in the laws and in the budget system itself, figures on the federal budget are not always consistent and directly comparable over time. For example, from 1996 on, the child benefit – until then part of the category "other social expenditures" – is no longer a direct government expenditure, but is instead reimbursed via the tax system. This is one reason for the decrease of this category from 1992 to 2002, while qualitatively there has been no change. Note, however, that the trend visible in Figure 2 is also existent if one looks at the change over time in the different expenditure categories as a share of GDP.

Figure 3

Public Pension Expenditure per GDP up to 2050
(percent of GDP)



Source: IFO (2000), simulations for the "standardised scenario" of the EPC.

continued ageing of the population, this process reaching its peak in the 2030s and 2040s. The main causes for this development are an increasing life expectancy and low birth rates since the Seventies, while the baby-boom generation of the Fifties and Sixties now begins to enter the age of retirement.

There are many studies available that analyse the potential effects of ageing on public finances, see, e.g., EPC (2001) or Banca d'Italia (2000) and the references therein. It is beyond the scope of this paper to give an overview over this literature and especially the methodological problems connected to projections in the long-term future. Nevertheless, we want to present one example that gives an idea of the challenges that lay ahead. One of the key pillar of the German social security system that will be impacted severely by the demographic trends is the public pension scheme. In 2000, the IFO (Institute for Economic Research) in Munich was commissioned by the Federal Ministry of Finance to analyse the financial development of the Statutory Pension Scheme and the spending on the Civil Servants' Scheme up to the year 2050, see Werding and Blau (2002) for details. As this study was the national input to the first round of sustainability analyses by the EPC in 2001,[2] the projections are based on the standardised assumptions agreed

[2] See EPC (2001) for more details and a comparison of all EU member states. A second round of harmonised EU-wide sustainability analyses is due in 2005.

upon in the EPC beforehand, see Werding and Blau (2002) and EPC (2001) for a detailed description of the assumptions and the different scenarios projected. The model used (CESifo pension-model) is based on a partial equilibrium approach to forecast the pension budgets and the retirement benefits for civil servants. In its calculations, the legal framework is that of the end of 1999, recent changes in pension legislation will be considered in a new study of the IFO Institute due in autumn 2004.

The main result of the model projections can be seen in Figure 3, which plots the projected development of public pension expenditure per GDP for the years up to 2050. It can be seen from the figure that until 2015 there will be some relief in the Statutory Pension Scheme mainly due to the pension reform implemented in 1999. Total expenditures (including contributions to the Statutory Pension Scheme, the federal subsidy as well as the civil servants scheme) will decrease from 11.8 per cent in 2000 to around 11.2 per cent in 2010, being back at the initial level at 2015. However, after 2015 total expenditures increase steady until 2035 and reach a level of 16.9 per cent in 2050, given that there will be no more adjustments to the system. With respect to the contribution rate, the projections of the IFO show that, without any additional measures, it decreases from 19.3 per cent in 2000 to about 17.3 per cent in 2015, while it afterwards increases sharply and remains at a level of 26.4 per cent up to 2050.

2. The role of fiscal institutions in securing long-term sustainability of public debt in Germany

With respect to sustainability-oriented fiscal policies, one hugely important issue is to look at the existing system of laws and regulation that form the social insurance system and that bring about concrete and legally-binding expenditure duties for the state. The key point here is that laws and regulations that make up the social welfare state have direct fiscal consequences either directly via higher expenses or, indirectly, via negative impact on growth and employment and probable reduced tax revenues.

In the present paper, however, we do not want to focus on the issue of social reform, although it is certainly of paramount importance for the ongoing viability of the system. Rather, here we try to shed some light on the more “fiscalist” aspects of safeguarding sound public finances and on the contribution of fiscal institutions to sustainability in a broad sense, which is a problem of the right policy and of the proper functioning of the institutions. An extensive and still growing political economy literature has highlighted the importance of proper fiscal institutions for sound public finances. Fiscal institutions in this context are understood as the entirety of institutions that govern the decision making process over public spending and revenues of a country. These institutions include the formal and informal decision-making rules that distribute authority and control over public finances,

determine who does what and when in the decision-making process, and channel the flow of information among the relevant actors (Perotti *et al*., 1998).[3]

In the present paper we intend to approach this rather broad topic from an applied perspective. We discuss existing institutions that support a medium- to long-term perspective on the budgeting process in Germany and develop approaches aimed at improving the existing fiscal institutions.

2.1 Medium-term financial planning

The federal budget in Germany is planned and executed on a yearly basis. Nevertheless, in 1967 medium-term financial planning was introduced into the German budget system to have some sort of forward-looking element in the budget process:

- to take into account likely developments in public finances in the medium term when making the decision incorporated in the yearly budget;
- to identify at an early stage the full impact of new measures, reform projects, etc.;
- to assess the scope for fiscal policy action in future years;
- to identify in good time undesirable fiscal policy trends with longer-term impact and to enable policy decisions to counteract them at an early stage.

The German system is based on a five-year period. The first year in the period is the current fiscal year. The second year is covered by the draft budget for the next fiscal year, and this is followed by three genuine planning years. The whole financial plan is "rolled forward" every year, to be able to respond flexibly to recent political decisions and potentially changing economic conditions.

The medium-term financial plan in Germany includes the expenditure as well as the revenue side of the budget. For this reason, a system of advance tax estimation is installed to ascertain what the tax revenues will be in the medium term. In particular, for the revenue forecast, but also for the forecast of certain expenditure categories, a sound medium-term projection of key macroeconomic data is necessary. This is provided in the bi-annual macroeconomic forecast of the federal government.

In the German system of financial planning, a forecast of aggregate economic development is made for the first two years of the planning period, taking account of discernible trends in economic activity. In contrast, the medium-term projection of the envisaged development of the economy in the last three years of the planning period deliberately makes no allowance for fluctuations in the level of economic

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[3] Note that of course there is a direct connection between the issue of social reform and the existence of proper fiscal institutions. Particularly relevant are "tied expenditure" in the budget due to legal entitlements in the social security sector that may lead to a loss of control over a significant and increasing part of the budget, see section 1.2 and, among others, the discussion in Strauch and von Hagen (2001).

activity. This cyclically-neutral projection is intended to have a stabilising effect on private-sector decision-makers, and serves at the same time to ensure a balanced fiscal policy.

All states and municipalities in the federation are obliged to draw up a financial plan. The necessary coordination of the budgets and financial plans of the different levels of government is undertaken by the Financial Planning Council. This is a coordinating body at ministerial level with the federal minister of finance in the lead, comprising in particular the finance ministers of the states and representatives of the associations of the municipalities.

Overall, the financial plan has indeed become a useful tool for fending off excessive demands on the budget. Moreover, the obligation to draw up a financial plan each year reinforces awareness within the federal government of the need for financial discipline and responsible budgetary policy. However, while financial planning is a valuable instrument, it cannot guarantee the implementation of a sound budgetary policy. One key problem in this context is the non-binding nature of the medium-term financial plan. In particular, it may be adjusted every year in the course of the budgeting process without the need to explain the changes. Medium-term financial planning, therefore, while being a useful tool to support a forward-looking budgetary policy, has to be supplemented by other mechanisms and procedures that frame the conduct of fiscal policy to support its long-run sustainability.

2.2 Transparency and information

One key aspect of sound budgeting institutions is to ensure the transparency of the budget and of the budgeting process. The more detailed and disaggregate information about the budget is freely available, the easier it is for the parliament to exercise its control function and for the public, more in general, to form an objective opinion on the fiscal policy of its government. This, in turn, increases pressure on the government to implement sound fiscal policies that reflect the view of the majority of the population. Transparency and information, thus are a key "institution" that supports sound public finances in a democracy.

In general, the German budget process is judged as being very transparent – recently confirmed by the IMF in the 2003 Report on the Observance of Standard and Codes in Germany – and the constitution and several additional budget laws (Law on Budget Principles, Federal Budget Code and the annual Budget Statute with the budget itself in the annex) establish a number of provisions that are essential for an orderly and efficient budget management (see, for instance, Federal Ministry of Finance, 2000).

However, one aspect that is criticised quite often in the current debate on the sustainability of public finances is the fact that the consequences of ageing – in particular, increasing liabilities resulting from the public pension system – are not explicitly taken account of in the official budget process. To increase transparency

and especially information in this area, the first step is to increase public awareness of the dimension of the upcoming problems. Although there are a lot of academic studies around that demonstrate the fiscal consequences of ageing, it seems likely that the broader public does not really take notice of these studies und therefore is relatively uninformed about potential future developments. Furthermore, one key challenge for policy makers today is that the consequences of ageing will in its full dimension only be felt in the future, while significant and political adjustments, to some extent "painful" for the public, are necessary already today.

Therefore, increased efforts have to be undertaken to inform the public about the coming developments and challenges, not least to gain political support for necessary political measures today. The Federal Ministry of Finance, therefore, plans to inform the public about the consequences of the ageing of the population with a new *Sustainability Report* which will be published in 2004 for the first time. The report will present a sustainability analysis of the sort presented in section 1.3 of this paper. In addition, the report will try to spell out a fiscal, economic and social policy strategy of the government which embeds the different political reform options in a concrete political program. It thereby intends to fill a still existing gap in the political discussion on public finances in Germany.[4]

2.3 The "optimal" structure of the budget to achieve long-term sustainability

The public debate on public finances has devoted increasing attention to the concept of quality of public finances during recent years. This is due to the fact that a long-term consolidation strategy has to focus not only on the quantitative aspects of the consolidation but also on qualitative or structural issues. The growth-enhancing restructuring and the efficiency-improving design and management of public expenditure (and revenues) can quite clearly be described as one major policy challenge with evident macro- and micro-economic implications.

2.3.1 The PEGS-budget concept

Background

The aim of structural consolidation is to strengthen future-oriented public expenditures, *i.e*. those public expenditures that are of high quality, in the sense that they improve economic growth, employment and sustainable development.

As a first step towards improving the quality of the budget, information about the budget quality has to be gained. In the following, a new indicator of the quality of the budget is presented that is based on a study of the Cologne Center for Public

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[4] While consistency with the medium-term financial planning certainly has to be secured, it has to be stressed that it seems not to be useful to directly connect a sustainability analysis with the yearly budget process, especially as a yearly update of the sustainability analysis doesn't seem to be sensible and necessary.

Finances, commissioned by the Federal Ministry of Finance (see Thöne, 2004, for details). The focus of this indicator lies on exposing expenditure categories that encourage economic growth, employment, and sustainable development (PEGS = Public Expenditure for Growth and Sustainable Development). It should be viewed as complementary to other indicators and, therefore, assist the broader analysis of the quality of public finances. It thereby may serve as one input to a broad strategy of qualitative consolidation.

Traditionally, public investment expenditure is treated as a synonym for precautionary policy with major merits for future generations. Consumptive expenditure, in contrast, has the reputation of being unproductive. This distinction is the basis for the German "Golden Rule" of article 115 of the federal constitution that restricts the scope of deficit-financing to the amount of public investment. Yet, recent empirical research doubts the old dualism investment and consumption-spending for two reasons.

Public investment is often assumed to generally exert a positive influence on economic growth. This assumption stems from large network-infrastructures in transport, communication and public utilities. For example, roads, railways and harbours are intermediate public goods that generate benefits as inputs in the production process and thereby increase the efficiency of the private sector investments. Where public investment expenditure significantly contributes to the production of indispensable public goods, economic theory expects positive impacts on economic growth. Yet, this kind of expenditure accounts only for the minor part of official public investment expenditure in Germany. Additionally, empirical findings hint at saturation effects and a low marginal utility of new public investment in highly-developed economies.

Even though network-infrastructures are very capital-intensive public goods, it is still the provision of infrastructures services that count for economic growth. Infrastructures without the complementary operating services rapidly lose their productive potential for the economy. A survey of the empirical literature shows that many categories of consumptive government-spending may indeed produce positive growth effects, see Thöne (2004) for details:

- one important example is investment in human capital, although many studies are based on output (e.g., schooling quality) of public activity in this area, not public expenditure *per se*,
- another important example is research and development that in general ranks high among the major causes for long and sustained economic growth in industrialised countries. Yet, the question whether this qualification holds for public R&D-activities (and R&D-expenses) is highly controversial. The crucial issue is whether public and private R&D are substitutes or complements. Only in the latter case, public R&D expenditures may have a positive impact on growth. The empirical findings on this question are heterogeneous, while many studies find evidence for a complementary relationship.

Differences in labour utilisation are considered to be another important cause of growth disparities between the United States, Australia, Canada and Ireland on the one hand and continental Europe and Japan on the other hand. Low labour utilisation in Europe results from (a) fewer hours worked annually and (b) low participation rate in the labour market. In continental Europe, early retirement is customary, and in many European countries women still have insufficient chances and incentives to combine family life with a long-term professional career. Thus, active labour market policy to increase participation in the labour market can be viewed as a helpful additional measure to enhance growth potentials.

Finally, the government's health policy is traditionally seen as one key government activity that increases the quality of human capital in the economy. Recent empirical research, however, questions the direction of causality in the relationship between growth and health, especially in rich countries.

Based on these considerations, an alternative "quality" indicator, Public Expenditure for Growth and Sustainable development (PEGS), is introduced. The PEGS-budget consists of expenditures in the following policy fields: schools and nursery schools (including overseas schools); colleges, universities and other education (including financial assistance to students); science and R&D outside universities; family policy (family allowances, maternity protection, early childcare, etc.); active labour market policy; public health service; environmental and nature protection (incl. nuclear safety and community amenities); promotion of renewable energies and infrastructure-services in transport and communication.

The PEGS-budget: an application to Germany

Figure 4 shows the PEGS-expenditures of the German federal government as a share of GDP, Figure 5 as a share of total expenditures from 1975 onwards. In a similar manner, it is possible to identify the PEGS-budget for the general government. Due to the specific division of functions within the German federal state, the share of PEGS is slightly larger at the state level (almost all education expenditures are done at the state level) and even higher at the municipal level (the majority of infrastructure investment is done at the municipalities level) than on the level of the federal government.

Overall, the PEGS-budget as share of total expenditure displays the same trend as investment expenditure: coming from a high level in the Seventies, the PEGS decreased and stagnated during the Eighties. With German unification, the PEGS-budget jumped upwards to a new level in the early Nineties. In 1995, the federal PEGS-budget amounted to 19 per cent of federal expenditure (and 20.6 per cent of total government expenditure). Note the following: in 1996 a rearrangement of the way child benefits are paid out caused a structural break and hampered the intertemporal examination of the data. With the beginning of 1996, the child benefit is no longer an expenditure but instead is reimbursed via the tax system. Thus, a "sustainability-relevant" expenditure was succeeded by a tax exemption which is equally "sustainability-relevant", but nevertheless not part of the PEGS-budget.

Figure 4

PEGS Expenditures applied to Germany
(percent of GDP)

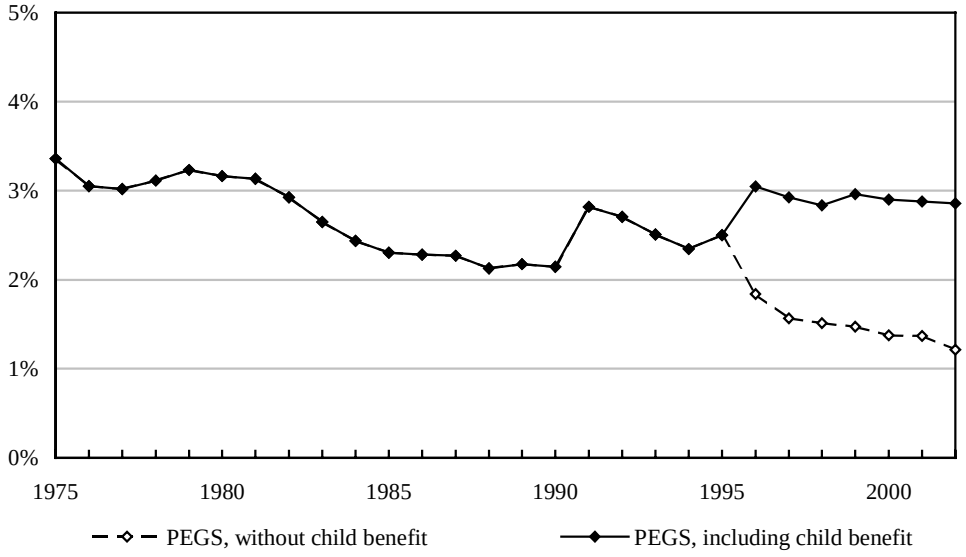
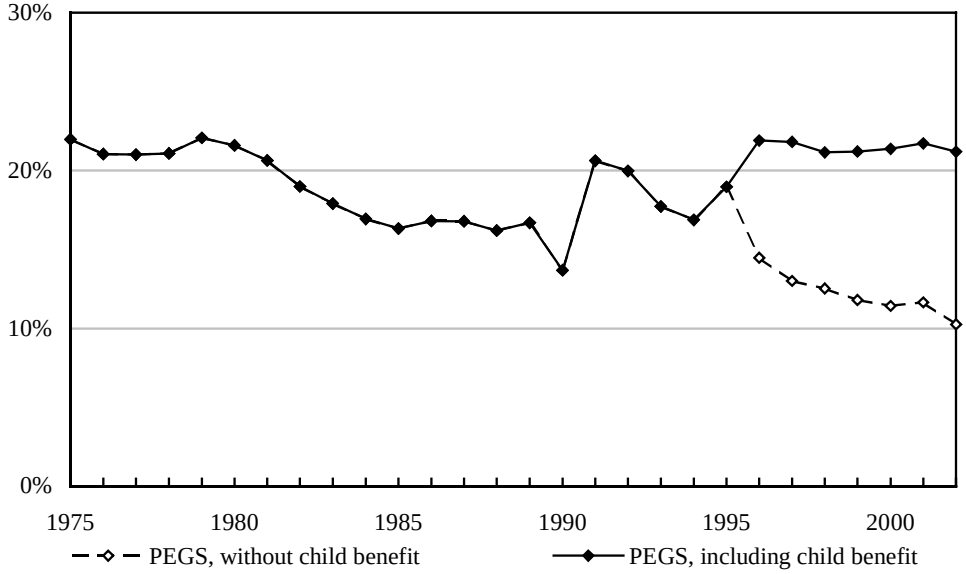


Figure 5

PEGS Expenditures applied to Germany
(percent of total expenditure)



Figures 4 and 5 show the huge difference between the PEGS-budget without the family allowance and a hypothetical PEGS-budget that includes this tax expenditure. Taking the tax allowances into account, the PEGS-budget rises to a level comparable to the Seventies, otherwise the share declines continuously.

Methodological shortcomings of PEGS

The PEGS-budget is thought to serve as a first starting point to measure the quality of public expenditure. The PEGS-budget in its actual form certainly has shortcomings. The most important of them are:

- no provision for tax expenditures. The case of the child benefit immediately shows one of the main shortcomings of the indicator: since tax expenditure and direct expenditure are substitutes, the PEGS-budget and the overall government budget remain incomplete as long as tax expenditures are not taken into account systematically,
- pure input orientation. From an economic point of view, the actual positive effects of expenditures stem primarily from government activities, not from the expenditures *per se*. Consequently, input data, *i.e.* public expenditure in a PEGS-activity, should be interpreted with great care when one is actually interested in the output effects, like, for instance, schooling quality.

Both criticisms show that the PEGS-concept warrants further work to be more utilisable for practical purposes. In general, the Federal Ministry of Finance considers to take this new indicator into account for its consolidation strategy, while it is still unsettled how to proceed from the first step of a general quality analysis to the second step of incorporating these concepts concretely into the budget process.

2.3.2 Subsidy control

There is the widespread belief – partly theoretical, partly ideological – that granting subsidies always violates the principle of "good allocation". As a consequence, one can observe some public support for radical cures, such as prohibition or linear reductions of all subsidies ("lawnmower method"). However, the starting point of our discussion of subsidy control is the observation that subsidies *per se* are neither good or bad, neither necessary in general, nor indispensable on the whole. Consequently, like any other policy instrument, they must be judged on their merits: can they be implemented successfully? Do they enhance the incentive structures? Do they reach their addressees, thus promising to accomplish their political purpose? Finally, are subsidies cost-efficient instruments? The acknowledgment of potential justifications for subsidies implies the necessity of a critical review and control of subsidies instead of, for instance, the proposed linear reduction of all subsidies.

A key challenge to subsidy control already arises at the first level of the control process, namely the questioning of a subsidy's objectives. Before asking

how the aim may best be reached on the operational level, the justification of a subsidy has to be critically assessed. In doing so, usually not only the rationale of the subsidy itself will be under investigation, but the justification of a public intervention in general must be questioned regardless of the particular instrument employed (potential justifications include the existence of externalities, economies of scale, imperfect information and the like). Obviously all potential justifications cannot completely rule out subsidies that distort markets or violate the principles of allocation. Consequently, systematic subsidy control must review the objectives of a public intervention on a regular basis in order to assess whether the original justifications can still be sustained. Of course, the review of subsidy objectives must also take potentially negative effects of public aid measures into account. In a second step, the success or failure of the single measure in achieving the objectives has to be evaluated. In this context, the significant problem of how to measure the effectiveness and efficiency of the measures arise, see the extensive discussion in Thöne (2003) for details.

As a first step in the direction of a systematic subsidy control, in 2002 the Federal Ministry of Finance developed a questionnaire for the control of the efficiency of all granted expenditure subsidies. This was the basis for the first step of a systematic controlling of subsidies that was introduced in the preparation of the federal budget for the year 2004 and of the federal financial plan 2003-07. Every subsidy that is part of the federal report on subsidies was reviewed on the basis of the control scheme. Questions that had to be answered by the relevant ministries responsible for the respective subsidies included the following: what are the legal obligations within the medium-term financial planning horizon? Is the aim of the subsidy clearly defined and justified? Is the subsidy in this form the suitable instrument to reach the defined aim? Is it effective and efficient? Is it possible to grant the subsidy in a degressive manner?

It is planned to establish this inquiry as a regular instrument in connection with the budget preparation procedure. Furthermore, to put the attempt for a sustainable reduction of subsidies in a more systematic and binding framework, on the occasion of passing the 19th Federal Report on Subsidies, the federal cabinet agreed on the following principles for the future subsidy policy of the government:

- in the future, new subsidies are granted only, if at all, as expenditure subsidies and not as tax benefits;
- new subsidies are granted only temporarily and in a degressive manner;
- aims of new subsidies are defined in a manner that allows a success control;
- the above-mentioned aims are to be applied to all existing subsidies. Thereby it has to be examined to what extent existing tax subsidies can be transferred into expenditure subsidies.

Based on these policy principles and utilising the above-mentioned control scheme, the Federal Ministry of Finance plans a systematic stocktaking of all existing subsidies with precise information about time restrictions, degression and

success control during the course of 2004. In a next step it is planned to work out concrete needs for action for the future subsidy policy.

2.4 The role of national fiscal rules

2.4.1 National institutional boundaries to debt

Budgetary rules may be one building block to restore or safeguard sustainable public finances. Indeed, many OECD countries have installed fiscal rules at the national level, for an overview see, e.g., OECD (2002). In Germany, the constitution (Article 115 GG) provides for a "Golden Rule" at the federal level, according to which the federal deficit must not exceed federal investment spending. This rule, however, may be breached when the national economic equilibrium has been disrupted. Notably, most state constitutions also provide for a Golden Rule in their constitutions or budget rules. A more strict solution is provided for at the level of the municipalities, who are allowed to resort to public borrowing only when other means of financing are not possible or appropriate. Moreover, borrowing by the municipalities has to be approved by the states.

Yet, there are many critical voices that claim that these regulations are not sufficient to ensure a sustainable limitation of public debt in Germany. The main reasons put forward in the debate are that public investment is defined in a rather broad sense, that the rules apply only to the Federal budget and therefore may be circumvented by debt issuing of special funds, and finally that there is no powerful enforcement mechanism when the limits on borrowing are breached.

A full critical appraisal of these arguments is clearly beyond the scope of this paper. Yet, only when looking at the debt figures (compare to section 1) it is apparent that the statutory regulations have not been able to prevent a sizeable increase in the stock of public debt. Moreover, the much stricter deficit and debt limits provided by the Maastricht Treaty increasingly dominate the debate on public debt and represent an even bigger challenge to the existing fiscal policy institutions in Germany.

Historical experience shows that the federal structure of the state makes a unitary systematic fiscal policy strategy very difficult. Many areas of responsibility remain at the state level and the states exercise quite significant influence on the decision-making process through the upper house of the parliament. Coordination of the different levels to find a coherent fiscal strategy is quite loose and so far the states have resisted initiatives to find some sort a stronger form of coordination between the different levels of government.[5]

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[5] Non-binding coordination of public finances across different levels of government is done within the Financial Planning Council, which is composed of the Federal and the state finance ministers and other local authority officials.

2.4.2 A "national stability pact"?

The Stability and Growth Pact demands the member states of the EU to build up effective national mechanisms to ensure that the deficit and debt levels prescribed by the Treaty are met. Against the background of Germany's federal structure and the considerable degree of budget autonomy granted to the states by the constitution, some sort of a "coordinative" deficit and/or debt restriction is certainly necessary. During the Nineties there was a considerable political and academic debate on the optimal shape of a national stability in Germany, see Wendorff (2001) for an overview. Although the Federal Ministry of Finance and some states came up with reform proposals, in the end no agreement could be reached due to strongly divergent interests of the parties involved. This is remarkable, as the general need for some sort of national regulation that safeguards the proper functioning of the Stability and Growth Pact was not denied. But it is important to mention here that the Federal Government had no legal or specific political powers to force the states in such a pact against their will. Germany, hence, cannot be directly compared with other federal states like, for instance, Austria.

It was in the context of the imminent *Early Warning* of the Ecofin Council in 2002 that the issue of a national stability pact regained interest. While during the Nineties the possibility of Germany's general government deficit breaching the 3 per cent limit of the Treaty looked rather theoretical, it became concrete in 2002. For this reason, the Financial Planning Council decided, at a special meeting on 21 March 200,2 to bring forward to the year 2002 an amendment of the Law on Budgetary Principles (HGrG) which had already been agreed in the Law to continue the Solidarity Pact but was originally to have effect only from 2005 onwards. The new Section 51a of the HGrG is concerned with a procedure to implement at national level the commitments entered into by Germany at European level in the Maastricht Treaty and the Stability and Growth Pact.

Section 51a of the HGrG stresses the common responsibility of the Federation and the states to comply with the budgetary discipline within the framework of the European economic and monetary union. Federation and states are enjoined to reduce net borrowing with the aim of achieving budget balance. The Financial Planning Council plays a central part in the procedure to ensure compliance with budgetary discipline by issuing appropriate recommendations especially on a common expenditure line as a yardstick for the budgets of the federal and state governments (including local authorities). The Council also assesses whether trends in the budgets of the federal, state and local governments are in line with the provisions of Article 104 of the EC Treaty and the European Stability and Growth Pact. If necessary, the Council makes recommendations on measures to be taken to restore compliance with budgetary discipline. The amendment to the law took effect in July 2002.

This strengthening of the role of the Financial Planning Council places greater weight on the effect of decisions reached in a cooperative procedure by equal partners, thus refraining from restricting budget autonomy by way of a law, which would run up against constitutional problems.

However, while the now existing "national stability pact" is the best that could be reached within the binding legal and political restrictions, it is still not optimal, as it does not lay down clear and binding responsibilities and furthermore does not allow for any sort of enforcement mechanism. In the context of the existing structure of the national stability pact, one could think of giving the Financial Planning Council the competence of formulating concrete recommendations to the states with the possibility of imposing sanctions when the recommendations are not met. Moreover, binding rules should be established for the participation of the states in potential sanctions in the context of the EDP.

A more comprehensive national stability pact, however, can only be implemented in line with a general reform of fiscal federalism in Germany, which is currently discussed in the Constitutional Commission set up jointly by the Bundestag and the Bundesrat. The task of the Commission is to look into the modernisation of the federal system and to try to reach the necessary consensus on appropriate reform measures and to put them into effect before the end of the current parliamentary term.

3. Conclusions

The first part of the paper presented past debt developments as well as future challenges to fiscal sustainability due to the ageing of the population in Germany. The second part discussed, from an applied perspective, selected approaches to improve fiscal institutions that support the long-run sustainability of public finances in Germany.

With respect to some of these approaches, we discussed only first ideas that have to be developed further and that have to be implemented in a complex political environment. Fundamentally, to make the discussed projects work and exploit all potential benefits, a reform of the federal system is indispensable. To reach this aim, however, a change of the constitution is necessary which in turn requires a consensus of all levels of the state as well as all political powers. The difficulty is to get the parties involved to focus on the advantages of cooperation in this strategic game.

For the federal level there is, not only due to the Stability and Growth Pact, no money to "buy a consensus", so arguments have to do the job, in particular long-term arguments that reach beyond the legislation period of four years and, accordingly, have no high priority on any political agenda seeking power within the next four years.

Another easily underestimated challenge is the implementation of such a strategy in economically difficult times. During the last four years a considerable reform package has been implemented in Germany, in particular in the area of labour markets, in the social security system and in the tax system. Of course, more reforms are necessary, Germany still lags somewhat behind compared to other major economies. However, also due to the unfavourable macroeconomic environment,

these reforms have not yet delivered all of their potential benefits. As a consequence, many people, being generally in favour of reforms, are discontented with the concrete reforms implemented. This strategic deadlock makes further reforms difficult to implement and may require a big political coalition at least for some time.

Finally, any strategic policy discussion at the national level has to be seen also in the European context. With respect to a reform of fiscal and economic surveillance and coordination in Europe a window of opportunity opened after the argument in the Ecofin-Council in November 2003 and the recent ruling of the European court of Justice. Sustainability and quality will probably play an important role in any possible reform of "economic governance" in the EU. A discussion of this aspects is beyond the scope of this paper but remains an interesting area for future research.

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PUBLIC DEBT, SUSTAINABILITY AND THE FISCAL POLICY FRAMEWORK OF THE EMU

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Introduction

During the first five years of EMU useful experiences have been gained from the functioning of the economic policy coordination and the fiscal policy framework. The ECOFIN council reported on this issue to the Helsinki European Council already in November 1999. The debate concentrating mainly on the Stability and Growth Pact has continued since. Now it is time to take stock and try to draw conclusions and make some proposals.

A common view is that the current institutional framework is appropriate but more focus should be given to policy implementation and sustainability issues. This was also more or less the outcome of the EU Convention and similar conclusion has been drawn in the context of the ongoing ICG in which only small amendments have been proposed to the Treaty.

There is no willingness to open the key provisions and to change competences. When trying to improve the EU-level policy coordination and to strengthen the credibility of the Stability and Growth Pact (SGP), the question is how to improve the existing framework. At the end of the day, if the legal requirements and provisions are considered to be in place, strengthening of the political commitments will be the key.

One important avenue in this respect is the common interest which the Member States have in maintaining the long-term sustainability of public finances. In recent years there has been a clear trend to focus increasingly on sustainability and debt issues. This has been endorsed in several occasions both by the Heads of States and Governments and by the Council of Ministers.

It is a major paradox that no explicit and operational link between the SGP and the sustainability of the public finances exists. The aim of the medium term target of "close to balance or in surplus" was to strengthen long-term sustainability of public finances and to ensure reduction of indebtedness. However, the Pact, as such, is silent on the public debt criterion which has in practice remained rather inoperational. The discrepancy and inconsistency between short and long-term considerations has been one of the central reasons behind the difficulties experienced in the implementation of the SGP.

The aim of this paper is to discuss debt and sustainability issues in the context of the SGP. A lot of work has been done to study these questions further. It is especially important to try to understand the politics involved. Despite the strong

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commitments, the outcome of the SGP has recently been less satisfactory. The question is why the performance has been so poor despite of all the political will invested.

The SGP and the existing fiscal framework have failed to provide the result which is most important from the point of view of the euro area, *i.e.* strengthening of long-term sustainability and reduction of debt levels. Attention has been given mostly to the three high debt countries (Belgium, Greece, Italy) which have been expected to maintain their primary surpluses at an appropriate level in order to ensure rapid debt reduction. In this respect, the outcome has been disappointing. These three countries have not been able to deliver what they promised in their original stability programmes in 1998, *i.e.* their initial commitments when joining the euro area. The Commission and the Council have been unable to tackle this problem and to make the debt criterion operational. In 2003 the debt ratio of the euro area exceeded 70 per cent. Furthermore, there has been no improvement during the five year period.

Even more disturbing is, however, that in recent years the large euro area countries have moved away from their original targets and have again exceeded the 60 per cent benchmark. Indeed, too much attention has been given to their excessive deficits and too little to the fact that the public finances of these countries are increasingly on an unsustainable footing. In general, it seems that the coordination has focused too much on short-term issues and on secondary issues in which the common interest is less important, like the quality aspects of the public finances.

1. The framework

The euro area Member States prepared their first stability programmes in 1998 before adopting the common currency. The programmes were based on the Council regulation which defined their minimum data requirements. These requirements were further specified in the code of conduct on the content and format of stability and convergence programmes endorsed by the ECOFIN Council in 1998. Since then the programmes have been updated on an annual basis. In 2001 the sustainability aspect was strengthened when the code of conduct was revised. According to the new rules the programmes were expected to outline in an explicit way the Member States' ageing strategies and provide information on how they were planning to tackle the longer-term budgetary implications of ageing populations.

This change reflected the conclusions of the Stockholm European Council in March 2001 endorsing a "three pronged strategy" of ageing population. The Member States are expected to review regularly the long-term sustainability of public finances, including the expected strains caused by the demographic changes ahead and to take measures in three areas in order to improve the long term sustainability. The three areas where efforts should be made are increasing of employment rates, speeding up reduction of the debt burden and implementing

pension and health care reforms. The "three pronged strategy", which has been frequently referred to, is politically highly useful and an important commitment to promote sustainability.

In November 2002 the Commission gave a communication on strengthening the coordination of budgetary policies. One of its proposals was that the sustainability of public finances should become a core policy objective. This aspect should be, according to the Commission, explicitly taken into account when assessing the budget positions of Member States under the SGP. Furthermore, the Commission announced that the debt criterion of the excessive deficit procedure, which requires debt levels above 60 per cent of GDP to approach the reference value "at satisfactory pace", should made operational. Countries with debt levels well above the 60 per cent level should outline a detailed strategy on how to reduce their indebtedness. Commission argued that these Member States should consider running budget surpluses in coming years, *i.e.* over and above the "close to balance or in surplus" requirement of the SGP (European Commission 2002). The communication led to an intensive debate on common fiscal targets both at the level of high officials and by the ministers in their informal Euro Group.

In 2003, the Commission deepened its analysis on the debt criteria and on excessive deficit procedure further in its annual public finance report (European Commission 2003). The background was that the European Council had concluded in March 2003 – in line with the Commission communication and ECOFIN conclusions – that the pace of decline in public debt should play an important role in budgetary surveillance, especially in highly indebted countries, and that the excessive deficit procedure should contribute to ensuring a satisfactory pace of debt reduction. This was again a clear and strong commitment at the highest political level.

Unfortunately the Commission analysis on how to operationalize the debt criterion remained rather open-ended. Developing undisputable, quantitative criteria for debt reduction in EU level policy coordination proved to be difficult.

In November 2003 the Council discussed the impact of ageing population on public finances and endorsed the report of Economic Policy Committee (EPC 2003). The EPC assessment was based on quantitative indicators backed with qualitative information. The EPC defined the sustainability of Member States' public finances meaning a continued compliance with the Treaty requirement to keep debt levels below 60 per cent of GDP. On that basis, a "clear risk of emerging budgetary imbalances" exist in seven Member states (Germany, Greece, Spain, France, Italy, Austria, Portugal). According to the EPC conclusions this demonstrates the long-term impact of failing to achieve the "close to balance or in surplus" target.

This politically rather strong assessment is particularly noteworthy, as the working group consisted of representatives of the Member State governments. This indicates that there should be readiness to adopt more obliging and far-reaching conclusions and policy recommendations on sustainability issues at the Council level. The Council also confirmed the mandate to the EPC to produce new common

budgetary projections by mid-2005 on the basis of the approach outlined in the report.

2. Commission recommendations and Council opinions

There is a general understanding that the weaknesses in the functioning of the SGP and the lack of credibility are due to the final decision making role which the Treaty gives to the Council in the excessive deficit procedure. It can be expected that the Council/Member States will, at the end of the day, water down efforts to strengthen fiscal discipline at the EU level and to prevent the use of sanctions for this purpose. This can be seen as the major underlying reason behind the problems in economic policy coordination. These common views – which are challenged in this paper – have also led to quite radical proposals how to reform the SGP. See, e.g., Fatás *et al.* (2003).

Largely this expectation has also been behind the proposed Treaty amendments aiming to increase the competences of the Commission. If the Commission received right to put forward formal proposals concerning orientations on economic policies instead of recommendations it would be more difficult for the Member States to soften the common policy line and to blur fiscal discipline.

Legally there is a significant difference between proposals and recommendations put forward by the Commission. According to the EU decision making rules, unanimity of the Member States is always needed to change the Commission proposals whereas a recommendation can be changed by a qualified majority. On these issues see also Buti, Eijffinger and Franco (2003). This question has become particularly topical after the decisions of 25 November 2003. The question is basically whether an enhanced role of the Commission in economic policy coordination would promote fiscal discipline in the Member States and especially the long-term sustainability of public finances.

It is not clear that a change in the division of competences between the Community and the Member States would strengthen the credibility of the Stability and Growth Pact and improve policy coordination. This is doubtful because at the end of the day the main bulk of the budgetary decision making will remain in capitals. According to the new Treaty text the national parliaments should ensure that legislative acts proposed by the Commission are in compliance with the principles of subsidiarity and proportionality. It is clear that any proposal for new secondary legislation on economic policy coordination would be carefully checked by the national parliaments and be vetoed if needed. Indeed. the final responsibility of fiscal stability and long-term sustainability is in the hands of national governments and parliaments, which is one argument why in the future the national parliaments should be linked more closely with the economic policy coordination at the EU-level. Any attempt to change the institutional balance would lead to a major conflict with the national parliaments.

Thanks to the increased openness and transparency of the EU institutions, the availability of key documents has improved in recent years. Therefore, one can more easily observe what have been the respective roles of the Commission, on the one hand, and the Council/Member States, on the other, when formulating the recommendations and policy orientations. Of course, the final test whether the policy coordination has failed or not, are the budgetary developments and the sustainability of public finances in individual countries. The question is, however, whether the common interest represented by the Commission and the peer review exercised by the Council/Member States have had any effect on fiscal discipline or sustainability.

After what happened on 25 November 2003, when the ECOFIN Council decided against to the recommendation of the Commission to suspend the excessive deficit procedures for France and Germany for the time being, the use sanctions has been largely excluded. This option has been reserved for cases where the country in excessive deficit procedure is not cooperative. The conflict between the Commission and the Council could also be interpreted reflecting different attitudes concerning the budgetary autonomy of the Member States and division of competences in this respect. Therefore, the events of 25 November 2003 could be seen mainly as an institutional dispute, not a question of substance. The verdict of the European Court which is expected to clarify the respective competences and responsibilities in the policy coordination, will be of key importance.

Despite adverse developments in major countries and difficulties in implementing the SGP, it has to be taken into account that there are also some encouraging signs which reflect increased concern on the long term sustainability of public finances and the financing of welfare systems e.g the growing determination to implement pension and health care reforms in various countries.

Also, the Finnish experience on how to enhance commitment at the domestic front has been encouraging. The growing concern about the long-term sustainability of public finances and pension systems because of ageing populations were communicated by the government at a very early phase. The message was received well. In the late Nineties the obligations of the coming EMU membership and the need to fulfil the Maastricht criteria were never used as an excuse to consolidate public finances. It was always emphasized that these challenges have to be met because of demographic challenges regardless of participation in the euro area.

There has been a strong element of continuation in the Finnish budgetary policies. In March 2003, when taking the office, the present government decided in its coalition agreement on a budgetary framework for the next four years. It was agreed that the government will keep the central government finances on a sustainable basis both in order to be able to cope with the burden of ageing populations and to have an adequate fiscal leeway. For these purposes, the reduction of the central government debt-to-GDP ratio (excluding cyclical deviations) was considered to be crucial. The agreement continues:

> *"To ensure the sustainability of the public finances, the Government aims to secure balanced central government finances under normal conditions of economic growth at the end of the electoral period, measured in terms of national accounting. There would then be an overall surplus in the general government finances equivalent to some three per cent of GDP. Cyclical or other short-term deviations from the path of balanced central government finances are permitted, provided that they do not jeopardize overall reduction of the central government debt-to-GDP ratio."*

In line with the requirements of the Growth and Stability Pact, the Finnish Government committed to take corrective action if the central government deficit approaches the 3 per cent ceiling. At the general government level this implies that further measures will be taken if the overall financial position turns into deficit.

The new expenditure rules were tested for the first time when discussing the year 2005 budget framework in March 2004. The results were satisfactory. Accordingly, the general government surplus is expected to strengthen during the four year election period so as to reach 2.7 per cent in 2008. During the same period there will also be a reduction in the debt ratio from 44.1 per cent in 2003 to 40.4 per cent in 2008. At the same time the Government is also committed to implement further cuts in taxation of labour in order to strengthen employment and growth.

When exploring new avenues to strengthen the SGP and its credibility, the importance of explicit political commitments should not be underestimated. It seems that there is increased willingness and capacity in the Member States to strengthen the sustainability in the long run. This might reflect the fact – which has been generally recognized – that the room for manoeuvre is increasingly limited and the real challenges are approaching as the structure of population becomes unfavourable.

The following analysis is based on observations made in the context annual examination of stability and convergence programmes in 2003-2004. Country examinations consist on Commission assessments and recommendations for Council opinions which the Council adopts after a discussion in the Economic and Financial Committee (EFC). The Commission has published press releases of its assessments on the web site since 1999. In 2003 it started to publish not only press releases but also the assessments as working documents. The Council opinions on the programmes are public and can be found both on its own and on the Commission web sites.

The analysis concentrates on debt and sustainability issues. To concentrate the analysis on debt and sustainability issues, two cases are considered: namely France and Italy.

2.1 France

In the 2002 stability programme, the risk of breaching the 60 per cent debt ratio ceiling in 2003 was not identified. This problem was noted in the Commission assessment of the French programme and it was also mentioned in the Council opinion, but without any comments. As regards achieving sustainability, the Commission concluded that it will require maintaining a balanced budget position in underlying terms over the very long run: "this implies running large primary surpluses for many years so that a large reduction in the debt ratio is recorded prior to the budgetary impact of ageing populations taking hold". The Council opinion followed similar lines emphasizing the role of debt reduction which should make "a noticeable contribution towards meeting the budgetary cost of ageing populations, then reaching a balanced budget position by 2006 is essential... and may have to include the running of surpluses." There is slight difference in the wording but the policy advice given by the Council is quite clear. Only when the Council welcomes the pension and health care reforms is the wording chosen more political, but not less demanding. France was urged to proceed rapidly with these reforms "given the limited window of opportunity".

As regards the 2004 examination the debt issue became even more topical because the 60 per cent ceiling was breached in 2003. The assessment of the Commission emphasises the speeding up of budgetary adjustment to ensure an earlier and larger decline in the debt to GDP ratio, "which is projected to remain above 60 per cent throughout the programme period, and to start to decline only in 2006". The Council opinion is in similar lines but adds a warning that "the evolution of the debt ratio might be less favourable than projected given the risks to the deficit outcomes mentioned above".

In 2004, the Commission changed its approach by taking into account not only quantitative factors affecting debt and sustainability. This reflected the recommendations of the ageing working group of the EPC according to which also reforms strengthening the long-term sustainability of public finances should be taken into account. The Commission gives credit to measures which improve the sustainability and facilitate meeting of budgetary costs of ageing populations but emphasises also that risks of imbalances cannot be ruled out and that securing adequate primary surpluses will be essential. These key messages were not challenged by the Council opinion. As regards the reduction in public debt, the Council opinion is in line with the Commission text according to which the debt is expected to start declining only after 2006 and remain above 60 per cent through the period covered by the stability programme. The Council opinion also repeats the concern expressed by the Commission that the evolution of the debt ratio is likely to be less favourable given the risk related to deficit outcomes. The Council, however, strengthened the Commission text by pointing out that at least 0.5 percentage point improvement is needed to achieve the medium term position of government finances close to balance or in surplus and to bring the debt ratio back to declining path.

2.2 Italy

Because of the initially high level of debt in Italy the Commission and the Council have had a clear position on these issues emphasising especially maintenance of high primary surpluses. Achievement of a position of underlying budget balance in the medium-term has considered being critical in order to place public finances on a sustainable footing. These views have been shared both by the Commission and the Council. In 2003 the Council was very explicit and stated that the pace of debt reduction should be significantly faster that has been the experience of the past years. It urged Italy to act to ensure that the debt is sufficiently diminishing. The relatively slow pace of debt reduction during the programme period has been linked by the Commission to persistence of large and unexplained "below-the-line" operations. This is a rather sensitive issue. The Council recommended that the measures of transitory nature should be considered as a means to accelerate the reduction of debt and not as a substitute for corrective action on the deficit side. Both the Commission and the Council have had also concerns related to required increases in participation rates and the long transition period in pension reform.

In 2003 there were unexpectedly large reductions in debt ratio. This was noted both by the Commission and the Council. The Council opinion was, however, rather critical and pointed out that the projected decline during the programme period is less ambitious than in the previous update. Given the risks to deficit outcomes and expected proceeds from privatisation, a warning was added according to which the evolution of debt ratio may be less favourable during the programme period. All in all, both the Commission and the Council assessed that risks of budgetary imbalances emerging due to ageing populations cannot be ruled out. The Council opinion emphasises also the importance of implementation of the draft legislation on pension reform the postponement of which "is not consistent with the pursuit of sustainability-oriented fiscal strategy".

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All in all it seems that the fiscal policy coordination and the peer review conducted by the ECOFIN Council has been rather straightforward and functioned well from the procedural point of view. There is no evidence that the Council would like to soften the recommendations prepared by the Commission. Sometimes the Council has even strengthened the message further. This has, however, not been able to prevent the excessive deficits from emerging and the indebtedness from rising. It is suggested in this paper that this is largely because of the missing link between the long-term orientations and the short and medium term policy recommendations. Strengthening this link and making it more explicit could also lead to an enhanced credibility of the SGP and more sustained public finances.

3. Conclusions and suggestions

Despite the well known problems in implementing the SGP, the Council/Member States seems to be committed to long-term sustainability of the public finances. Obviously, there is a common concern which should motivate the decision makers more than the policy coordination in a short-term context on which the SGP and the multilateral surveillance have mostly focused. Currently, there are too many targets to be met so that the final aim of the coordination is at risk to be lost. The debt criterion has not been made operational enough to trigger the excessive deficit procedures. In the German and French cases the debt levels exceeding the critical threshold were not the key problem. It was mentioned only shortly as an additional outcome of breaching the 3 per cent ceiling.

Against this background, the coherence between short- and medium-term orientations and long run sustainability issues should be increased. This is evident when considering the Council opinions on stability and convergence programmes. In the short- and medium-term context Member States are urged to take additional (one-off?) measures whenever it turns out that the economic outlook and budgetary situation will deviate from what has been expected and the 3 per cent ceiling might be breached. This is a bad substitute to policy orientations aiming at strengthening the sustainability in the long run by adopting clear-cut budgetary strategies and orientations. Hence, increasing attention should be directed to budgetary processes, frameworks and fiscal rules on enhancing sustainability.

One further avenue by which the commitments of the Member States could be strengthened is increasing the involvement of the national parliaments on the economic policy coordination. Because of the importance of budgetary issues in domestic policy making the EU-level coordination should be more closely linked with the democratic processes in each Member State. Adoption of binding multiannual budgetary rules and expenditure ceiling should be encouraged and developed as a standard procedure in the context of the multilateral policy coordination framework. This has also been argued by Brunila (2002). National, multiannual expenditure rules are likely to facilitate the policy coordination also at the EU level and to strengthen, not weaken the SGP.

The challenges related to long-term sustainability of the public finances differ in the Member States. The approach could be developed further so that the general SGP framework will be accompanied with country specific targets. Accordingly, each Member State could define its own medium and long term targets to be endorsed by the Council. These targets should focus on the long term sustainability of public finances and reforms implemented to strengthen it. The question is whether the impact of major reforms affecting the long term sustainability could be translated into budgetary figures in a reliable way. This might be the next challenge of the EPC ageing working group.

There are both quantitative and qualitative aspects involved. The trend that the quality of public finances has been increasingly linked with multilateral surveillance has tended to blur competences and responsibilities. This approach was

tested when the stability and convergence programmes were examined last time. Politically, it is important to give the appropriate credit to reform efforts and to learn from good practices but risks may emerge if this leads to a development where gradually the "hard coordination" softens and "soft coordination" hardens so that the conduct of budgetary policies becomes more and more difficult.

The HM Treasury presents in its recent discussion paper (2004) three principles for reform of the SGP. They are long-term objectives, pre-commitment to sound institutional arrangements and maximum transparency. These principles are difficult to dispute as such, but they should be seen as complement, not as substitute for firm criteria and clear, binding rules. Too flexible interpretation of the 3 per cent reference value could further undermine the credibility of the rules based approach and the SGP. The public finances are rather fragile and budgetary situations may change quite rapidly. Excepting virtuous countries from the SGP or loosening the multilateral surveillance could lead to unpleasant surprises later (Berglöf *et al.*, 2003).

In the context of the ongoing IGC it is expected that to a certain degree the powers of the Commission in the policy coordination will be increased. This concerns especially the implementation of the excessive deficit procedure. However, defining basic orientation and final design of economic policies still remains in the hands of the Member State governments and the Council. It should be kept in mind that also the EMU was an achievement of the Member State governments and an end result of a political process. One should not underestimate the importance of the political will and energy when tackling the necessary reforms. The evidence presented above indicates that the Member States are under considerable pressure to take action to strengthen the sustainability of public finances.

It would be important to clarify and solve the open issues related to the SGP before they will be topical again due to the enlargement. The new Member States are expected to join the EMU in due course. As regards the public debt levels their initial starting point has been quite favourable. Only two of them (Cyprus and Malta) exceed the 60 per cent reference value. On the other hand debt levels are increasing in several countries and may gradually approach the reference value (Hungary, Poland, Czech Republic and Slovakia). Before they are ready to access the euro area, the new Member States should be able to show that they have achieved – in line with the Treaty language – "high degree of sustainable convergence". This includes the sustainability of the public finances. The precedent is not too encouraging. The three highly indebted, euro area Member States have not been able to keep up the time table of debt reduction which was agreed in 1998.

The stability and convergence programmes have been updated now five times. One could wonder whether a new generation of programmes would be needed so that especially the challenges of ageing populations could be taken into account in an appropriate manner reflecting the methodological innovations in the area of structural deficits and sustainability indicators. Against our experiences from the past it might be too optimistic to expect that one day the Member States could totally agree with numbers and methods. One of the problems concerning the

multilateral surveillance and the early warning procedures has been the still poor quality of budgetary figures and forecasts.

In order to improve fiscal discipline and long term sustainability a renewed commitment at the political level is needed. There seems to be wide consensus that the long-term sustainability should be the core. A lot of proposals in these lines have been made. One of the most prominent is the idea of "Debt Sustainability Pact" by Pisani-Ferry (2002). The proposal has its merits but the problem with it as with most of the models presented seems to be that the importance of budgetary policies in domestic policy making and democratic processes has been more or less ignored. In this respect, most of the proposals discussed have remained unrealistic and impractical. This is also the problem with the "sustainability council" suggested by Fatás *et al.* (2003). An independent panel of experts reporting to the European Parliament also nominating the body, would concentrate only on debt and sustainability issues in the euro area and have judgemental powers in the EDP.

There is also final avenue to be explored if reforming the SGP proves to be impossible. Then one should ask whether – after the recent experiences – the time is ripe to reopen the debate on budget discipline and reinforcing the impact of market pressures. If the conclusion is that the deteriorating fiscal discipline of the major countries will lead to further weakening of credibility of the common policy coordination framework and long term sustainability of public finances (default risk), radical measures should be taken in order to restore the confidence and to ensure that the medium term targets will be met in due course. This question is likely to become even more topical because of the enlargement and the convergence game.

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THE PUBLIC DEBT AND THE PROBLEM OF POPULATION AGEING IN LITHUANIA

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Introduction

Pensions are one of the major disturbing issues in the ageing societies of industrial countries. Already ten years ago, the birth-rate indicators started declining steeply in these countries, the population pyramids tended to turn towards middle-aged people, now living the most productive period of their life and relatively free from the burden of growing their children. However, what is favourable today may become a problem tomorrow. The so-called baby-boomer generation is nearing the retirement age and the consequences of the generous burden of social obligations will fall on the future working generation (or the system will become less generous, this also causing numerous problems).

The problem is becoming still more urgent also due to the fact that in many cases we speak about the social obligations of the State, which already constitute the considerable portion of GDP in the European countries and threaten directly one of the key principles of the successful functioning of the Economic and Monetary Union: the requirement of the Stability and Growth Pact to maintain the public sector deficit and debt at the acceptable level. Some countries at least have already solved this part of the problem – shifted their pension burden to the private sector – the employers and the employees (known as the second and third pillars). The state left for itself only maintaining the minimum social security level, which ensures only a minimum standard of living.

In the context of the ageing Europe, Lithuania is not an exception either. If in the last decade demographers could still be delighted with a relatively favourable demographic situation and authorities did not care too much about changing the economic motivation system for the people to provide for the old age by themselves, today the situation has changed. Within the past years, the population of Lithuania decreased and the same tendencies are forecasted for the future. Moreover, the economic development and the improvement of social living will prompt the rising of life expectancy. As a result, the share of old people to people of working age is projected to increase sharply over the next decades.

This study is aimed at attempting to evaluate the risk of sustainability of fiscal policy in the long and medium term in tackling the issues of options relevant to the pension system reformation. The action plan for the pension system reform in Lithuania was approved in 2002. As of 2004, this system will allow people to switch a part of their pension contribution into private pension funds. Upon the rejection of obligatory participation in the new system, the reform was less radical than it was

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previously planned and by itself it does not ensure the sustainability of public finances (only a small part is allowed to be switched to private funds and this system is not mandatory) over the longer term as the population continues to age.

During transition from public to private pension schemes, at the beginning of the period of reforms that may continue for quite a long time, the state will inevitably face the need of additional financing. On the other hand, the current analysis of the Lithuanian State Social Insurance Fund (SSIF) shows that the coverage of the social insurance will be expanded and less painful variants are also possible.

In the first part of the study, the development of the public debt is discussed. The second part provides a brief overview of demographic problems in line with demographic forecasts of the Department of Statistics. The third part deals with the pension system in Lithuania and the consequences of the pension reform started. This part also provides an evaluation of the possible burden of fiscal policy with a view to the restructuring of the pension system and the deterioration of the demographic situation. At the end, a list of problems to be solved and possible proposals on the opportunities for reformation of the pension systems are provided.

1. The development of the public debt

Prior to studying the fiscal implications of the state social insurance system reformation, it would be useful to evaluate the trends of the public debt. The sustainability of public debt can be a key goal determining the medium-term fiscal policy strategy. At present, Lithuanian debt indicators comply with the Maastricht requirements (below 60 per cent of overall GDP) and demonstrate the sustainable level by international standards. The total public debt of Lithuania in absolute expression rose almost each year in the period under survey. From 1998 to end-2002, it increased approximately by 37 per cent. The year 2003 is exceptional in this sense. Following the decrease in government-guaranteed loans and due to the national currency appreciation against the USD dollar, the total public debt decreased by 0.2 per cent from 2002 to 2003.

The *public debt per capita indicator* also reflected similar trends. The growth rate of this indicator was faster than that of the gross public debt within the period under study; from 1998 to end-2003, public liabilities per capita increased by more than 40 per cent. The more accelerated growth of the public debt per capita may be explained by demographic factors (the decreasing number of the population).

The *public debt-to-GDP ratio* is one of the most popular indicators for measuring the amount of the public liabilities. This indicator reflects the Government's capability to pay the debt and the interest accrued. Contrary to the absolute size of the public debt or the indicator of the public liabilities per capita, the public debt-to-GDP ratio did not increase each year – it peaked during the economic decline in 1999 and in the recent years it has been declining constantly due to the accelerating economic growth and some tightening of the fiscal policy stance. It

Table 1

Lithuania: Dynamics of the General Government Debt
(non-consolidated; end of period)

	1998	1999	2000	2001	2002	2003
General government debt *(LTL million)*	9,614	12,069	12,725	12,904	13,162	13,137
General government debt per capita *(LTL)*	2,719	3,437	3,649	3,713	3,801	3,816
Interest payment *(percent of GDP)*	1.1	1.5	1.8	1.8	1.6	1.3
General government debt *(percent of GDP)*	22.4	28.3	28.2	27.0	25.5	23.9
Domestic debt *(percent of GDP)*	n/a	5.5	6.3	6.4	7.7	7.8
Foreign debt *(percent of GDP)*	n/a	22.8	21.9	20.6	17.8	16.2

The *Debt service indicator*, a ratio of interest payments and GDP, reflects the borrowing terms of the country and the level of solvency. Over the period under review, the public debt service indicator of Lithuania did not exceed 2 per cent of GDP. The lowest debt expenditure was recorded in 1998 (1.1 per cent of GDP), and the largest in 2000 (1.8 per cent). Currently, this indicator is gradually decreasing both due to the positive economic development and the reduced interest payments.

Source: Ministry of Finance.

should be noted that public debt-to-GDP ratio is not the only indicator reflecting that Lithuania suffered most serious financial difficulties in 1999. Both the overall public debt and its size jumped up most significantly. In addition, the public debt service indicator also obviously went up in said year and reached its highest level in 2000, reflecting the worsening government borrowing terms due to the poor financial situation.[1]

One of the factors that could cause a threat to the public finance is contingent government liabilities, comprised of domestic and foreign loans granted with the government guarantee to various economic entities and institutions. As of end-2003, the portfolio of loans with the government guarantee was reduced to 43 per cent, compared to 1999. As of 2003, the government fully suspended the granting of new

[1] This happened due to the impact of government loans of 1999, interest on which was paid starting with 2000.

Table 2

Lithuania: Contingent Debt
(end of period, percent of GDP)

	1999	2000	2001	2002	2003
Contingent government liabilities	5.9	4.9	4.6	3.5	2.6
Government guarantee for the obligations assumed under guarantee agreements*	0.1	0.2	0.4	0.3	0.4
*Government guarantees:***	5.8	4.7	4.2	3.2	2.2
central government	0.6	0.6	0.6	0.4	0.2
local government	0.2	0.2	0.1	0.1	0.0
social security fund	0.4	0.4	0.3	0.1	0.0
other	4.6	3.6	3.1	2.7	2.0

* In order to encourage the development of small and medium-sized businesses and to support the agriculture, the Government had established the Guarantee Institutions and Insurance Companies, which ensure, under the guarantee and insurance agreements, the repayment of loans taken from banks by the economic entities.

** Government guarantee on loans will be extended only for the infrastructure investment project of national significance that has been incorporated in the Public Investment Programme.

Source: Ministry of Finance.

guarantees for economic entities, attempting to create equal business and borrowing conditions for all enterprises and to encourage other, more efficient ways for financing business activity.

Despite the efforts by local authorities to improve the overall financial situation, the underlying problem has not been solved. As of 2003, the municipalities started to borrow abroad without the government guarantee (independently). This can induce the local authorities' demand for extending the borrowing limits. In 2002-03 the financial situation of the State Social Insurance Fund (SSIF) began to improve but, despite this fact, the SSIF still has room for further increase in public debt, especially within the context of the ageing of the population. Contrary to many EU candidate countries, Lithuania has just started the restructuring of its pension system.

In the context of international standards, the measures of Lithuania's public debt are at a sustainable level. IMF studies suggest that the sustainable public debt ratio for typical emerging economies is 25 per cent of GDP. At present, Lithuanian

public debt is slightly below this "safety" margin. On the other hand, an insufficient progress in tightening the fiscal stance and implementing structural reforms is the main risk for the further increase in Lithuania's public debt.

2. The demographic trends

Any social insurance system, whether the pay-as-you-go or fully funded, is subject to certain risk factors: political, economic or social. The objective of this study is to evaluate demographic risk factors in order to answer the question of how the increasing part of the population of pension age will affect the size of expenditure on old-age pensions.

The demographic situation in Lithuania started to get complicated since the beginning of the Nineties. The decline of the fertility rate from over 2 in the late Eighties to under 1.3 currently and the negative migration balance resulted in a reduction of the population of Lithuania from 1993 to 2003 by more than 6 per cent. Besides, the composition of population in term of age has changed significantly too. Low birth rate resulted in a smaller population of children, while the share of people of 60 and over started to grow.

The average life expectancy in Lithuania is still quite low, compared to the average in EU countries. In 1991-95, at the beginning of the economic transformation period, life expectancy for both men and women declined sharply. But as the health systems modernize and the standard of living increases, the average life expectancy for men grew from 62 in 1995 to 66 in 2003, while for women it increased from 75 to 77.

The Department of Statistics presented three scenarios of population projection in Lithuania for the period 2005-30: medium (most probable), optimistic and pessimistic. In this study, the medium scenario of population projection was used. Demographic projections were based on the assumptions regarding the forecasted fertility rate, life expectancy and immigration flows.

As indicated in Table 3, the total fertility rate will increase from 1.24 to 1.65. However, in the opinion of demographers, this does not ensure the change of generations. The demographers of Lithuania also feel concerned about the rapid increase of economically weak families, where children have only one of the parents. A trend in fertility rate, in fact, is very difficult to predict. This indicator cannot have a direct effect on the forecast of elderly persons, but it may have very sizable effects on the projected number of persons of young and working age.

Achievements in medicine and other sciences prolong the expectancy of life. Therefore the world society is ageing inevitably. It is predicted that, 30 years from now, the life expectancy of Lithuanian males will reach 73 years of age, an increase of 7 years compared to 2003, while that of females might even reach 82 years of age, 5 years more than at present.

Table 3

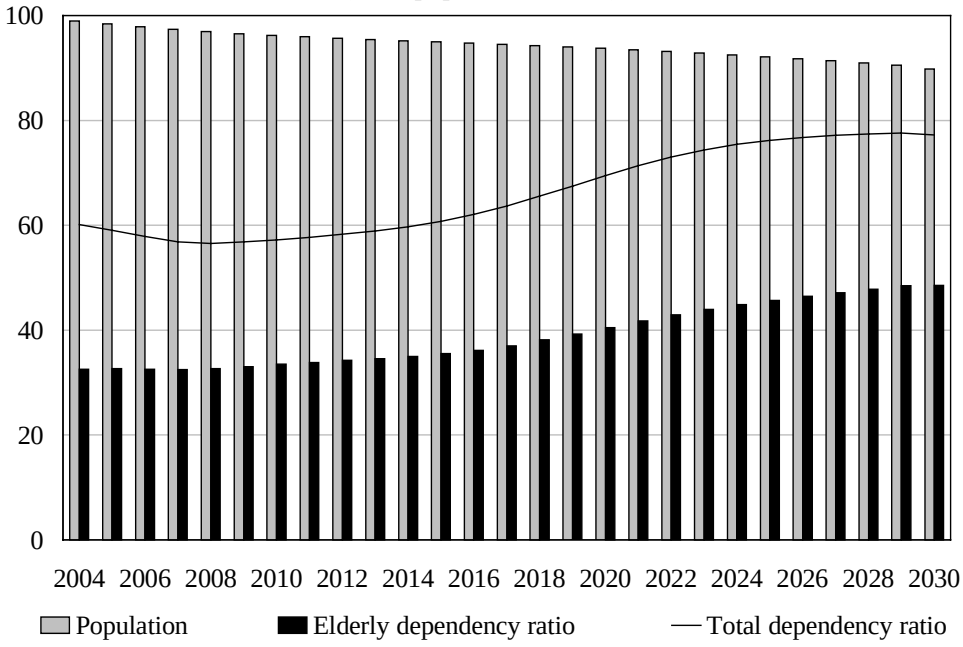
Lithuania: Demographic Projections
(medium scenario)

	1990	2000	2010	2020	2030
Population ratios:					
Population over 60 to working-age population	26	31	31	35	43
Population over 65 to working-age population	18	23	23	26	33
Fertility rate	2.0	1.4	1.5	1.6	1.7
Life expectancy *(years)*					
Males	67	66	69	71	73
Females	76	77	79	81	82

Source: Department of Statistics, author's calculation.

Figure 1

Lithuania: Demographic Trends
(1995 population = 100)



Note: The *elderly dependency ratio* is defined as population aged 60+ as a percent of the population 15-59. The *total dependency ratio* is defined as the population aged 0-14 and 60+ as a percent of the population 15-59.

Source: Department of Statistics, *Population projections 2004-30*.

The negative migration balance had a sizeable effect on the decline of the population. It is forecasted that the future membership in the EU will determine the negative migration balance and, with the opening of the EU labour market, about 100,000-150,000 residents will leave Lithuania. Each year, until 2010, about 15 thousand people will leave the country, later this number is going to decline, while the number of those arriving from abroad will be steady (about 10 thousand).

Given the assumption about fertility, life expectancy and immigration flows, the age structure of population is projected to change. According to the medium scenario, the population in Lithuania in 2030 will be slightly more than 3 million people, 11 per cent less than in 2003. According to the forecasts, the population structure will undergo changes: the population aged 0-14 will decline by 26 per cent, the population of the working age (15-60) will shrink by 17.5 per cent, only the number of people over 60 will increase (see Figure 1).

The elderly dependency ratio – defined as a ratio of population aged 60 and over to the population aged 15 to 59 – was around 30 per cent in 2001; by the year 2030 this ratio is projected to reach almost 50 per cent. Figure 1 shows that the projected dependency ratio starts to increase around the period of 2010-13. This reflects the general tendency – passage of the post-war baby-boomer generation into retirement (IMF, 1996). The total dependency ratio – defined as the population aged 0 to 14 and 60 and over to the population aged 15 to 64 – is projected to rise considerably less than the elderly dependency ratio.

3. The State Social Insurance Fund: the current situation and long-term perspectives

3.1 Pension system

The Lithuanian pension system is administered by the Board of the State Social Insurance Fund (SSIF) and operates on the so-called PAYG (pay-as-you-go) principle, *i.e.* one year expenses of pensions, benefits and compensations are covered by the contributions of the same year. Four principal State social insurance types are enforced: *pension insurance*, *illness*, *maternity* (*paternity*) *insurance*, *unemployment insurance* and *health insurance*. The pension system of Lithuania is functioning on social security contributions paid by the employers and employees, with a special arrangement for farmers[2] and the self-employed. In both cases the size of contributions, generally a certain percentage on wages, is fixed by the State (by the common case, 31+3 per cent).

For the old-age pension a *defined benefit scheme* is applied. The size of benefits is associated with the earnings history and the contribution period. Pensions have two components: 1) *B*, the basic pension (46 per cent of the average pension); 2) the supplementary components (*P*):

[2] 50 per cent of the basic pension rate. Since April 1, 2003, farmers are insured on voluntary basis.

$$P \equiv 0.005 * S * K * D$$

where *S* represents the years of contribution, *D* the average coverage wage and *K* the worker's individual wage coefficient. The basic pension is indexed to inflation, and supplementary components are indexed to the average wages. Given the ceiling on the supplementary components of the pension, the average replacement rate is very low (approximately 36 per cent).

During the last few years the PAYG system started to improve, partly as a result of a favourable demographic situation and partly due to the implementation of a number of measures:

- increase in social insurance rate (in 2000, the general rate of state social insurance contribution increased from 31 to 34 per cent);
- raising the retirement age for both men and women (since the beginning of 2001 the old age pension age increased annually by 6 months both for females and males). Males will reach the established age for receiving old-age pension in 2003 (62.5), females in 2006 (60 years);
- temporary freeze of pension payment to working pensioners;[3]
- revising of maternity and sickness benefits;
- some improvement in revenue collection.[4]

But in the future, this "improvement" can easily disappear due to changes in the demographic situation (the population is ageing and shrinking). As a result, this will decrease the *support ratio (the ratio of contributors to beneficiaries)* and require an increase in the contribution rate or the decrease of the size of pensions. Those actions are difficult to implement. It is calculated that the life expectancy of a person does not suffer, if upon reaching the retirement age he/she receives the income amounting to 70-80 per cent of the size of his/her last wages, whereas the existing SSI system guarantees only less than 40 per cent of the size of his/her last salary. Regarding the social contribution rate, there is no substantial reserve left in the tariff growth, as the burden of payroll tax is high even by international standards.

3.2 Reforming the PAYG

Starting from 2004, people in Lithuania may accumulate a part of the State social insurance contributions in private funds: –2.5 percentage points in 2004 and

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[3] Pension limitation to working pensioners was declared illegal by the Lithuanian Constitutional Court in 2002.

[4] With regard to the budget development of the SSIF in 2003, there was some acceleration in social contributions. A part of this acceleration is explained by the decline in the number of unpaid vacations. Previously, a popular practice was to provide the unpaid leave for the tax avoidance purpose. Now, according to the new Labour Code, the possibility to provide the unpaid leave is restricted (only for a certain purpose).

Table 4

Lithuania: State Social Insurance Fund, 1994-2003
(percent of GDP)

	1998	1999	2000	2001	2002	2003
Revenue	9.5	9.9	9.9	9.3	9.0	8.8
Social contributions	9.3	9.5	9.6	9.1	8.8	8.7
Employers	8.9	9.0	8.6	8.2	8.0	7.8
Employees	0.3	0.3	0.8	0.8	0.8	0.8
Compulsory social contribution by self-employed persons	0.1	0.1	0.1	0.2	0.1	0.1
Voluntary contributions	0.0	0.0	0.0	0.0	0.0	0.0
Other revenue	0.3	0.4	0.3	0.2	0.2	0.1
Expenditure	9.6	10.7	10.2	9.4	8.8	8.4
Old age pensions	5.2	5.7	5.4	5.0	4.7	4.6
Other	4.4	4.9	4.8	4.4	4.1	4.2
Deficit/surplus	0.0	–0.8	–0.4	0.0	0.2	0.3

Source: Department of Statistics, Ministry of Finance.

additionally 1.0 percentage point in each further year, up to 5.5 per cent in 2007. In 2004, the new pension system will cover about 32 per cent of employment. The private pension fund analyses predict that, within the immediate several years, about 75 per cent of employment will participate. In this case, too optimistic forecasts in respect of the SSIF expenses, relevant to the pension reform, seem to be somewhat risky. In the first draft of the SSIF budget for 2004, the funds allocated were six times lower than it would be needed, taking into account the number of participants and the average wages. At end-2003, the pension reform costs were revised, but taking into consideration that the wages of the participants of the second pillar were higher than the average in the country, the need for additional funds may be also higher. Thus, in mid-2004 it is planned to revise the need of additional funds for the pension reform by updating the State budget. In 2004, the central and local

government budget deficit is planned to reach about 3 per cent of the projected GDP, therefore such policy may induce additional strain to the public finance.

The European Commission and the IMF are apprehensive of the pension reform under way in Lithuania being insufficient. With the currently existing favourable economic and demographic situation, the restructuring of the PAYG system could be more radical. According to this, it would be better to make participation in the second pillar mandatory for younger cohorts. In the neighbouring countries (Poland, Estonia) the reform was mandatory in part – for the younger cohorts. The middle-aged working people were able to choose whether to trust only the state social insurance system, or to accumulate a part of the pension privately.

The State Social Insurance Fund (SSIF) budget and labour market analysis of the past period show that already at the present stage, after evaluating the existing demographic tendencies, the SSIF faces financial difficulties. On the other hand, the SSIF still possesses huge "internal" resources for tackling problems related to the increase of expenditure for pensions.

A unique situation has formed in the income taxation system in Lithuania. Income of different type is taxed with a very different burden of taxes. Wages are taxed by income tax (33 per cent) and social insurance tax (34 per cent). Upon adding them up together, the efficient tax rate is more than sixty per cent of earnings. Meanwhile, income according to a business licence (efficient social contribution rate –3 per cent) and authors' agreements (not insured compulsorily at all) is taxed only by 15 per cent tariff, *i.e.* four times less than wages. Therefore, the part of wages in the national accounts almost does not change (the share of compensation of employees in the GDP amounted to 39 per cent, while in developed countries it made up almost the 60 per cent of GDP), whereas the part of other types of income increases. Simultaneously, it means that the taxation base for the social contribution becomes narrower. As a result, the SSIF is facing increasing financial strain.

Table 5 presents selected indicators of the labour market. Only less than 80 per cent of total employment is currently paying 34 per cent of social contribution tax and 39 per cent of them are public sector employees. Therefore, workers in the private sector have little incentive to participate in the social insurance system.

Under the present situation, 20 per cent of employment will not qualify for a future pension even at the relatively low replacement rate. A part of them, self-employed, will acquire basic pension (46 per cent of average pension) coverage only. So, in contrast with the previous Soviet period system, reflecting full employment participation in the social security system, the net social safety target is not maintained completely (IMF, *Country Report, 2003*).

The role of the state in the pension system remains important due to the inability of a person to take care of his/her old age individually. The right to receive a pension is essentially a political right, therefore, there is no doubt that upon reaching the pension age the present-day employees, which do not pay social

Table 5

Lithuania: Labour Market and SSIF Indicators

	1998	1999	2000	2001	2002
Annual population *(thousands)*	3,536	3,512	3,487	3,476	3,463
Labour force *(thousands)*	1,660	1,687	1,671	1,636	1,630
labour force participation rate	47	48	48	47	47
Employment *(thousands)*	1,547	1,538	1,398	1,352	1,406
Covered workers *(thousands)*	1,246	1,201	1,137	1,112	1,127
as a share of total employment	81	78	81	82	80
Self-employed covered workers *(thousands)*	99	120	162	162	179
as a share of total employment	6	8	12	12	13
Average effective contribution rate	32	35	37	37	37
Average effective contribution rate of self-employed workers	3	4	3	4	3
Average monthly wage in the whole economy *(LTL)*	930	987	971	982	1014
Average covered wage *(LTL)*	845	886	886	886	901
as a share of monthly wage	91	90	91	90	90
Average old-age pension *(LTL)*	291	319	314	309	320
Average basic pension *(LTL)*	136	138	138	138	147
Number of pensioners *(thousands)*	1,024	1,043	1,060	1,068	1,068
old-age (thousands)	648	645	645	637	625
Support ratio*	1.2	1.2	1.1	1.0	1.1
Support ratio**	1.9	1.9	1.8	1.7	1.8
Support ratio***	1.2	1.1	1.1	1.1	1.1
Average replacement ratio	34	36	35	35	36

Note: The *average contribution rate* is the contribution rate excluding net budget transfers (as a percent of covered wage bill). *Support ratio** is defined as the ratio of covered workers to pensioners (including disability, survivors and other). *Support ratio*** is defined as the ratio of covered workers to old-age pensioners. *Support ratio**** is defined as the ratio of covered workers (excluding public sector employees) to old-age pensioners. *Average replacement rate* is defined as the average of pension benefit (excluding disability and survivors' benefits) as a percent of covered wage.

Source: Department of Statistics, Ministry of Finance and author's calculation.

insurance contributions, or those paying incomparably lower contributions, will seek to realize their "political" right to receive an adequate pension.

Ensuring sustainability of the pension system, the authorities have to take a step to make the coverage of the pension system as broad as possible.

3.3 Projected state social insurance fund budget balance under the various reform options

This part of the study presents projections for several variants of the SSIF balance on the basis of demographic and macroeconomic forecasts performed by the Department of Statistics.[5] Also, an evaluation is given of the impact of the SSIF budget balance on the dynamics of the State debt. The horizon of forecasting for the period of 2004-30 was selected taking into account demographic forecasts. On the other hand, the selected period probably is not optimal for carrying out the cost/benefit analysis; however, it is limited by the existing forecasts of demographic indicators.

According to the definition of PAYG, two indicators predetermine the SSIF balance: 1) support ratio, 2) average replacement ratio. In the period under forecast, an assumption was made that the average projected replacement ratio and the projected contribution rate will not change. Those indicators will be fixed at the level of 2002. For separate scenarios the sustainable contribution rate will be calculated, showing the contribution rate to be used in order to ensure the balance between the SSIF revenue and expenditure.

The main financing source of the SSIF is social security contributions. For the sake of simplicity, in this study, workers under the special social contribution arrangement were excluded from projection because of insufficient low effective contribution rate (0.4 per cent) and, on the same basis, those acquiring basic pension coverage only.

In forecasting the SSIF budget expenditure, a presumption was applied that expenditure, not related to old-age pensions, will be fixed as a percent of nominal GDP at the level of 2002 (Table 4). The same assumption was made for the other revenue (basically, budgetary transfers); it will be fixed as a percent of nominal GDP at the level of 2002.

When forecasting the changes in labour force, population projection and expert evaluations were taken into account as well as the increase in the retirement age. From January 1, 2001, the retirement age for males and females has been extended by 6 months. In 2003, males have already reached the old-age pension age established by the law: 62 years and 6 months. Females will reach the old-age pension age of 60 years in 2006.

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[5] A broader description of methods underlying the projections of the SSIF revenue and expenditure is given in Annex.

Macroeconomic forecasts are provided in Table 6. Forecasts were performed by applying the LITMOD primary version. However, taking into account that this model is better suited for short and medium term forecasts, consideration was taken of expert evaluation. During the period 2004-30: 1) real GDP will grow, on average, by 5 per cent; 2) the number of employees, considering demographic forecasts, will decrease by about 0.6 per cent.

A question may arise: how will Lithuania maintain the stable and sufficiently high growth of GDP with the decreasing number of employees? As shown by the research of the economic growth of the Baltic States and its factors of change,[6] the economic growth of Lithuania in 1995-2003[7] was primarily predetermined by the increase of the capital stock and/or the total factor productivity (TFP). In the period of 1995-2002, the breakdown of GDP of Lithuania by contribution of production factors into economic growth shows that the GDP of Lithuania increased due to the change in capital stock by 15 per cent and the TFP by 30 per cent, and decreased due to the labour factor by 5 per cent. Upon the evaluation of research results, we shall make an assumption that the future impact of the labour factor on GDP will not be very significant. Meanwhile, the key role will belong to the increase of investment into the fixed capital and the stable growth of factor productivity.

Table 6

Projections of Averages of Macroeconomic Variables, 2004-30
(percent)

Employment growth	GDP growth	Real interest rate	Inflation rate
–0.6	5	3	2

Source: Bank of Lithuania staff estimates.

The main objective of the study is to give an evaluation of fiscal consequences:

1) growing expenditure for old-age pensions,
2) parametric reforms,
3) passing over from PAYG to the private funded pension system.

Therefore, in this study four possible forecast variants will be presented. In the first variant *(I)* the SSIF budget balance and the public debt are presented, with

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[6] See, for a more in-depth analysis, Vetlov, I., *Economic Growth Accounting in the Baltics* (2003).

[7] With the exception of effects of a crisis in Russia, 1999.

an assumption that the situation in the social insurance system is not changing, *i.e.* only the PAYG system is functioning.

The second *(II)* variant shows the SSIF budget balance after the start of the pension reform. As mentioned, in 2003, Lithuania launched the pension reform, though quite a conservative one. The present Law on Pension Reform foresees the option to transfer voluntarily the appropriate part of the social contributions. Based on an expert evaluation, up to 80 per cent of all working people will participate in the pension reform within several forthcoming years.

The results of the third variant *(III)* show the changing position of the SSIF, in line with the extension of the insured workers with the uniform social insurance contribution rate up to 93 per cent of the employment. In the variant III forecasts we will see that upon expanding the coverage of the pension system (including self-employed persons and those working under authors' agreements) by paying the uniform social insurance contribution rate, the SSIF situation will improve considerably.

Variant IV shows fiscal implications in gradual transition from PAYG to the fully funded (FF) system, simultaneously expanding the coverage of the pension system. This variant presents a gradual transition on the basis of the Law on Pension Reform adopted in 2003, *i.e.* providing an opportunity to additionally transfer 1 percentage point yearly to the private accumulation fund. Thus, in 2030, 9 per cent will remain for the SSIF, whereas the remaining part will be transferred to the private accumulation funds.[8] This variant foresees that up to 90 per cent of all working people will take part in the private FF system.

A simple analytical approach was applied to determine whether the current primary SSIF balance would lead to the increase or decrease in the ratio of public debt to GDP[9] (IMF, 1997).

3.4 Comments on empirical results

Figure 2 shows three variants of the SSIF balance as a percentage of GDP. The variant I presents the balance of the SSIF under the unchanged pension arrangement. The SSIF problems related to the ageing of the population would be faced practically from 2016, when the surplus of the SSIF would turn into a substantial deficit. Taking into account that until that period the SSIF excess was in surplus, the public debt (in Figure 3 denoted respectively as I) remains at a low and acceptable level.

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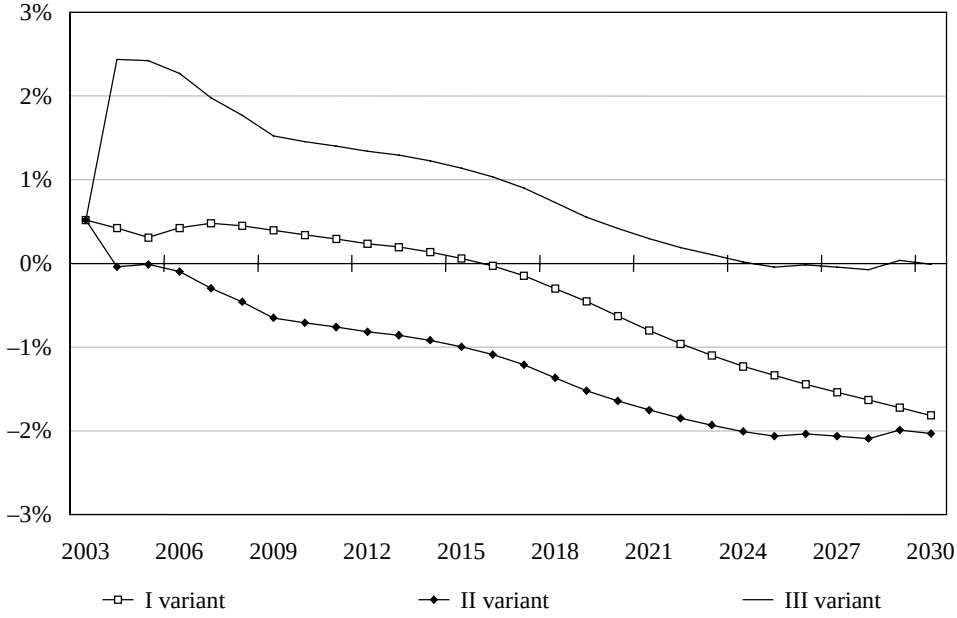
[8] In this projection scenario, the loss of SSIF revenue is likely to be underestimated.

[9] $\Delta d \equiv p_d + (r - g)*d$, where Δd is the rate of change in the debt-to-GDP ratio; p represents the ratio of primary balance to GDP, d is the ratio of debt-to-GDP in the previous period, r is the nominal interest rate and g is the nominal growth of GDP.

Figure 2

Projected Balances of the State Social Insurance Fund, 2003-30
(percent of GDP)



Notes: The balance of the SSIF is defined as a difference between the projected SSIF expenditure and the projected revenues from contributions and other revenues, which are kept constant as a percent of GDP at 2002 level. Data for 2003 are preliminary.

Source: author's estimates.

However, in this case it is necessary to take into account that an assumption on expenditures not related to old-age pensions fixed at the level of 2002 becomes not very realistic. In structural terms, those expenditures amount to about a half of the total SSIF expenditure. As experience shows, if SSIF expenses for old-age pensions are decreasing (for example, due to the extension of the pension age), in parallel, expenses for other social needs are increasing. Therefore, in fact, in variant I of forecasts, the situation in the SSIF budget balance may be considerably worse.

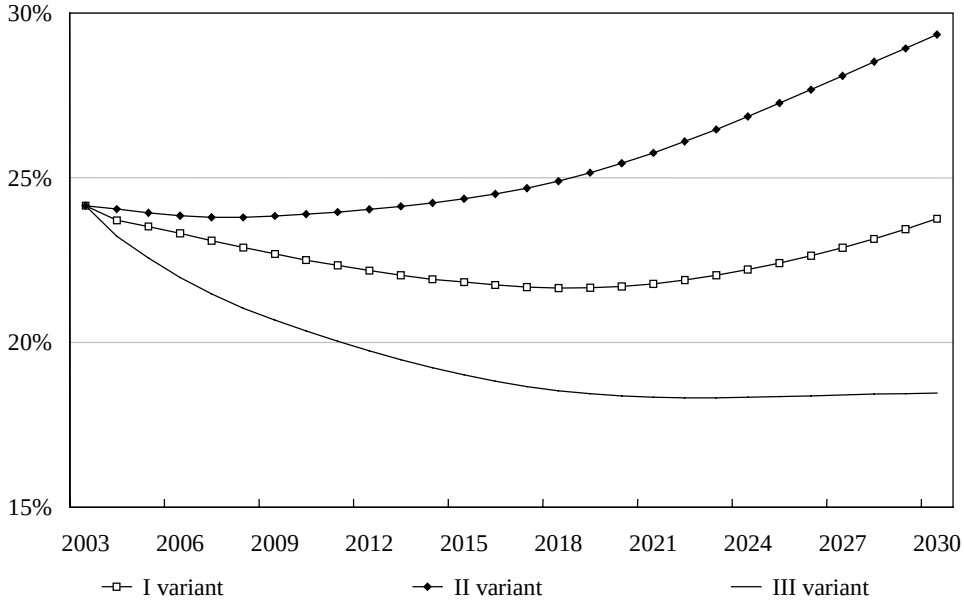
The second pillar of the pension system will start functioning in reality in 2004. The effects of this reform on the SSIF budget balance and on the debt are estimated in variant II of forecasts (deficit and debt are denoted as II).

As shown in Figures 2 and 3, even though the started pension reform is conservative enough, the implementation of the funded second pillar system is related to substantial fiscal costs. In 2003, the employees of Lithuania took an active part in the funded second pillar pension system. On the basis of forecasts by private pension fund management, within the immediate several years it is expected to

Figure 3

Implications of Projected State Social Insurance Fund Balance for Public Debt, 2003-30

(percent of GDP)



Notes: Total public debt in Lithuania was calculated according to the conservative approach, *i.e.* including government guarantees, until the beginning of 2004.

Source: author's estimates.

efficient social insurance tax rate of about 3 per cent. In addition, the third group of income exists – income according to authors' agreements (royalties) – which is not taxed at all with the social insurance tax. In forecast variants I and II, with account taken that the efficient social insurance tax rate for the second (discussed above) income group is incomparably lower than the main rate (for wages), we presumed that the group of employees receiving the mentioned income does not participate at all in the social insurance system (therefore, the part of the insured employees in the total number of those employed is less than 80 per cent).

In variant III, the number of the insured employees was extended by including self-employed persons, farmers (having increased the portion of the insured employees to 93 per cent of the total number of those employed) and by fixing the same uniform average social insurance contribution rate. As seen in Figures 2 and 3, such reform of SSIF parameters, though not very radical, improves the SSIF position significantly in the short and long term.

attract more than 70 per cent of all those employed to private pensions funds. Remembering a somewhat aggressive advertising campaign of private pension funds in 2003 and low trust of the population in the SSIF, the above forecasts are realistic.

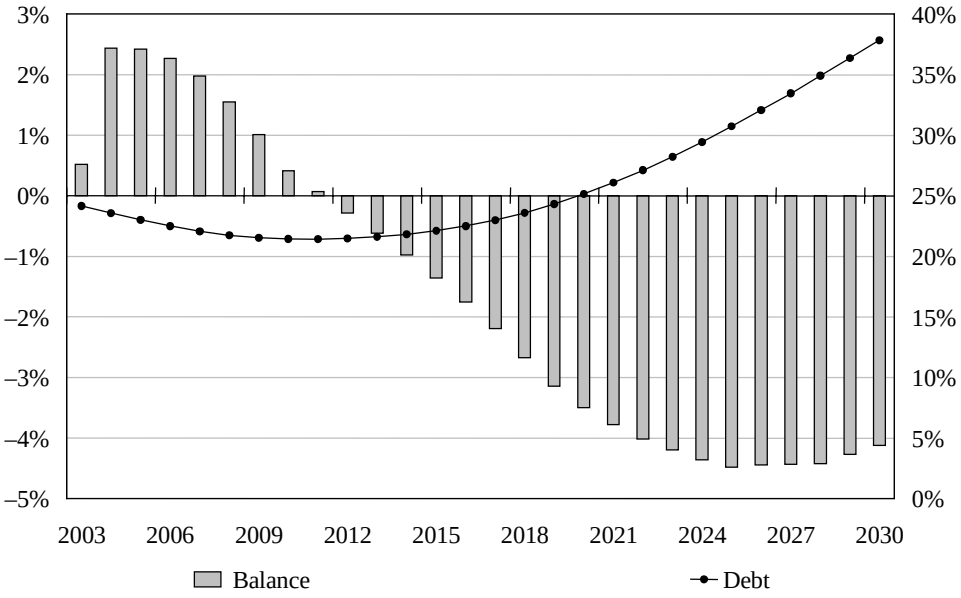
As already mentioned, the present system of income taxation with social insurance taxes is highly disproportionate. The wages are taxed at a rate of 34 per cent of social insurance taxes and the income of the other group is taxed with theIn forecast variant IV, the SSIF budget balance and public debt dynamics are given by further continuing the gradual transition from PAYG to the FF system. In addition, foreseeing the possible growth of costs, the extension of the coverage of the social insurance system became crucial. As seen in Figure 4, at the end of the forecast period, the SSIF deficit is becoming stabilized and may start to decline afterwards with the reduction of the SSIF obligations to the pensioners according to the PAYG system. The debt in 2030 reaches almost 40 per cent of GDP.

Examining the *equilibrium contribution rate* and *support rate* can help assessing the implication of a parametric reform of the PAYG system.

Figure 4

Projected Balances of the State Social Insurance Fund and Public Debt on the Gradual Transition to a Fully Funded System, 2004-30

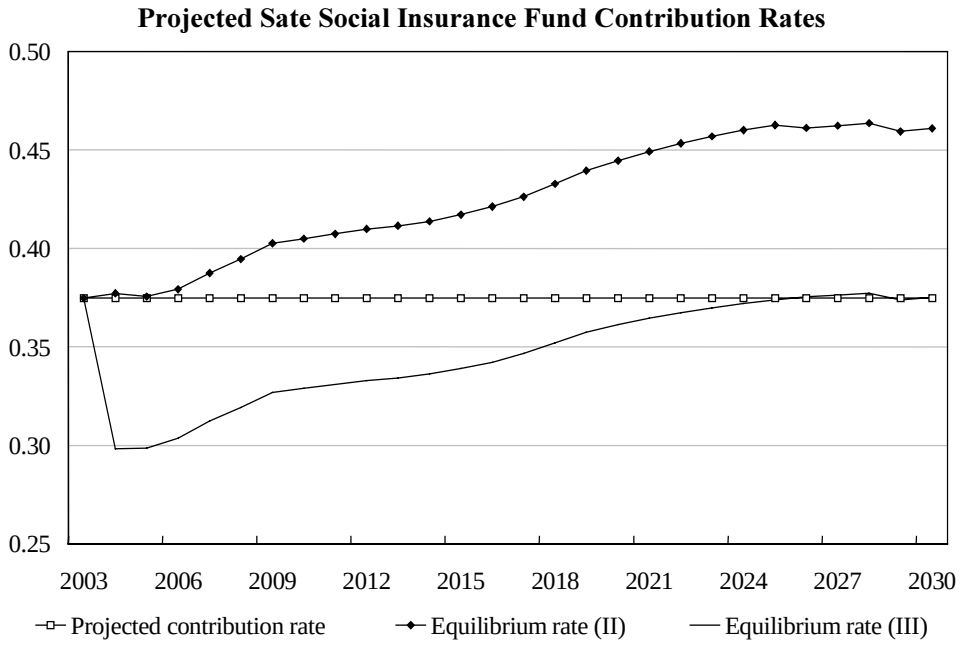
(percent of GDP)



Notes: the right side scale is for public debt, the left side for the SSIF balance.

Source: author's estimates.

Figure 5



Notes: In this study, the equilibrium rate refers to the contribution rate, which could change from year to year, for the SSIF flows to be in balance. *Equilibrium_r_II* is the contribution rate on the II projection scenario (current pension system reform); *Equilibrium_r_III* is the contribution rate on the III projection scenario (current pension system reform together with the extension of the coverage of the pension system). *Projected rate* is the projected contribution rate[10] that is assumed to be constant.

Source: author's estimates.

Figure 5 shows the movements of equilibrium contribution rate or the proportion of covered wage that has to be contributed to cover the SSIF expenditures as determined by replacement rates and the support ratio. The decline in the support ratio (see Figure 6), under the assumption about the constant replacement rate, determines that the equilibrium contribution rate continues rising. The extension of the coverage of the pension insurance system would allow a lower equilibrium rate (*equilibrium_r_III*).

The possibility to lower the statutory contribution rate is being of special importance for the labour market of Lithuania. On the other hand, it is not to be forgotten that pressure on further implementation of the pension reform will persist

[10] This study is isolated from the social insurance policy applied in respect of the self-employed persons and employees in the system of defence, security and similar authorities, which also are taxed at a lower rate (23.4 + 2.5 per cent). Therefore, the calculated average efficient social insurance tax rate applied in the study is higher than statutory.

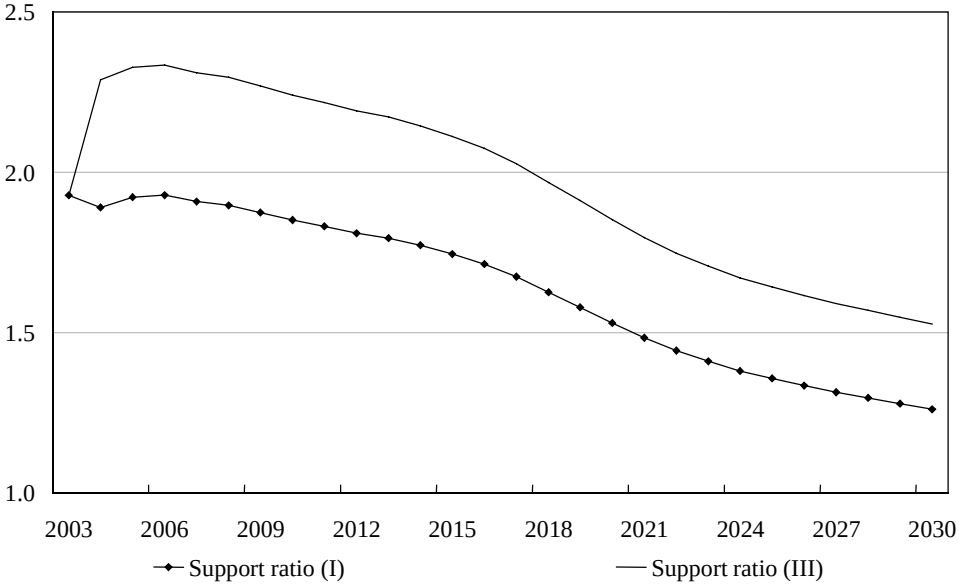
intensively. Pressure will be made on the part of the lobbyists of private pension funds and on the part of the international organizations as well. Therefore, thinking soundly, the reduction of the social insurance rate may be made just for a short period.

As shown in Figure 6, according to demographic projections, the coming decades entail a decline in the number of retirees per workers. The situation could be substantially improved by increasing the coverage of the system as well (*variant III*).

Another option of parametric reforms in the social security system is further increasing the retirement age. Preannounced increase in the retirement age has already been taken into account in all projection scenarios. However, the pension age in Lithuania is still low by international standards. Previously, one of the arguments against rising the pension age was low life expectancy. In accordance with population projection, given the longer life expectancy, a further increase in the retirement age will allow a less distortional equilibrium contribution rate, especially on the IV projection scenario.

Figure 6

Effect of Extending the Coverage of the Pension System on Support Rate



Notes: *Support ratio_I* is defined as a ratio of covered workers to old-age pensioners on the *I projection scenario*, *Support ratio_III* is defined as a ratio of covered workers to old-age pensioners on the *III projection scenario (*current pension system reform together with the extension of the coverage of the pension system).

Source: author's estimates.

4. Conclusions and proposals

Summarizing the results of the study, we may draw the following conclusions. The importance of the potential fiscal challenge related to the ageing society is very much dependent on that country's public debt position. Examination of the Lithuania's public debt dynamics denoted that this issue does not raise a significant concern. But the uncertainty surrounding debt target is increased by challenges facing the pension reform, primarily related to population ageing.

There seems to be no doubt that not only the advanced countries will face negative shift in their demographic structure in the nearest future. In accordance with the demographic forecasts made by the Department of Statistics, in the period 2004-30 the population age structure will change to a considerable extent. The number of older people, especially females, will increase.

According to the projections of the SSIF balance, the following conclusions could be made:

- favourable situation for the SSIF under the PAYG pension scheme is to continue until about 2016,
- introduction of a funded second pillar will bring quite a high loss to the SSIF,
- the government has properly extended the coverage of the pension system as broadly as possible,
- with the currently existing favourable economic and demographic situation, the restructuring of the PAYG system could be more radical.

Increase in expenditure for an old-age pension is a shock of permanent type. The social security system will not be able to return to balance independently. For that purpose, long-term reforms are needed. The new pension system in Lithuania by itself does not ensure the sustainability of public finances over the longer term as the population continues to age. In this case, an important role in restructuring the state pension insurance system belongs to the assurance of system universality.

The extension of the coverage of the system is important from the social safety target as well, in spite of the statement of the authorities that persons not covered by compulsory state social insurance or only partially insured (for the so-called basic pension) lose their right to receive the respective part of social guarantees (certainly, if persons do not undertake voluntary insurance additionally). However, practically it is difficult to imagine such situation.

One of additional problems typical of the Lithuanian social insurance system is a low replacement rate. Replacement of a part of the pension of fixed benefits by the private accumulation pension of fixed contribution will not increase old-age pensions considerably. The third pillar of the pension system based on voluntary accumulation for the old age in pension fund and tax incentives could serve this purpose.

Transition from PAYG to the FF system may be quite costly in fiscal terms. In spite of the rapid growth of economy, the budget deficit of the general government sector fluctuates at approximately 2-3 per cent of GDP, thus we are close to the critical limit. Therefore the assurance of fiscal discipline in the central and local government sector will be of special importance.

The authorities should adequately assess the risk related to the deterioration of the demographic situation and the increasing expenditure for the social sphere. It is necessary to formulate long-term strategies, with the account taken of what we want to achieve.

ANNEX [11]

Projection of State Social Insurance Fund Revenue and Expenditure

Revenue of the state social insurance fund (*SSIF*) is defined as the sum of social insurance contributions of insured workers (*REV1t*) and other revenue (*REV2t*) (fines on late payment, transfers from other budgets):

$$REV\,t = REV1t + REV2\text{t} \tag{1}$$

The other revenue of the *SSIF* is kept constant as a percent of nominal GDP at its 2002 value. The projected social insurance contributions of insured workers (*REV1t*) are derived from:

$$REV1t = NCt*Wt*\alpha \tag{2}$$

where *NCt* is the number of contributors, *Wt* the average covered wage and α the effective average contribution rate.

The number of contributors is calculated as:

$$NCt = POPt*LFPt*(1 - Ut)*INSt \tag{3}$$

where *POPt* is the number of average annual population, *LFPt* the labour-force participation rate, *Ut* the unemployment rate and *INSt* the share of employers contributing to the pensions.

Expenditure of the state social insurance fund (*SSIF*) is the sum of old age pension expenditure (*EXPoldt*) and other expenditure (*EXPt*). The other expenditure is kept constant as a percent of nominal GDP, at its 2002 value.

The old-age pension expenditure (*EXP old t*) in a given year is the sum of expenditure for the pensioners who retired during the given year (*EXPold_1 t*) and expenditure for pensioners who retired during the previous years (*EXPold_2 t*):

$$EXPoldt = EXPold\_1t + EXPold\_2t \tag{4}$$

The pension expenditure for new and preexisting pensioners is defined as:

$$EXPoldi,t = NPit*Wt*\beta \qquad i = 1, 2 \tag{5}$$

where *NPit* is the number of new and preexisting retirees, *Wt* the covered wage and β the average replacement rate.

$$NPit = POVt*ELit \qquad i = 1, 2 \tag{6}$$

where *POVt* represents the population over working age and *EL* the share of new and preexisting pensioners.

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[11] See Chand *et al.* (1996).

Projection of Macroeconomic Variables

Projections of macroeconomic variables (growth rate of GDP, gross wages) are based on a small-scale quarterly structural macroeconomic model for the Lithuanian economy (LITMOD[12]) and expert judgments.

The growth rate of employment is derived from exogenous assumptions about labour force participation and unemployment rates.

Projection of Demographic Variables

Data on the future population trend required to calculate the number of covered workers and pensioners in equation (3) and (6), respectively, are taken from the Department of Statistics Population projection 2005-30 (2004). One of the inaccuracies of the study performed is that the impact of the different expectancy of life of males and females on the projected expenses for old-age pensions was not evaluated.

[12] See Vetlov (2003).

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FUTURE PUBLIC DEBT ACCUMULATION AND SAVING IN THE UNITED STATES

Charles Steindel[*]

Introduction

After a brief period of surpluses,[1] large federal deficits have reemerged in the United States. Cyclical improvement in the economy and tax revenues may lead to some shrinkage of the deficit, and a period of resumption in the decline in the ratio of federal debt to GDP (Figure 1 shows the latest CBO projections of the federal balance and the ratio of debt to GDP assuming the maintenance of current policies). Nonetheless, at some point within in the next generation deficits are likely to swell again as the number of people eligible for the old-age retirement and health care (Medicare) programs increase sharply, and the debt to GDP ratio could well reach very high levels by the middle of the century, assuming maintenance of current policies (Figure 2).

The inevitable increase in the number of retirees and the increased demand for medical care coming with an aging population will likely put upward pressure on consumption, and downward pressure on saving and capital formation. Partly as an artifact of demographic trends and the mechanics of the old-age entitlement programs, the future is likely to see a negative correlation between public debt growth on the one hand and national saving and capital formation on the other. Of course, there could also be a similar connection arising from a behavioral connection between a larger stock of outstanding debt and higher levels of consumption by the nonbeneficiary population.

Is there evidence of a connection between the prospect of future rapid debt growth arising from entitlement payments and higher current levels of consumption (and reductions in saving and capital formation)? This connection might arise if people anticipate receiving future benefits in excess of the taxes they have paid, and expect to pay, to finance their individual benefits. If this connection exists, the current structure of federal taxes and benefits tends to reduce the future potential of the economy – and it is this future potential that will be called on to provide for the benefits of that day.

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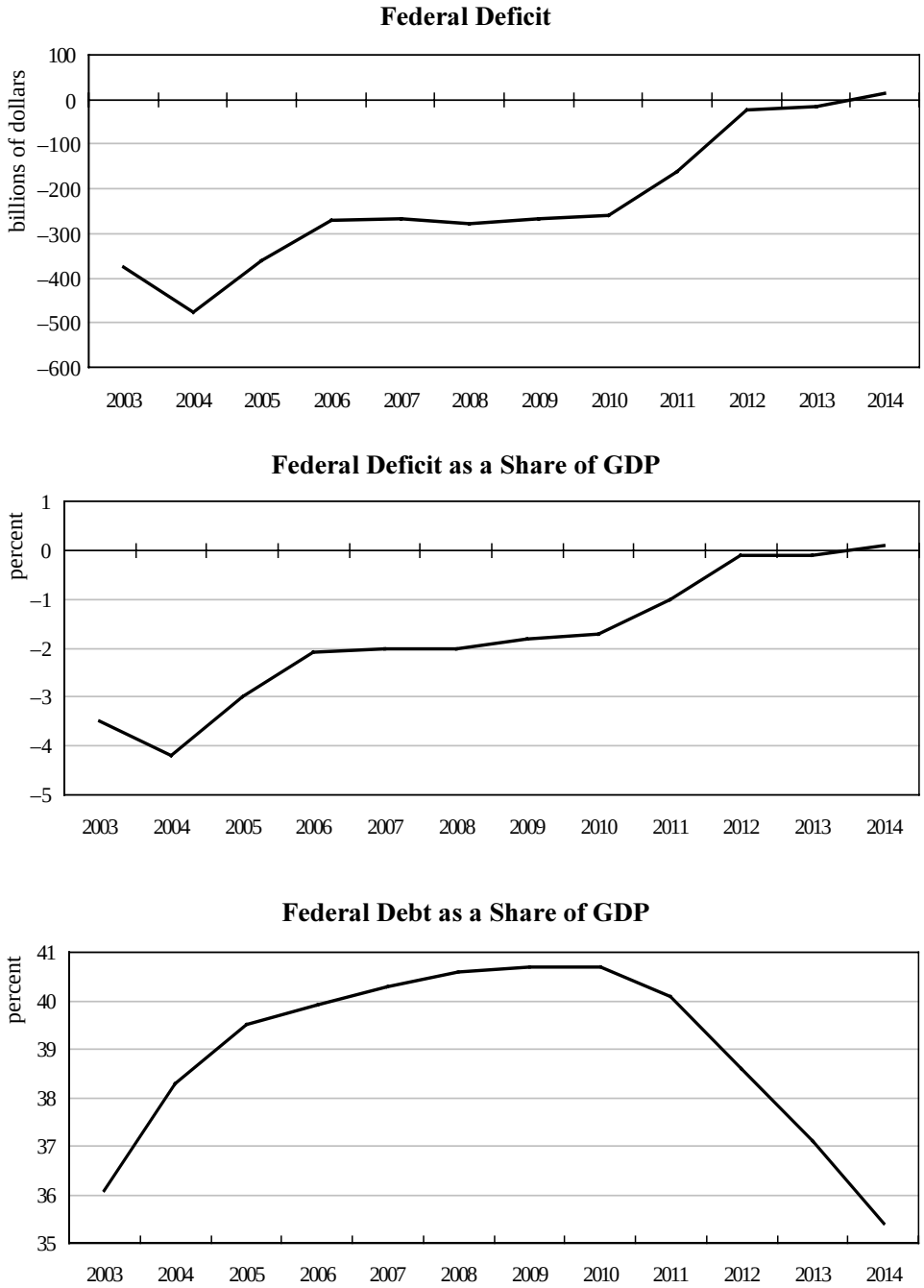
The views expressed are those of the author and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System. Thanks to Rebecca Sela for invaluable assistance, to Jagadeesh Gokhale and Andrew Haughwout for comments, and to Richard Peach for many helpful conversations on these topics over a period of years.

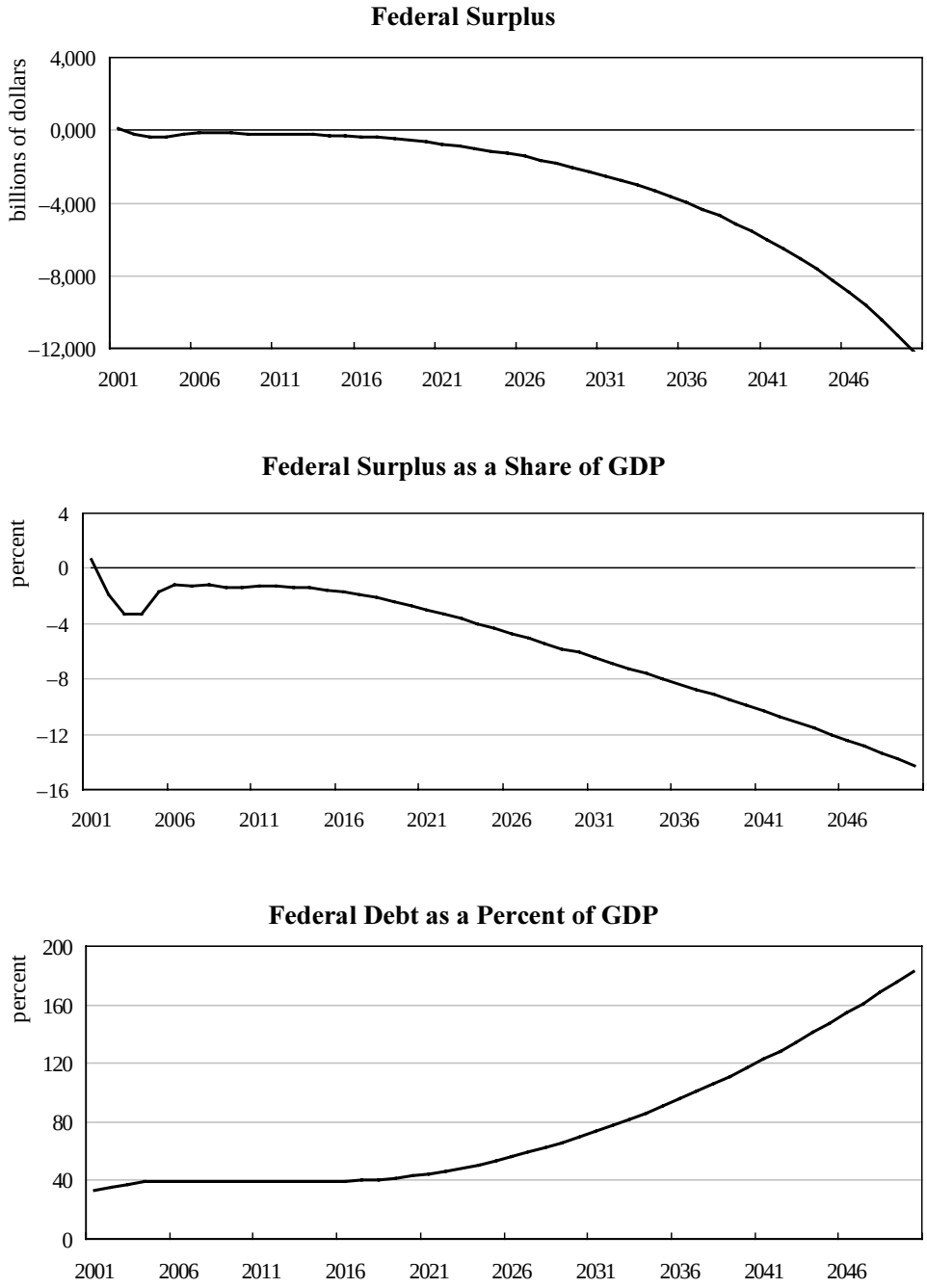
[1] Which seemed large enough and likely to persist long enough to raise a reasonably well-founded forecasts that the federal debt would be retired, raising some concerns about the operations of financial markets and the technical operations of monetary policy. See Federal Reserve Bank of New York (2000).

Figure 1



Source: CBO (2004).

Figure 2



Source: CBO (2004).

This paper will first review some of the evidence supporting the projections of very large future deficits in the United States. Given no change in current policies, large deficits are very likely to become quite persistent, mainly as the result of the Medicare program. The next issue addressed is the question of whether these very reasonable projections imply that the programs are currently eroding saving and capital formation. The evidence for this is weak. This result may bear on the desirability of different types of reforms of the entitlement programs.

1. Entitlement programs and the long-term U.S. fiscal outlook

Deficit forecasts, especially over a longer horizon, are always highly uncertain, resting on many details of the economic and policy outlook.[2] However, in qualitative terms the future U.S. deficit expansion does not look to be reversible without some significant adjustments in federal finances, or some unforeseen changes in the structure of the economy. The projected rise in the deficit is primarily the result of the current structure of federal entitlement programs. Existing public retirement and medical care programs in the United States do not appear to be sustainable given their current financing and benefit structures. This quite noncontroversial point is a simple reflection of the ongoing and projected demographic transition – the rise in the ratio of beneficiaries to the taxed working population – the extrapolation of the long-standing increase in the relative cost of medical care, and the specifics of the benefits and financing of the programs. It may be possible that in the United States, at least, the old-age benefit program of the Social Security System could be sustained with relatively modest changes (cuts in benefits, increases in taxes, changes in the ages of retirement). The federal medical programs (Medicare, the program for retirees, and Medicaid, the program for the indigent) are another matter, and cannot be continued with anything like their current benefit and funding structure, unless one anticipates very dramatic changes in the cost of providing medical care.

The generational accounting literature in the United States computes the sizes of the changes needed to put these programs on a longer-lived sustainable basis, under a number of assumptions, and reporting the size of the adjustment a number of ways: the dollar size of the present value of the imbalances, the size of the ongoing fiscal changes required to restore balance as a share of the tax base, that number reallocated among various generations of worker-beneficiaries, etc. These differing ways to report the imbalances may create different impressions as to the magnitude of the changes necessary to create self-financing programs. For instance, Gokhale and Smetters (2003) report that a plausible estimate of the present value of the real imbalance of the Social Security, Medicare, and Medicaid programs in 2002 was roughly $45 trilllion. That number approximates current World Product. It is also

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[2] All references to deficits and surpluses apply to the national income and product accounts concept, which includes the "off-budget" balances of social insurance funds. All references to debt apply to the explicit debt held by the public.

about equal to the aggregate net worth of the U.S. population. However, some perspective is gained when we find they also compute that the present value of real U.S. GDP in that year – the ultimate source of the resources for these programs – was around $680 trillion. Thus, the present value of the imbalance was then about 6½ per cent of the present value of GDP. The enactment of a fiscal program of this magnitude would be enormous (it would be equal to more than one-third of current federal taxes, more narrowly it is about equal to the current value of the payroll taxes used to fund these programs) but is comprehensible.

Of course, the estimated imbalance rests on many assumptions, and altering the assumptions can make large changes to the estimate. Gokhale and Smetters report a range for the fiscal imbalance from $29 to $64 trillion. While much of the variation is due to differing discount rate and GDP growth assumptions, and thus should have limited impact upon the imbalance relative to the present value of future output,[3] the wide range suggests that there is much uncertainty about the current fiscal imbalance. Of course, even the "smallest" of these figures is impressively large, and as the authors note, without changes in the programs these gaps grow annually. Thus, these figures, computed for 2002, could be boosted by some trillions of dollars, simply as a reflection of the passage of time without reforms. The recent enactment of the Medicare prescription drug benefit would raise the imbalance even more.

The Gokhale and Smetters computations also highlight an important aspect of the fiscal imbalance in the United States. The longer-term fiscal imbalance is primarily the result of entitlement spending programs. Last year claims were made that the federal government would reap a substantial revenue windfall, offsetting much of the fiscal imbalance, as tax-deferred savings were redeemed by the retiring baby-boom generation, and their estates were liquidated. The entitlement programs then could be made more viable by shifting income and estate tax revenue toward their funding. While the programs would still be "unsustainable" based on their traditional funding sources, their finances might be greatly improved by the more-or-less technical shift of government funding. If this prospect was real, then making permanent the currently scheduled-to-expire cuts in federal income tax rates and the elimination of the estate tax would have larger consequences for the longer-term fiscal imbalance. However, further study has suggested that the potential revenue windfall was much smaller than first thought (Mandel, 2003). The

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[3] For instance, the imbalance increases for a lower discount rate, but so would the present value of GDP. The imbalance increases for a higher rate of overall growth in per capita GDP, due to the authors' assumption of a fixed difference in the growth rate of medical sector productivity relative to the rest of the economy. At a higher overall growth rate, the present value of costs in the medical sector rise, thus raising the medical deficit. Gordon (2003) notes how dramatically changes in assumptions can shift projections of the accumulated growth of real output over long horizons – at the 1.8 per cent growth rate assumed by the Board of Trustees of the Social Security System real output will increase 3½ times in seventy-five years, while there would a 20-fold increase if growth averaged 4 per cent. While an increase in the growth assumption would not greatly change the ratio of the old-age imbalance to the present value of GDP, it would greatly improve the primary balance excluding entitlements. This latter improvement could be sufficient such that consolidation of the old-age program with other government operations could ensure its sustainability.

Congressional Budget Office has estimated that allowing the 2001 and 2003 tax cuts to expired as scheduled under current law, but not altering the basic trajectory of entitlements, would result in deficits between 10 and 20 per cent of GDP by mid-century. These would be about half those that could occur if the cuts were made permanent, but still very large by any other standard.[4] Thus, it seems to be the case that restoring the 2000 tax structure would not radically transform the longer-term fiscal imbalance.

It is hard to escape the conclusion that in the long run the current fiscal structure of the U.S. government will come under major strains. Any near-term cyclical improvement in the deficit will in no great time be swamped by more rapid growth of old-age entitlement programs. The ultimate size of the needed adjustments will only grow with time.

2. Questions raised by projections of large future deficits

There is no disputing the logic that current programs create the strong likelihood of very large future U.S. deficits. Do these programs also inhibit saving and capital formation, and thus the level of potential output in the long run? Would significant changes in the future path of entitlement programs work to raise saving and capital formation and help to supply the resources demanded by the programs?

What are the connections between consumer behavior and the entitlement programs? Does the current working population regard unfunded retirement income and health benefits as a form of wealth? If so, the entitlement programs have and are depressing saving and capital formation. Yet, the late Herbert Stein famously noted that "if something cannot go on forever, it will stop."[5] The computations of the fiscal imbalance by Gokhale and Smetters imply that at some point an enormous share of all economic activity in the United States would be devoted to providing medical services financed by the Medicare program.[6] The fiscal imbalance computations suggest either that the basic structure of health care will change (reducing the shift of resources and spending to this sector) or the federal commitment to funding health care will be diminished. Do consumers currently expect such changes?

Another set of issues involves the design of policies to address the fiscal imbalance arising from entitlement programs. The future entitlement outlays are payments largely earmarked for the future retired population, and presumably will

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[4] See the comparison in CBO (2003) of Scenarios 2 and 4, which assume that the tax cuts expire, with scenario 1, which basically assumes they are maintained.

[5] Thanks to David Lebow for this definitive statement of "Stein's Law," which may be found at http://slate.msn.com/id/2561.

[6] Gokhale and Smetters assume that the differential growth of real Medicare spending (relative to per capita GDP) will cease by 2100. If this does not occur, while the present value assumptions may not change greatly, the shift of resources to the sector will continue. They report their results in real terms; given an additional assumption of continuing increases in the relative price of medical care it could be that Medicare spending would account for the majority of nominal GDP by the second half of this century.

be used (specifically, in the case of Medicare) for consumer spending by this group. Ideally, addressing the fiscal imbalance today would involve more than formally balancing the government's books, and would correct any distortions to future demands arising from the structure of the programs,[7] thus helping to provide the resources to satisfy these demands.

3. Saving, wealth accumulation, and the entitlement programs

One would wish to examine the saving behavior of differing cohorts of Americans, and how this behavior has responded to changes in longer-term government programs. While such data do not exist in precisely the form that would be desired, some insight can be gained by looking at the results of the Federal Reserve's Survey of Consumer Finances. Every few years the Board staff collects data on the distribution of asset holdings and debt segmented by demographic variables and income. Figures 3 and 4 show the ratios of wealth to income for recent sample years, segmented by major age groups, reported for overall net worth, and for net worth excluding direct and indirect (mutual funds) holding of equities (the data for 1983 are taken from Avery *et al.*, 1984a and 1984b). The rationale for looking at wealth formation excluding the stock market is twofold: first of all, changes in wealth for even moderately long frequencies such as those between these surveys are dominated by stock market fluctuations,[8] and their inclusion may impede our ability to discern the connection between changes in wealth accumulation and changes in basic saving and spending patterns. Second, shifts in the stock market, while they can dramatically change the value of wealth and may affect ultimate saving and spending decisions,[9] do not typically reflect changes in saving and changes in the underlying capital stock, and are probably not a good proxy for the changes in the physical resource base.[10]

The data shown are quite limited. On the whole, there do not seem to be any noticeable trends – the overall ratio of financial wealth to income has generally risen, due to the secular rise in the stock market. Removing equity holdings leaves

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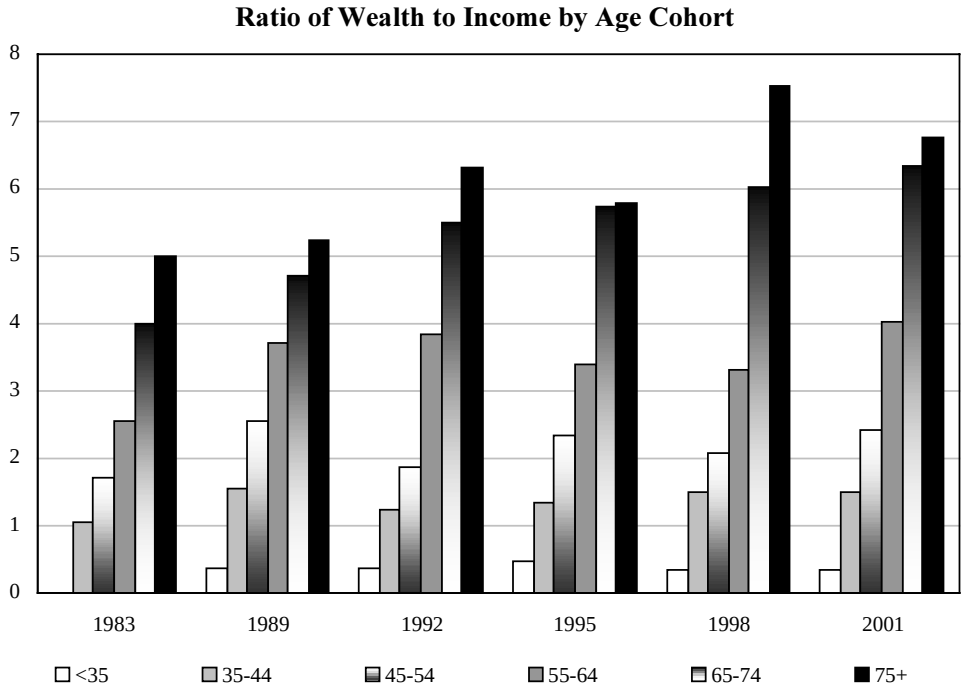
7 As the text notes, there inevitably will be structural changes in the economy that will arrest the shift of resources to medical care. Noting this is not a policy proposal, but it is clear that much of the fiscal imbalance is the result of the assumption that the current economics of medical care continues. An important issue is the extent to which the incentives in current programs accentuate the ongoing increase in relative prices and demand for medical care. Peach (1995) discusses some of the basic issues in the economics of health care in the United States.

8 Ludvigson and Steindel (1999) show how this effect works in the aggregate data for periods as long as a decade.

9 Ludvigson and Steindel (1999), Ludvigson, Steindel and Lettau (2002), Ludvigson and Lettau (2004), dispute some of the traditional views of the mechanisms connecting stock market fluctuations and consumption but not the basic notion that there is a linkage.

10 This may seem to be a truism. Of course, in the simplest macroeconomic growth models the value of wealth is the value of the capital stock, and fluctuations in wealth will equal fluctuations in the productivity of that stock. Harris and Steindel (1991) contains a very crude test of this hypothesis; perhaps not surprisingly it fails.

Figure 3



Source: Federal Reserve Board and author's calculations.

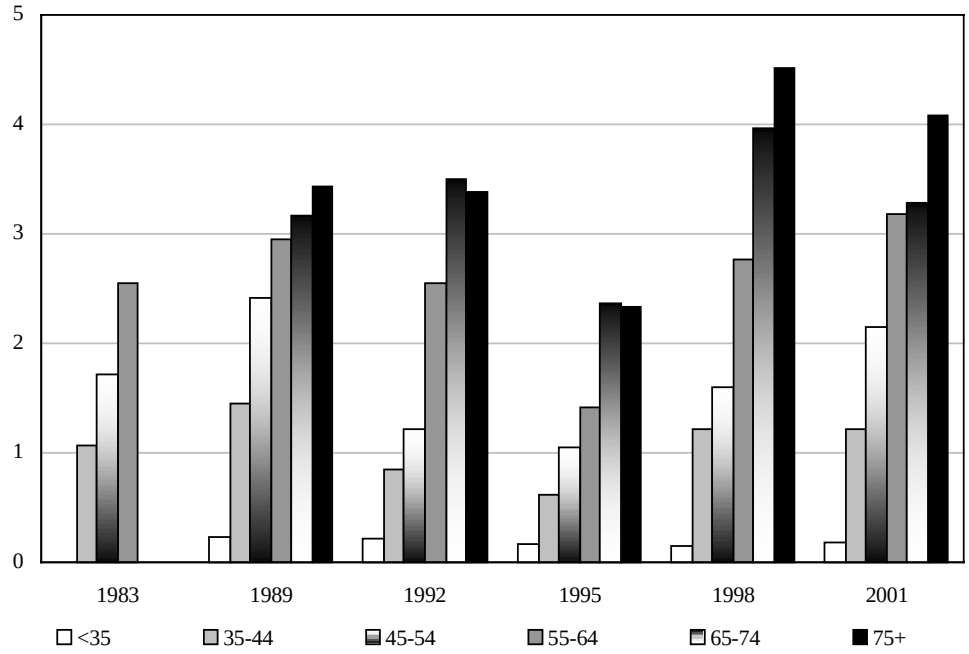
flat trends, save perhaps for an increase in wealth among the elderly. There's no obvious sign here that changes in expectations of entitlement benefits have affected wealth accumulation across generations (for instance, middle-aged people today have wealth holdings relative to income that are similar to those of middle-aged people in the Eighties). But since we don't have a clear counterfactual hypothesis (perhaps middle-aged people today would, in the absence of the entitlement programs, have much higher wealth than those in the Eighties) there's little to be drawn from this.[11]

An alternative way to examine the effects of the entitlement programs on saving and thus capital formation is to use the aggregate time series data. The early attempts to do so on the basis of traditional time-series consumption function have been largely abandoned. These efforts basically treated measures of the aggregate fiscal imbalance as the equivalent of privately held wealth. They foundered on the

[11] Gokhale, Kotlikoff and Sabelhaus (1996) document a sharp increase in consumption of the elderly relative to other groups from the early Sixties to the early Nineties. As they note, this shift is likely reflective of the large expansion of the entitlement programs. The extension of this analysis to national saving and consumption trends and the identification of a causal link from the programs is less clear-cut, as was noted by discussants.

Figure 4

Ratio of Wealth to Income by Age Cohort
(excluding stock holdings)



Source: Federal Reserve Board and author's calculations.

sheer difficulty on making an unambiguous measure of the imbalance, coupled with the growing professional skepticism that such functions really could measure the underlying parameters of consumer behavior.[12] Even beyond the problems raised by looking at aggregate time-series regressions for behavioral parameters, there is the conceptual difficulty raised by viewing any form of government liability as a form of private wealth. The literature stemming from Barro (1974) notes that the creation of a government liability necessarily results from some changes in current taxes or spending (with behavioral implications reflecting the changes in incentives and the nature of that spending) and likely creates changes in expectations of the future

[12] The early estimates of Feldstein (1974) and Munnell (1973) were marred by computational problems, as pointed out by Leimer and Lesnoy (1978). However, Feldstein (1996) has argued that reconstruction of these models based on later vintages of the data support some of the initial findings, while acknowledging the skepticism about such results in the light of more modern analysis. To be precise, the early work treated as wealth estimates of the portion of the fiscal imbalance arising purely from the old-age portion of the Social Security program that could be credited to the population working at any point in time. The Gokhale and Smetters concept is larger, both because it incorporates all federal programs and because it takes into account benefits granted to and taxes collected from future generations.

paths of taxes or spending. At the ultimate extreme, when all government spending and taxes are in the form of lump-sum transfers and taxes, consumers face infinite horizons, and expect all debt to be redeemed; government spending and taxes will be completely irrelevant to national saving and capital formation.

The literature that treated traditional government debt as something more than simply a lump sum form of financial wealth held by the population was not able to develop reliable alternative indexes of the fiscal stance, which is a complex blend of current and expected tax and spending policies.[13] The problems would be compounded when one treats the implicit liabilities raised by entitlement schemes funded by future taxes on nonbeneficiaries. At any point in time, one can use the current law and assumptions on the evolution of major economic variables relevant to the programs (interest rates, real wage growth, relative prices of medical care, etc.), as well as projections of demographic change, and arrive at estimates of the overall fiscal imbalance and its distribution by cohort. However, the evolution of these aggregates over time depends not only on the evolution of the economic driving variables and changes in demographics but also on legislated changes in the programs. This is utterly different than for explicit government debt, where the only forces changing the real value of a household's holdings are time, interest rates, and inflation.[14]

If households anticipate future changes in entitlement programs, they are not likely to regard the share of the fiscal balance credited to them at any point in time as "wealth" in the same sense as explicit assets. Movements in this type of wealth will have less impact on spending than other forms of wealth. In the language of Ludvigson and Steindel (1999), a large fraction of the changes in this wealth may be transitory, and will be ignored in making saving and spending decisions. If the wealth, and its changes, has limited effect on saving and spending, then its near-term evolution will have limited effect on saving and capital formation. In principle, delaying the necessary reforms of entitlement programs will not hamper the growth of economic resources needed to produce the consumption associated with the programs – since households may not have reduced saving, nor may capital formation have been hampered, by the growth of the fiscal imbalance associated with the programs.[15]

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[13] Kormendi (1983) produced evidence suggesting that consumers differentiate between transfer payments, government consumption expenditures, and government investment expenditures. However, these results were not based on a fully articulated specification of consumer behavior and should not be viewed as structural. Blanchard (1985) developed a theoretical measure of the fiscal stance incorporating expectations of future policy changes, but unambiguous computation of this measure would be quite difficult (the fiscal balance measures in the generational accounting literature might be viewed as a special case of this sort of measure using the strong assumption that current policies continue indefinitely).

[14] Of course, inflation and interest rates are affected by government policy changes. However, changes in these variables do not, as a first approximation, move the real value of government debt in a dramatically different fashion than other components of the household balance sheet. Changes in entitlement programs affect the fiscal imbalance in a dramatically different fashion than any explicit component of wealth.

[15] This is comparable to the arguments raised regarding the effects of tax changes raised in Steindel (2002).

It would be a very formidable task, both on theoretical and empirical grounds, to measure the effect of government entitlement programs on aggregate consumption and saving, and there is no recent literature addressing this topic in the U.S. There is some modest evidence that the time path of this fiscal imbalance as computed by extrapolating current program parameters is not a good measure of the consumption incentive experienced by the population. In 1972 and 1983 there were very substantive changes made in the old-age benefit portion of the Social Security program. In 1972, the basic benefit was increased by 20 per cent, and a price indexing formula was introduced that had the effect of raising nominal benefits faster than the price level. In 1977 the flaw in the indexing formula was corrected,[16] and in 1983 a more fundamental retrenchment was made in the program, including increases in the minimum age to receive the full benefit, increases in the discount on the benefits for early retirement, and a schedule of future increases in the payroll tax rate. From the point of view of the fiscal imbalance, or from that of generational accounting, these were significant events. The 1972 change greatly increased the future unfunded liabilities of the government, while the 1983 change reduced those liabilities. The data on the current balance (tax receipts less benefits) of the old-age program, and the time path of the explicit trust fund used to pay the benefits, give some idea of the significance of these moves (Figure 5).

If consumers were to take into account something like the fiscal imbalance computed from current law in making spending and saving decisions, then the 1972 change would probably have spurred spending and reduced saving from current income, while the 1983 change would have had the opposite effect. Of course, many factors can affect aggregate spending and saving decisions. Still, one may have observed some change in the pattern of spending and saving around those periods.

The raw data on consumer spending growth, consumer spending as a share of GDP, the personal saving rate, the private sector investment rate (private investment as a share of GDP), and the national saving rate (gross saving as a share of GDP) do not suggest that there was any radical change in behavior around these times in the hypothesized manner (Figure 6). Saving and investment rates did not ratchet down, nor did the consumption rate ratchet up, around 1972, nor did the reverse happen around 1983. It seems to be the case that even fairly large long-run changes in entitlement programs have little impact on behavior at the time of enactment. One possibility, which I have alluded to in other work (Peach and Steindel, 2001, Steindel, 2002) is that households may not regard "structural" changes in entitlement programs as all that permanent. Changes are often made in these programs. For instance, shortly after the 1972 changes in Social Security, many analysts started to note the diminished sustainability created in the program and likely need for a retrenchment in the near term to avoid exhaustion of the trust fund – and as soon as 1977 the indexing formula was changed. Workers would have been somewhat foolish to ignore such widespread warnings and made their longer-term saving

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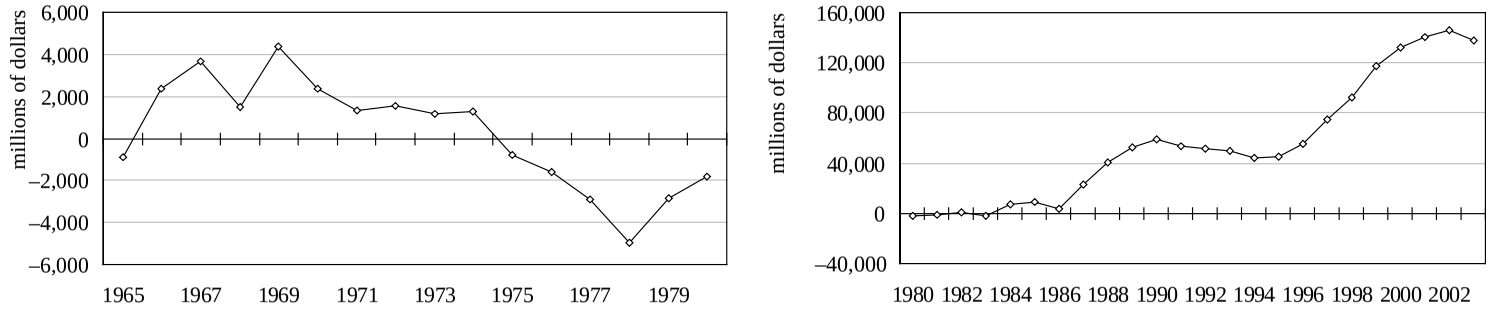
[16] Explanations of the flaw may be found in the 1978 *Economic Report of the President* and in Roberts (1983).

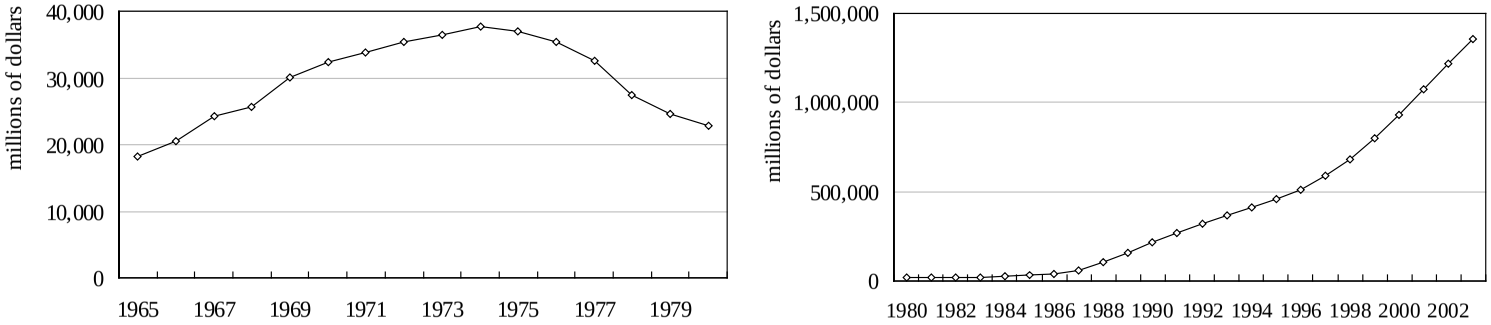
Figure 5

Financial Situation of Social Security
(millions of US dollars)

Current Social Security Surplus



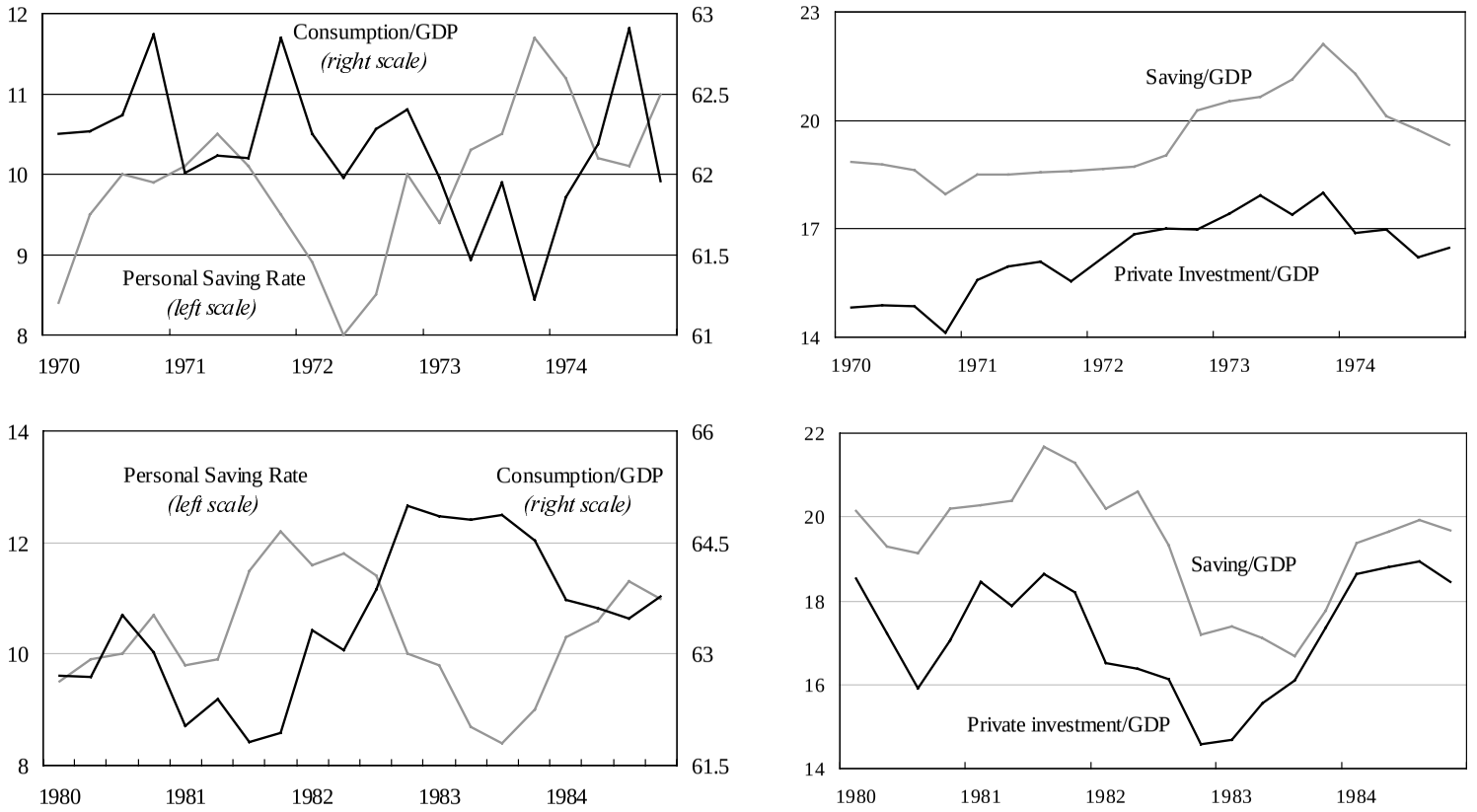
Total Social Security Trust Fund



Source: Social Security Administration.

Figure 6

Consumption and Personal Saving



Source: Bureau of Economic Analysis.

decisions on the basis of maintenance of the existing program.[17] Under this line of reasoning, the 1983 change was merely a long-expected correction and should not have provoked any behavioral response.

The skepticism here expressed about the saving and capital formation effects of unfunded government liabilities seems to be in contrast to the results of Laubach (2003), who finds that forecasts of increased future deficits put upward pressure on long-term interest rates – exactly what one would expect to find if saving is reduced by the prospect of entitlement benefits not funded by the current working population.[18] There does not seem to be any real contrast. Laubach's work looks at the effect of forecasts of deficits five years into the future – a horizon in which one can make reasonably firm projections of the trajectory of fiscal policy. The problems addressed in the generational accounting and fiscal imbalance literature apply to deficits that may arise a longer time into the future, assuming the maintenance of current policies over that period. Thus, the downward pressure on saving and capital formation, and the upward pressure on interest rates, arising from unfunded entitlements, is still something to be seen in the future.

4. How should entitlement programs be reformed?

A lack of obvious meaningful response to past substantive changes in Social Security could be an important element in thinking about the timing of changes that will be needed in federal entitlements. The ultimate economic rationale for reform in the shape of straightforward corrections to the fiscal imbalance (through the form of tax increases or benefit reductions) is that the "sacrifice" necessary to ensure sustainability is smaller (expressed as a share of income) the sooner it is done. That is true in a sheer accounting sense. A small change in taxes or spending today, from the point of view of balancing the government's books, lessens the need for a larger change tomorrow. However, from an economic point of view, if today's change does not result in the creation of any new resources available to produce goods in the future it does not address the fundamental problem.[19] This argument applies with

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[17] A commonplace in the U.S. is the widespread saying that "I don't expect Social Security to be around when I retire." Analysts confronting such skepticism (for instance, Diamond, 2004), note that the erosion of that trust fund is likely to be gradual, and that the fund could well remain positive – allowing maintenance of the current schedule of taxes and benefits – through the life of the current working population. Even if the fund approaches exhaustion, the programmatic changes necessary to keep the program intact would be reasonably modest. Nonetheless, the saying probably does encompass reasonable skepticism that the program is sustainable under all circumstances and that retrenchment is likely in the future.

[18] Some years ago rather similar results were found by Palash and Steindel (1986), using a much less sophisticated modeling strategy. The 2003 *Economic Report of the President* argues that there is most a very small interest rate effect from a near-term change in the deficit, but Laubach's estimates are taken from changes in a longer-term outlook. Gale and Orszag (2003) survey the literature on this subject and find that anticipated deficits do raise interest rates.

[19] Indeed, the case might be made that it is not particularly advantageous to save today to provide for an explicit consumption need far into the future. Today's saving will produce capital that will require future resources to be maintained or replaced until that need ultimately arises and, in the event, may not be

(continues)

particular force when we note that the lion's share of the fiscal imbalance results from future medical costs. The extraordinary growth in government medical care expenses currently being seen reflects growth in real demands, in large part reflecting demographic needs and perhaps the general nature of medical care as a superior good,[20] compounded by the secular increase in the relative price of medical care. What possible investments could be made today to counteract such forces? The policy issue for entitlement problems may well be not the existence of these forces – a society can always find a means to finance goods and services it is willing and able to make[21] – but whether or not the current structure of the tax and benefit programs alters private demands and the price structure in undesirable ways. U.S. medical programs may subsidize "overconsumption" of real medical services (and/or drive up their relative prices) through the general policy of third-party payments and access by demand, coupled with a general societal thrust to allow wide access to very costly cutting-edge treatments. Microeconomic reforms might be able to contribute to reductions in the rapid growth of spending without fundamental changes in the basic medical safety net provided to the elderly and indigent.

The previous discussion may seem Panglossian. It could suggest that the unfavorable trajectories for the long-term finances of these programs do not imply a need for immediate major reforms, if the nature of the ultimate reforms does not necessarily involve commitment of funds of the magnitude suggested by the fiscal imbalance computations. A valid criticism of this line of reasoning is that it could encourage complacency about future government obligations. The ultimate changes to entitlements may not be made until the programs are at the verge of collapse, and hasty decisions made in a time of crisis could inflict unanticipated serious damage on people (aside from straining political systems). However, levying significant tax increases (or simply reducing benefits) to cover future costs of these programs also imposes costs, and if there is no significant increase in capital formation the benefits are unclear.

Nothing has been so far said about reforms of the entitlement programs reflecting changes in their investment policies, or in assigning current workers individual accounts that may be invested according to certain criteria (with the government guaranteeing some minimum benefit). Broadening the portfolio of the trust funds to assets other than government debt (most notably, corporate equities) might raise their income, and improve the formal accounting sustainability of the current benefit and tax structure. However, such a change would seem unlikely to make a material difference in the overall path of saving and capital formation, on usual Modigliani-Miller grounds: households can always incorporate government portfolio choices made on their behalf in making their saving and asset choice

suitable for meeting those needs. A large investment in horse breeding farms in the 1890s would not have done particular good in meeting today's transportation needs.

[20] Nakamura (1997) argued that the strong growth of real medical care in the Seventies and Eighties was a signal that productivity and real income growth was being understated.

[21] "A nation can finance anything it can produce." Kindleberger (1973), p. 286.

decisions.[22] Alternately, the privatization of the entitlement programs – having benefits for a worker paid out of fund invested in her behalf and at her direction – has considerable attractions from the point of view of microeconomic efficiency.[23] But the introduction of such a program leaves society with the choice of cutting transfers to current beneficiaries or finding a new major revenue source. Privatization prevents future growth of the fiscal imbalance from the entitlement programs, but does not directly reduce the fiscal imbalance, unless the process results in additional output and tax revenue.

5. Conclusion

The United States has entitlement programs that appear to be "unsustainable" in the sense that they are likely at some point to exhaust the trust funds from which benefits are paid. This may be no more than a mere forecast that at some point in the future either the programs will self-terminate or laws will be changed.

Full assessment of potential changes in the programs should involve more than computation of the adjustment needed to eliminate the agreed-upon "imbalances". Of course, estimates of these "current-law" imbalances are always uncertain, but the issue goes beyond recognition of this reality. A key issue would appear to be whether the current structure of the entitlement programs reduces the economy's ability to deal with the imbalances, most importantly by depressing saving and capital formation.[24] At least in the case of the old-age portion of the Social Security program, there is no real evidence that such is the case, at least to any marked degree. Given the frequency and size of past changes in this program, people do not seem to be saving and consuming on the basis of an indefinite increase in the program in its current form. This suggests that reform measures need not be large in the near-term, and perhaps could avoid making major changes to current benefits or those anticipated by the older part of the working population (as suggested by Diamond and Orszag, 2003).[25]

Medicare, and government medical programs in general, raise issues that go far beyond the mere funding of the benefits. Recent trends in the growth of real

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[22] Of course, as in the traditional Modigliani-Miller result for corporate financing decisions, the extreme frictionless result would be modified by taking into account considerations such as taxes on investment income, and infra-marginal portfolio choices (for many, if not most households, their share of the trust funds is much larger than financial net worth; thus the households might not be able to "undo" the trust funds' portfolio choice). Feldstein and Samwick (2000) argued that diverting payroll tax revenues into private accounts would boost output enough so that existing benefits could be maintained without increasing the government's overall tax take.

[23] Though some commentators have noted that such a change might greatly increase the administrative costs of the systems.

[24] Elmendorf and Sheiner (2000) describe some of the issues connecting national saving, demographic change, and entitlement programs. They argue that the optimal path for the economy may be for saving increases, and perhaps programmatic adjustments, to occur in the future.

[25] Bütler (1999) uses a simulation model to study the effect of the timing of future reforms in old-age pension systems.

medical consumption and increases in the relative price of medical are not sustainable for the economy as a whole, much less for the financing of a program. Extrapolation of these trends could result in the lion's share of current dollar U.S. GDP devoted to this one sector in a few generations. It would be simply impossible to come up with any mechanism to "fund" the needs emerging from such trends, even if one could imagine a proper set of investment instruments. The policy issue for Medicare reform may be whether the current program impedes or hinders these basic changes. Projections of massive future increases in U.S. federal debt might be viewed as more a symptom of the possible unsustainability of the current health care system, as opposed to a financing problem that can be addressed by itself through a pure fiscal fiscal consolidation.

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THE IMPACT OF DIFFERENT FISCAL POLICY REGIMES ON PUBLIC DEBT DYNAMICS

Walpurga Köhler-Töglhofer[*] and Martin Zagler[**]

Introduction

In a seminal publication investigating the success of fiscal consolidations, Alberto Alesina and Roberto Perotti (1995) find, among other things, consolidation policies to be most successful when they entail a reduction of government expenditures. Policymakers, heavily engaged in consolidating government budgets in recent years, have evidently been readily inspired by this finding.

These days, however, very few governments manage to balance, let alone consolidate their budgets. US budgets are exploding due to the war on terrorism, and several European economies (such as Portugal, Germany, and France) have surpassed the budget deficit ceiling set by the Treaty on European Union. We therefore think the time is ripe to broaden the analysis to include other fiscal policy regimes, namely fiscal expansions, excessive deficits and budgets close to balance; some of which will, of course, be more detrimental than others for the sustainability of public finances. We keep our analysis focused on the impact different fiscal policies have on the dynamics of public debt. Whilst the impact on debt dynamics may not, as such, be the primary target fiscal policymakers seek to achieve, we do think it is an important question, for two reasons. First, a high debt burden after a fiscal expansion will constrain policy in the future. Second, within a monetary union such as the euro area a high level of public debt will be a drag on financial markets in the entire union. It may drive up interest rates, thus pushing up the cost of servicing public debt, and it may discourage private investment, thus producing a welfare cost for all members of the monetary union.

Our contribution to the literature is twofold. First, we improve the Alesina and Perotti (1995) methodology by explicitly accounting for public debt dynamics. Indeed, Alesina and Perotti (1995) neglect the fact that it is easier to reach low public debt to GDP ratios when economic growth rates exceed interest rates whereas it is more difficult to do so when economic growth rates fall short of interest rates. By explicitly accounting for debt dynamics, we provide a fairer analysis of periods

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The opinions expressed are strictly those of the authors and do in no way commit the OeNB. Martin Zagler acknowledges financial support from Jubiläumsfonds Project No. 10347 and research assistance financed by FWF SFB Project No. F2008.

We would like to thank Reinhard Neck, Fabio Rumler, Doris Prammer, Inge Schuch and the participants of the 6th Banca d'Italia Public Finance Workshop for helpful comments and suggestions.

of fiscal consolidation and expansion before and after 1980, when the interest-growth differential reversed.[1] Moreover, Alesina and Perotti (1995) compare debt in percent of GDP at the end of the consolidation period with the debt position three years later. This approach is equivalent to comparing the debt ratio at the beginning of the consolidation period with the debt position three years later as adjusted for budget deficits accrued in the consolidation period. By contrast, we suggest to start with debt at the beginning of the consolidation period but to control for the impact of initial public debt and the current primary balance. Our definition thus differs from Alesina and Perotti (1995) insofar as we take adequate account of snowball effects on initial public debt and primary balances.

The second contribution of our paper is that we empirically analyze the impact of compositional effects of the government budget in all fiscal periods, not only during consolidations. We find that we can generalize the findings of Alesina and Perotti (1995) and the subsequent literature on the expenditure side. Reductions in government expenditures, in particular in government wage consumption, will lead to a dampening of debt dynamics across all fiscal policy regimes, without significant structural differences among regimes. Whilst we confirm the result that expenditure cuts are more important for debt reductions than revenue increases, our findings contrast the literature as we obtain persistent debt augmenting effects of tax reductions, again consistently across all regimes.

The paper proceeds as follows. By way of introduction, we discuss the related literature, explaining how we differ, and describe how we identify different fiscal regimes, notably fiscal consolidations, fiscal expansions, excessive deficits and budgets close to balance. We then use the intertemporal budget constraint to identify a sensible unbiased criterion for the evolution of debt ratios. Following a brief discussion of the data and methodology, we present our empirical findings, which include both the general regression paths and model hypothetical debt paths for those European Union countries that have been found to have excessive deficits. We summarize our findings in the conclusions.

1. Related literature

Alesina and Perotti's seminal publication on the *Fiscal Expansions and Adjustments in OECD Countries* (1995) revealed a gap in the standard macroeconomic literature on fiscal policy, namely the relevance of budget composition, changes in which can, of course, be extremely important from a policymaker's perspective. Alesina and Perotti show that the composition of adjustment measures fundamentally determines whether improvements in the fiscal balance will be successful in the long term or only in the short term; more specifically, that a fiscal adjustment cannot have long-lasting effects unless it tackles

[1] Around 1980, the interest–growth differential reversed as interest rates climbed and productivity slowed down globally.

public expenditures. Performing a cross-country analysis of fiscal adjustments in the industrial countries, Alesina and Perotti conclude that while permanently successful and temporarily successful adjustments, on average, cause the unemployment-adjusted deficit to drop by the same amount, adjustments that turn out to last rely mostly on expenditure cuts, in particular on large cuts of government wage consumption and of transfers, whereas adjustments that will be reversed with a short period of time rely primarily on tax increases. Alesina and Ardagna (1998) and McDermott and Wescott (1996) confirm this finding by concluding that adjustments that were implemented by cutting government transfers and public wages have been much more persistent than those achieved by increasing taxes.

Alesina *et al*. (1995, 1996) and Giavazzi and Pagano (1990) prepared the ground for a whole literature strand, mainly interested in the search for non-linear effects of fiscal policy. Alesina and Perotti (1997) shifted the focus by analyzing the macroeconomic consequences of fiscal adjustments in successful and unsuccessful cases, respectively. They assume that the composition of government measures influences the macroeconomic performance given that the successful tightening periods were associated with accelerating real output, a shrinking unemployment rate and improved international competitiveness. Successful fiscal contractions, moreover, coincided with investment booms whereas the growth rate of consumption, by contrast, did not seem to vary with different types of adjustment. From this evidence Alesina and Perotti (1997) conclude that a successful fiscal contraction may lead to an economic expansion by generating an investment boom rather than a consumption boom. McDermott and Wescott (1997) also emphasize the importance of the composition of fiscal consolidation. Whereas they study the relevance of the composition of fiscal adjustments for the success of a fiscal consolidation with a logit model for the OECD countries, Alesina and Ardagna (1998) in a rather similar approach use probit models to evaluate the success of a fiscal contraction.

The success of a fiscal adjustment is usually defined as the ability of a fiscal policy tightening today to achieve a lasting debt reduction at some future point in time. The focus of related subsequent studies is on whether fiscal consolidations can be good for growth and whether non-Keynesian effects of fiscal contractions exist. Non-Keynesian effects of fiscal policy are apparently more likely to occur during successful than during unsuccessful fiscal consolidations. Successful adjustments will produce future debt stabilization, which is why only those adjustments are likely to induce the positive wealth and expectational effects that can drive the non-Keynesian effects of fiscal adjustments. A permanent reduction in government wage consumption reduces the present discounted value of taxation, thus generating a positive wealth effect for the private sector. Under specific circumstances (if these actions are expected to be permanent), this may translate into higher private consumption at the time of the adjustment.

Based on sticky prices and given expectations about future investments, the standard Keynesian argument holds that fiscal adjustments have short-run contractionary effects. According to this view, fiscal consolidations (either a

decrease in government expenditures or an increase in taxes) reduce aggregate demand and income via direct effects and have a multiplied negative impact on output via indirect effects. The traditional Keynesian view incorporates also the fact that consolidation periods go hand in hand with an increase in the debt ratio, because consolidation measures dampen growth. The fall in income works against the stabilization of the debt to GDP ratio in two ways: directly by reducing the denominator of the ratio, indirectly by triggering the automatic stabilizers, and thus adding to public debt. But as Giavazzi and Pagano (1990) first suggested, the reverse might also occur, a drastic fiscal stabilization accompanied by a vigorous expansion, which helps to compress the debt to GDP ratio. The strand of empirical literature on non-Keynesian effects is based on theoretical work of Blanchard (1985, 1990), Bertola and Drazen (1993) and Sutherland (1997) that draws the attention on other channels that could lead to results opposite to the Keynesian. In their models, non-linearities mainly arise from the influence of fiscal policy on private sector expectations, either through wealth effects (wealth rises when the future tax burden is expected to decline) or through credibility effects (when interest rates decline, credibility is restored and inflation or default risks abate). Both consumption and investment might rise. Zaghini (1999) labels this the "the expectational view of fiscal policy". Another view (supply side) developed in Alesina and Perotti (1997) and investigated also in Lane and Perotti (2003) emphasises the effects of adjustments on labour market institutions affecting labour costs. According to Alesina and Ardagna (1998), with respect to this channel three ingredients seem to be important for a successful, long-lasting and expansionary fiscal adjustment: spending cuts in transfers, welfare programmes and the governments wage bill; some form of wage agreement with the unions that ensures wage moderation; and a devaluation immediately before the fiscal tightening.

An overwhelming number of studies, such as Giavazzi and Pagano (1996), Perotti (1999), Zaghini (1999), Giavazzi, Japelli and Pagano (2000), Hjelm (2002), van Aarle and Garretsen (2003), to name only a few, have looked at the empirical evidence of these non-Keynesian effects of fiscal policy. Hjelm (2002) finds that private consumption grows at a significantly lower rate in periods of fiscal contraction and at an (insignificantly) higher rate in periods of fiscal expansion than in non-contraction periods; and that neither the composition nor the size of fiscal contraction matters, nor the initial level of debt nor its growth rate. Conversely, van Aarle *et al*. (2003) find at best mixed evidence for the presence of non-linearities in the relation between fiscal adjustments and private spending.

Despite the growing body of literature, the profession has not yet reached a consensus on the effects of fiscal consolidation. This does not come as a surprise since even the macroeconomic impact of fiscal policy during "normal" times continues to be a highly controversial issue among economists.

Whilst we cannot ascertain non-linear effects of fiscal policy for every single case, such as Denmark from 1983 to 1986 or Ireland from 1987 to 1989, we will investigate whether asymmetric effects are present on average, or whether specific consolidations systematically differ from other periods of fiscal policy.

The main purpose of our research, however, is to investigate the impact of each of the individual revenue and primary expenditure categories on debt dynamics, and to establish whether that impact differs with respect to the fiscal regime. Heylen and Everaert (2000) in using also a multivariate regression framework ask a rather similar question, however, for consolidations periods only. With their analysis they confirm some of the existing conclusions of the literature, but in sharp contrast to the mainstream reject the persistent impact of government wage cuts on the debt ratio.

2. Modelling the fiscal stance

The dynamic equation describing the evolution of public debt equals:

$$B_t = (1+i_t)B_{t-1} + P_t \tag{1}$$

where i_t is the interest rate on public debt B_t, and P_t is the current primary deficit. Dividing both sides by GDP yields:

$$b_t = \frac{1+i_t}{1+n_t} b_{t-1} + p_t \tag{2}$$

where n_t is the nominal growth rate of GDP, small letters denote GDP shares, and we have corrected for nominal GDP growth n_t in existing debt. Our ambition is to establish how the debt dynamics are shaped by different periods of fiscal policy. In particular, we are interested in fiscal consolidations, fiscal expansions, excessive deficits, and budgets "close to balance or in surplus", which we must infer from the data. For excessive deficits, we may simply refer to the definition of the European Union, which defines an excessive deficit as a budget deficit d_t larger than 3 per cent or:

$$d_t = b_t - \frac{1}{1+n_t} b_{t-1} = \frac{i_t}{1+n_t} b_{t-1} + p_t > 3\%,^{2} \tag{3}$$

where primary deficits are the difference between government social expenditures s_t, other government expenditures g_t, and government revenues τ_t,:

$$p_t = s_t + g_t - \tau_t \tag{4}$$

As we might see a radical improvement or deterioration in the fiscal position merely for cyclical reasons, it makes sense to look at the structural deficit. A structural deficit is a deficit that would have prevailed without changes in policy and without changes in the business cycle. Our sole indicator of the business cycle will be, in accordance with Blanchard (1993), the unemployment rate. During the course

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[2] We abstain from taking into account any debt-deficit adjustments.

of a business cycle, both government expenditures and revenues may change. Lower levels of production imply a lower tax base, hence revenues will typically decline. On the other hand, lower levels of income imply a higher degree of social transfers (e.g. unemployment benefits), and therefore government expenditures typically increase. We will therefore estimate both revenues and expenditures as a function of the unemployment rate, and a time trend with a break in 1975. Tax revenues are estimated according to:

$$\tau_t = \alpha_0 + \alpha_1 D + \alpha_2 u_t + \alpha_3 (1-D)t + \alpha_4 Dt + \varepsilon_t \tag{5}$$

where the α's are parameters, D is a dummy that takes the value zero until 1975 and the value unity thereafter, and t is a time trend. Similarly, social transfers s_t are estimated according to:

$$s_t = \beta_0 + \beta_1 D + \beta_2 u_t + \beta_3 (1-D)t + \beta_4 Dt + \nu_t \tag{6}$$

where the β's once again are coefficients. We then compute an estimate for both revenues and social transfers on the assumption of an unchanged unemployment rate from the previous year:

$$\tau_t(u_{t-1}) = \alpha_0 + \alpha_1 D + \alpha_2 u_{t-1} + \alpha_3 (1-D)t + \alpha_4 Dt + \varepsilon_t \tag{5'}$$

and:

$$s_t(u_{t-1}) = \beta_0 + \beta_1 D + \beta_2 u_{t-1} + \beta_3 (1-D)t + \beta_4 Dt + \nu_t \tag{6'}$$

Let us define the structural primary deficit, pt*, as the primary deficit that would have prevailed without changes in the business cycle:

$$p_t^* = s_t(u_{t-1}) + g_t - \tau_t(u_{t-1}) \tag{4'}$$

Note that we assume in accordance with Blanchard (1993) that only government social transfers fluctuate with the business cycle, whereas other government expenditures gt are set by authorities independently of the business cycle. We can then derive the structural budget deficit as interest payments on government debt plus the structural primary deficit, by modifying equation (3):

$$d_t^* = \frac{i_t}{1+n_t} b_{t-1} + p_t^* \tag{3'}$$

"Close to balance" is interpreted by the European Commission in terms of cyclically-adjusted budgets being balanced with an error margin of 0.5 per cent of GDP:

$$d_t^* < 0.5\% \tag{3"}$$

Our definition deviates slightly from that of the European Union as we apply a different estimation of the structural primary deficit. Whereas we use the Blanchard method (based on unemployment rates), the European Union uses the

GDP gap (based on HP filtering or a production function approach). We consider the difference to be of only minor importance for the analysis at hand.

We can also use the definition of primary structural deficits to identify the fiscal stance and subsequently a fiscal consolidation and a fiscal expansion. The fiscal impulse is defined in line with Alesina and Perotti (1995) as:

$$f_t = p_t^* - p_{t-1} \tag{7}$$

where we can use the definition of the primary deficit, equations (4) and (4') respectively, to obtain:

$$f_t = \left[s_t(u_{t-1}) + g_t - \tau_t(u_{t-1})\right] - \left[s_{t-1} + g_{t-1} - \tau_{t-1}\right] \tag{7'}$$

Substitution of (5') and (6') yields:

$$\begin{aligned} f_t = [(v_t - v_{t-1}) + (g_t - g_{t-1}) - (\varepsilon_t - \varepsilon_{t-1})] + \\ + [(\beta_3 - \alpha_3)(1 - D) + (\beta_4 - \alpha_4)D] \end{aligned} \tag{7"}$$

The first three elements in this definition are the discretionary measures in fiscal policy, namely the discretionary change in social expenditures, other expenditures, and revenues. The second component measures the difference in the trend behaviour of expenditures and revenues before and after the break in 1975. If the parameters differ, the primary balance has a tendency to be in surplus or in deficit. We should still consider this as part of the discretionary policy, as policymakers have set this spending and revenue path irrespective of the business cycle. In order to get a better understanding of the fiscal impulse, we can use (7) to decompose the current primary deficit into three components:

$$p_t = p_{t-1} + (p_t - p_t^*) + f_t \tag{7'''}$$

where the first element is the previous primary deficit, the second element is the change in the primary deficit for cyclical reasons, and the last element is the discretionary policy change reflected in the fiscal impulse. Substituting the definition for the primary deficit (4) and the structural primary deficit (4') into equation (7"') and rearranging terms yields:

$$f_t = (p_t - p_{t-1}) - (\beta_2 - \alpha_2)(u_t - u_{t-1}) \tag{7""}$$

which states that the fiscal impulse equals the change in the primary balance, corrected for changes in the business cycle (represented by changes in unemployment rates).

A reduction in the fiscal impulse implies that, controlling for cyclical influences, government tightens fiscal policy. By analogy, an increase in the fiscal impulse implies that government loosens fiscal policy. This may occur due to a specific policy of expansion or consolidation, or by mere chance. In order to

separate arbitrary from intended expansions or consolidation, we require a fiscal consolidation to exhibit a fiscal impulse below one standard deviation σ, or:

$$f_t < -\sigma \tag{8}$$

and a fiscal expansion to exhibit a fiscal impulse above one standard deviation of the fiscal impulse for that country:

$$f_t > \sigma \tag{8'}$$

Together with the definitions for excessive deficits (3) and budgets close to balance (3"), the definitions for fiscal consolidations (8) and fiscal expansions (8'), this summarizes the selection of periods under investigation in our analysis.

3. Debt dynamics

Fiscal policy is supposed to achieve a number of goals (Musgrave, 1959). We will restrict our analysis to the medium to long run fiscal position only. In particular, we will focus on the performance of fiscal periods with respect to public debt. For consolidation periods (both tight fiscal policy and budgets close to balance), we will investigate which specific policies reduce debt most. For expansionary periods (both loose fiscal policy and excessive deficits) we will ask which policies are sustainable, keeping debt contained, and which are not. In that respect, we will expand the analysis of Alesina and Perotti (1995) in several dimensions. According to their definition, a "successful adjustment in year t is defined as a very tight fiscal stance in year t such that the gross debt/GDP ratio in year t + 3 is at least 5 percentage points of GDP lower than in year t". In brief, the Alesina and Perotti success criterion can be summarized as:

$$b_{t+3} - b_t < -0{,}05 \tag{9}$$

which we may generalize to:

$$b_{t+r} - b_t < -x \tag{9'}$$

The first concern with this definition is that a reduction in the deficit today will have little or no impact on success in the future. This is because we measure the difference between debt at the end of the period in question (t) with the debt position r years ahead. A consolidation will therefore improve both bt and bt+r. Hence, we consider a more sensible criterion that evaluates fiscal regimes by the change in public debt at the beginning of the fiscal episode (bt–1) to the public debt share r periods ahead (bt+r). To make our point more precise, we can reformulate (9'), noting that the current public debt equals growth-adjusted previous debt and the current budget deficits (3), yielding:

$$b_{t+r} - b_t = b_{t+r} - b_{t-1} - d_t + \frac{n_t}{1+n_t} b_{t-1} = b_{t+r} - b_{t-1} - \frac{i_t - n_t}{1+n_t} b_{t-1} - p_t < -x \qquad (9'')$$

An increase in budget deficits will facilitate success according to the Alesina-Perotti criterion (9) compared to our measure (bt+r – bt–1). By contrast, a reduction in budget deficits (or an increase in budget surpluses) will render success more difficult for the Alesina-Perotti criterion. Alesina and Perotti (1995) may have excluded the current budget deficit (which is the sum of interest payments on existing public debt and the primary deficit) from their criterion for good reasons. First, an increase in interest payments on public debt will ceteris paribus facilitate success according to their criterion (9), which is apparently an unpleasant feature. Second, considering the decomposition of the primary deficit (7'''), we find that high primary deficits are the result of the past (pt–1), current economic conditions (reflected in the cyclical component), and the size of the fiscal impulse. As we are interested in the effects of the composition or of the individual components of the primary deficit and not of the size of the primary deficit, it may be reasonable to eliminate primary balances as well.3 Whilst Alesina and Perotti implicitly control for the impact of primary balances and interest payments on existing debt, they fail to account for the impact of economic growth on the existing debt ratio.

In order to fully understand which elements influence the success of consolidations that have not been accounted for in Alesina and Perotti and that are not the result of discretionary policy measures, we next systematically investigate what causes the public debt ratio at the beginning of the consolidation period (bt–1) to change to the public debt ratio r periods ahead (bt+r).4 For this purpose, we will develop the difference, using the equation of motion for public debt (2). We start out with the equation of motion (2) in time t + r and subsequently substitute the equation of motion for the previous public debt ratio, until we have reached bt–1. This yields, after collecting terms:

$$b_{t+r} - b_{t-1} = \left[\prod_{j=0}^{r} \frac{1+i_{t+j}}{1+n_{t+j}} - 1 \right] b_{t-1} + \sum_{i=1}^{r} \left[\prod_{j=i}^{r} \frac{1+i_{t+j}}{1+n_{t+j}} \right] p_{t+i-1} + p_{t+r} \qquad (10)$$

This equation allows a systematic interpretation of the reasons for success of programmes to reduce debt ratios. First, the existing debt ratio matters. It increases the debt to GDP ratio if interest rates exceed economic growth rates on average during the period in question, and decreases it otherwise. This is clearly unintended, as we shall not judge a consolidation or expansion by its past. Moreover, it treats situations where the interest-growth differential is positive very differently from situations where it is negative. We should therefore eliminate effects of the initial debt ratio from the generalized Alesina-Perotti criterion (9').

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3 We are indebted to Reinhard Neck for drawing our attention to this point.

4 Note that we can always reconstruct the generalized Alesina-Perotti criterion (9') by subtracting the current budget deficit d_t.

Second, primary balances matter. Primary surpluses in the period under investigation and in all subsequent periods improve the debt situation. Indeed, the success criterion not only includes the impact of discretionary fiscal policy measures in period *t*, but additionally the impact of the today's fiscal policy on subsequent years. A consolidation, for instance, will be more successful if it also succeeds in dampening future primary deficits or if it facilitates reaching future primary surpluses.

Third, the interest-growth differential matters both for the impact of existing debt as well as for primary balances. Primary surpluses will have a bigger impact on debt reduction if interest rates exceed growth rates in all subsequent periods.

In order to adjust for influences from the past on the evolution of the debt ratio, we eliminate the effects of the initial debt ratio and of initial primary balances (including the effects of compounding) in equation (10) to obtain a modified Alesina-Perotti criterion (MAPC):

$$b_{t+r} - \left[\prod_{j=0}^{r} \frac{1+i_{t+j}}{1+n_{t+j}}\right] b_{t-1} - \left[\prod_{j=1}^{r} \frac{1+i_{t+j}}{1+n_{t+j}}\right] p_t = \sum_{i=2}^{r} \left[\prod_{j=i}^{r} \frac{1+i_{t+j}}{1+n_{t+j}}\right] p_{t+i-1} + p_{t+r} \quad (10')$$

Instead of arbitrarily setting a success criterion (as in Alesina and Perotti, 1995), we simply follow the evolution of the left-hand side of the modified Alesina-Perotti criterion (10') over time identifying differences between different policy regimes with respect to their performance in the MAPC. These time paths can be interpreted as quasi-cumulated impulse response functions for the evolution of public debt if the economy had started without initial public debt and if its initial primary deficit had been acquitted. Note that the two adjustments do exactly that. They remove the burden of initial debt and the initial primary deficit, evaluated at the end of the period under investigation (*r*), using the interest-growth differential as a compounding factor.

What we actually measure with this indicator is of course the right-hand side of equation (10'), which allows us to interpret the MAPC as the accumulated compounded primary deficits from period $t+1$ to $t+r$. Apart from the interest-growth differential, which serves as a compounding factor, we will observe an improvement in the debt position if structural deficits decline, and if subsequently the fiscal impulse is low, or if a consolidation or expansion period has prompted policymakers to resort less to the fiscal impulse in the future.

To sum it up, we have adjusted the Alesina-Perotti criterion for three reasons. First, instead of observing the criterion only over a period of three years, we will follow a time path for $r = \{1, 2, \ldots 6\}$. The rationale for choosing six periods lies in a compromise between gains for the assessment of discretionary measures on the sustainability of public finances and losses of accuracy when the time horizon between the fiscal policy regime and its subsequent consequences for the evolution of public debt becomes too long.

Second, and most important, we have adjusted for debt dynamics, so that the Alesina-Perotti criterion is no longer influenced by the initial debt ratio and the interest-growth differential. We consider this important, as otherwise periods before 1975, when the interest-growth differential was negative, are treated different from periods thereafter. Indeed, the Alesina-Perotti criterion is biased in favor of periods with a positive interest-growth differential.

Third, we have eliminated current primary deficits as we are interested in the effects of the composition or the individual components of the primary deficit and not the size of the primary deficit. An additional advantage is that this renders the MAPC independent from current primary deficits; hence we can use the composition of the current primary deficit without econometric problems as explanatory variables.

Note that the MAPC is equivalent to Alesina and Perotti (1995), if the initial public debt is zero (and hence interest payments on public debt are zero) and $i_t = n_t$ in all years. If interest rates exceed growth rates, the criterion is (sensibly) less strict, whereas it is stricter if growth rates exceed interest rates. In the empirical exercise that follows, we compute the left-hand side of equation (10') and track that indicator for the first six years, $r = \{1, 2, \ldots 6\}$.

We can modify equation (10) by subtracting the deficit and adding the growth adjusted initial debt ($b_{t-1}\ n_t\ /\ (1\ +\ n_t)$) on both sides to obtain the generalized Alesina-Perotti criterion (9'):

$$b_{t+r} - b_t = \left[\prod_{j=1}^{r} \frac{1+i_{t+j}}{1+n_{t+j}} - 1\right]\left[\frac{1+i_t}{1+n_t} b_{t-1} + p_t\right] + \sum_{i=2}^{r}\left[\prod_{j=i}^{r} \frac{1+i_{t+j}}{1+n_{t+j}}\right] p_{t+i-1} + p_{t+r} \qquad (10")$$

Now the current primary deficit only does not matter only if interest rates and growth rates are identical, with signs changing according to the interest-growth differential. The reason is that Alesina and Perotti (1995) do not compound primary deficits to the end of the observation period, but use the beginning of the period instead. Similarly, the initial level of debt will still matter for the evolution of public debt during a particular fiscal regime, unless interest rates and growth rates are identical. As the initial debt ratio (which cannot be influenced by policymakers) should never matter for evaluating fiscal regimes, the generalized Alesina-Perotti criterion (9') will be biased.

4. The data

Our sample includes the EU countries, USA, Norway, Australia and Canada for the period 1960-2002; Japan was excluded from the analysis because of data unavailability. Fiscal data as well as macroeconomic variables (GDP and unemployment rates) are taken from the AMECO database. For most of the countries included, debt data are only available from the Seventies onwards. We have a total of 774 observations for our estimations.

Table 1

Means and Standard Errors of the Means of Changes of Total Current Revenue and Total Primary Expenditure in Different Fiscal Policy Episodes
(percent of GDP)

	All observations	Consoli-dations	Expansions	Excessive deficits	Close to balance
Indirect taxes	0.04 (0.022)	0.30 (0.058)	–0.09 (0.078)	0.07 (0.039)	0.03 (0.041)
Direct taxes	0.14 (0.031)	0.68 (0.075)	–0.43 (0.121)	0.09 (0.045)	0.23 (0.059)
Direct taxes of households	0.03 (0.042)	0.20 (0.107)	–0.04 (0.142)	–0.07 (0.070)	0.07 (0.081)
Direct taxes of corporations	0.07 (0.045)	0.56 (0.154)	–0.55 (0.210)	0.05 (0.049)	0.11 (0.120)
Social Security contributions	0.14 (0.020)	0.10 (0.049)	0.19 (0.071)	0.11 (0.032)	0.17 (0.041)
Total current revenue	0.39 (0.046)	1.12 (0.103)	–0.28 (0.161)	0.30 (0.071)	0.52 (0.097)
Government consumption	0.17 (0.029)	–0.38 (0.063)	0.85 (0.077)	0.13 (0.045)	0.15 (0.046)
Government wage consumption	0.06 (0.018)	–0.27 (0.047)	0.45 (0.058)	0.02 (0.032)	0.09 (0.031)
Government non-wage consumption	0.12 (0.038)	–0.12 (0.038)	0.44 (0.060)	0.11 (0.029)	0.09 (0.077)
Social transfers	0.16 (0.028)	–0.29 (0.081)	0.92 (0.094)	0.24 (0.051)	0.10 (0.039)
Subsidies	–0.01 (0.015)	–0.10 (0.030)	0.19 (0.051)	–0.02 (0.030)	0.00 (0.019)
Public investment	–0.03 (0.012)	–0.18 (0.030)	0.17 (0.041)	–0.04 (0.021)	–0.03 (0.019)
Total primary expenditure	0.33 (0.068)	–1.25 (0.135)	2.47 (0.190)	0.37 (0.111)	0.20 (0.118)
Observations	774	86	79	267	226

The calculation of the fiscal impulse and the definition of consolidation and expansion episodes are very similar to Alesina and Perotti (1995). According to equation (8) and (8') we classify consolidation and expansion episodes by taking the average of the Blanchard Fiscal Indicator (BFI) plus or minus one standard deviation as cut-off points (calculated separately for the individual countries).

According to equations (3) and (3"), periods of excessive deficits are defined as years in which the actual budget deficit exceeded 3 per cent of GDP, whereas a close-to-balance budget regime means that the cyclically-adjusted budget deficit (however, calculated on a BFI basis) remained below 0.5 per cent of GDP in a given year. Table 1 lists the number of observations for every fiscal regime and provides a sample statistics with the means and standard errors of the mean of changes in current revenues and primary expenditures for the two main aggregates under the different types of fiscal regimes.

5. Methods

The empirical part comprises two different methodological approaches. We will first present descriptive statistical results (means and standard errors) for the modified Alesina-Perotti criterion (MAPC) in different fiscal policy regimes. Remember that in equation (10') we have shown that the MAPC is equivalent to the accumulated compounded primary deficit ratios and also equivalent to the level of the debt ratio in period $t+r$, corrected for the compounded influence of existing debt at the beginning of period t and the primary balance in period t.[5]

Unlike Alesina and Perotti (1995) and the subsequent comparable literature, we do not differentiate with respect to success and failure of specific fiscal policy regimes with an arbitrary *ad hoc* measure, namely a 5 percentage point change in the debt ratio between t and $t+3$. Instead, with the MAPC, we show hypothetical debt paths for different fiscal policy regimes based on actual realizations in the past.

In the second part of our analysis, we present estimates for the evolution of debt dynamics (measured by the MAPC) induced by changes in the primary expenditure and revenue ratios. We will use ordinary least square regressions in first differences in order to eliminate problems of autocorrelation. We differ from the empirical literature that uses logit or probit estimators (cf. Alesina and Ardagna, 1998, and McDermott and Wescott, 1996) for the success criterion by using the full information of debt dynamics instead of a dummy defined with an arbitrary cut-off point. We also differ methodologically from Heylen and Everaert (2000), who use first differences for the independent series, but not for the dependent series.

Our focus goes beyond the related empirical literature as we study not only fiscal consolidations but also fiscal expansions, excessive deficits and budgets close to balance or in surplus (defined on the basis of the BFI); and by the fact that we

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[5] We use the compounding factors as identified in equation (10').

apply this approach also for all observations. In the literature, the method of choice to investigate the impact of fiscal policy measures on public debt dynamics is sustainability simulations, which typically hold future primary balances constant at the current level. With our method, by contrast, we acknowledge the fact that the current composition of the primary balance may exhibit systematic changes on future primary balances.[6]

We analyze the MAPC for period *t+1* to *t+6*, which is twice as long as the three year period usually found in the literature. The rationale for choosing six periods lies in a compromise between gains of accuracy with regard to assessing discretionary measures on the sustainability of public finances and losses of accuracy when the time horizon between the fiscal policy regime and its subsequent consequences for the evolution of public debt becomes too long. Whilst the explanatory power of the composition of the primary balance in period *t* on the accumulated compounded primary deficit ratios in period *t+1* is presumably large, the impact of the composition of current primary balances on later accumulated compounded primary deficit ratios will be more and more influenced by potential policy actions taken in subsequent periods.

6. Main results

According to our descriptive statistical method the graph below considers the evolution of the mean of the modified Alesina-Perotti criterion (MAPC) for all observations in our sample, all fiscal consolidations (as defined in equation 8), all fiscal expansions (as defined in equation 8"), all excessive deficits (as defined in equation 3) and all budgets close to balance or in surplus (as defined in equation 3").[7] Note that we have normalized neither with respect to the size of the fiscal impulse nor to the size of the initial primary balance (p_t) of the different fiscal policy regimes. Instead, we use the mean values over the actual observation periods, which are typically positive for expansions and negative for consolidations. Similarly, budget deficits are on average larger than 3 per cent for excessive deficits and smaller than 0.5 per cent (structurally adjusted) for budgets close to balance or in surplus.

The increasing straight line for all observations between the start value (*t*) and the end value (*t+r*) merely reflects the fact that on average debt ratios have increased over time, even correcting for the impact of interest payments and initial primary

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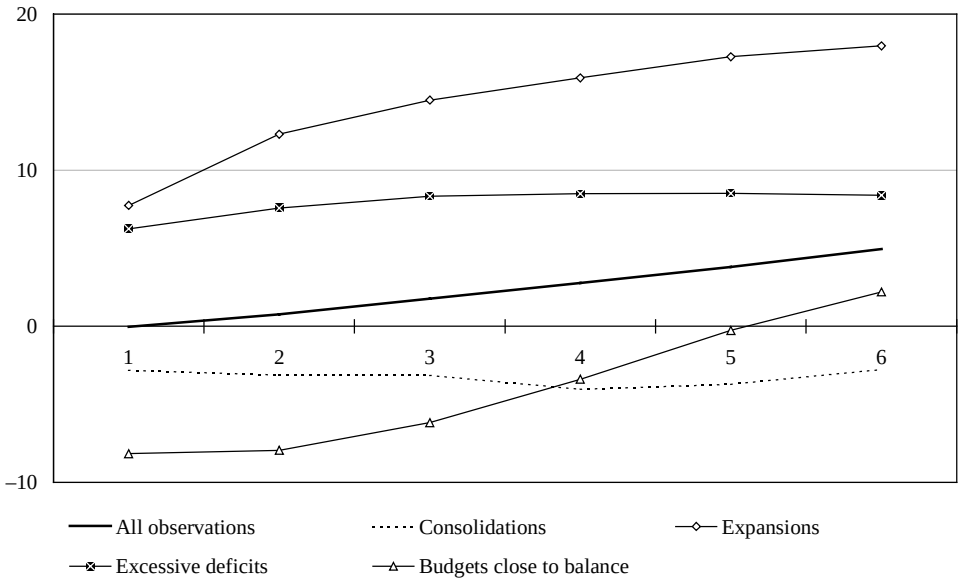
[6] As an example, suppose that a reduction in government wage consumption may be long lasting, whereas a reduction in subsidies will exhibit only transitory effects on the primary balance. This would imply that a primary balance with a high wage component will yield different (worse) future primary balances than one with a high subsidy component, thus leading to a very different path of public debt, not accounted for in sustainability simulations.

[7] Means and the corresponding errors of the mean for all different fiscal policy regimes can be found in Table A1 in the Appendix.

Figure 1

Debt Dynamics (MAPC)
(accumulated in percent of GDP)



balances.[8] This line defines the benchmark for the analysis of specific fiscal policy regimes. The evolution of debt dynamics in contractionary fiscal policy regimes may indicate that consolidations on average have a long-lasting impact on the reduction of the debt ratio. In contrast, episodes of budgets close to balance do not seem to exhibit a comparable degree of persistence.[9]

Note that a large number of this kind of fiscal episode occurred in initial parts of our sample, maybe by mere chance due to a negative interest-growth differential. However, we cannot take into account those budgets close to balance that were induced by explicit policy rules of EMU because of a lack of observations for the MAPC in subsequent years. In line with our expectations, the MAPC for expansionary episodes highlights potentially unfavourable impacts on the evolution of public debt as a share of GDP. Much of the debt increase is obviously due to the impact in the first two years, whereas the evolution runs in parallel to the benchmark afterwards, maybe because expansionary regimes are short-lasting or because expansions on average may be successful in stimulating economic growth and thereby reducing debt ratios. Finally, excessive deficits, whilst obviously also

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[8] Indeed, what we do is to merge the change in the adjusted debt ratio over all periods and countries into a sequence of six observations.

[9] In the following we will use "persistence" in the meaning of "long lasting".

leading to an increase in the first few years, seem to be followed by subsequent counteracting measures, implying a comparably lower increase in the MAPC than the benchmark.

In a second step we ask whether compositional effects, as emphasized by Alesina and Perotti (1995, 1996), McDermott and Wescott (1996) among others, matters for debt dynamics in general (without specifically focusing on consolidation or expansion episodes). In order to investigate this issue we run an OLS regression as mentioned above, where we use the individual revenue and primary expenditure categories as a share of GDP (*i.e*. the composition of primary budget) as explanatory variables and the MAPC as the dependent variable. In order to eliminate the impact of the cycle we use real GDP growth as a control variable.

Table 2 opposite presents the coefficients of a one percentage point increase of the individual explanatory variable, measured as a share of GDP, on the MAPC. Each column represents a separate estimation for the respective MAPC for $t+r$, with $r = \{1,2,..,6\}$. t-values are presented below the individual coefficients.

Due to a limited number of observations for direct taxes on households and direct taxes on corporations, we first estimated the regressions with the total direct taxes in percent of GDP as an explanatory variable. We have replaced this aggregate category with the two sub-categories. All coefficients are taken from the first regression; only the coefficients for direct taxes on households and corporations stem from the second regression. As shown in the table, all the variables included exhibit the expected sign.

We find that increases of the individual revenue ratios tend to reduce the debt ratio (as measured by the MAPC), whereas an increase in the share of any government spending categories obviously causes the debt path to deteriorate. This is consistent with the neoclassical and the Ricardian view as well as with the non-Keynesian literature. In a Keynesian world, however, the effect is ambiguous and depends on the strength of the output growth on changes in expenditures or revenues.

The hypothetical time path for the MAPC(1) to MAPC(6) can be thought of as a quasi-cumulated impulse response function following a one percentage point increase in individual government revenue and primary expenditure categories (computed in a rather different fashion) for the public debt ratio, starting at a hypothetical value of $b_t = 0$ (*i.e.* accumulated compounded future primary deficits).

The strongest impact on debt dynamics can be observed for a change in government wages as a share of GDP. The impact is consistently strong over the entire observation period. This confirms the finding of Alesina and Perotti (1995, 1996) but is in sharp contrast to Heylen and Everaert (2000), who obtain a large and negative impact of government wage based consolidations.

Our results indicate that once realized, reductions of this expenditure category have a persistent effect on the debt ratio. However, we cannot confirm the second major result of Alesina and Perotti, which states that cuts in social transfers are

Table 2

Impact of a change in individual budgetary categories on the MAPC[10]

	MAPC1	MAPC2	MAPC3	MAPC4	MAPC5	MAPC6
Indirect taxes	–1.48 (–4.330)	–1.31 (–3.320)	–1.35 (–2.970)	–2.18 (–4.450)	–1.32 (–2.440)	–1.49 (–2.700)
Direct taxes	–1.80 (–7.430)	–1.61 (–5.680)	–1.46 (–4.490)	–1.22 (–3.490)	–0.91 (–2.390)	–0.98 (–2.490)
Direct taxes on households	–2.48 (–5.310)	–1.98 (–3.570)	–1.73 (–2.770)	–1.65 (–2.420)	–1.63 (–2.190)	–1.53 (–2.060)
Direct taxes on corporations	–0.30 (–0.630)	–1.02 (–1.750)	–0.95 (–1.350)	–0.47 (–0.610)	–0.72 (–0.860)	–0.75 (–0.910)
Social Security contributions	–1.90 (–4.530)	–1.68 (–3.450)	–2.06 (–3.730)	–2.52 (–4.230)	–2.56 (–3.810)	–2.08 (–3.010)
Gov't wage consumption	4.14 (7.260)	5.60 (8.480)	6.11 (8.200)	6.17 (7.760)	6.13 (7.080)	6.28 (7.050)
Gov't non-wage consumption	1.80 (3.270)	1.22 (1.920)	0.79 (1.110)	0.96 (1.260)	0.29 (0.350)	0.59 (0.690)
Transfers	1.42 (3.990)	0.91 (2.230)	0.84 (1.840)	0.40 (0.810)	0.71 (1.330)	0.42 (0.760)
Subsidies	0.84 (1.730)	0.64 (1.160)	0.78 (1.260)	1.29 (1.960)	0.25 (0.350)	1.09 (1.500)
Public investment	3.45 (4.780)	3.28 (3.940)	3.24 (3.460)	2.71 (2.700)	3.18 (2.940)	2.81 (2.510)
R^2	0.414	0.347	0.299	0.275	0.231	0.229

almost as important as a reduction in government wages. We do find a significant but much smaller and not persistent impact from a cut in transfers.[11] We are similarly surprised about the reaction of the debt ratio to changes in the public investment ratio. With respect to this category we expect that increases in public

[10] Estimated in first differences; note that one can interpret the estimated coefficients as the impact of 1 percentage point increase in GDP of a specific category on the MAPC (defined as accumulated primary deficit ratios).

[11] For a lack of data we use only social transfers other than in kind, which might render our result less comparable to the finding of Alesina and Perotti. Note that also Heylen and Everaert (2000) in general do not find a significant effect of transfers either.

Figure 2a

Debt Dynamics (MAPC) by Composition
(accumulated in percent of GDP)

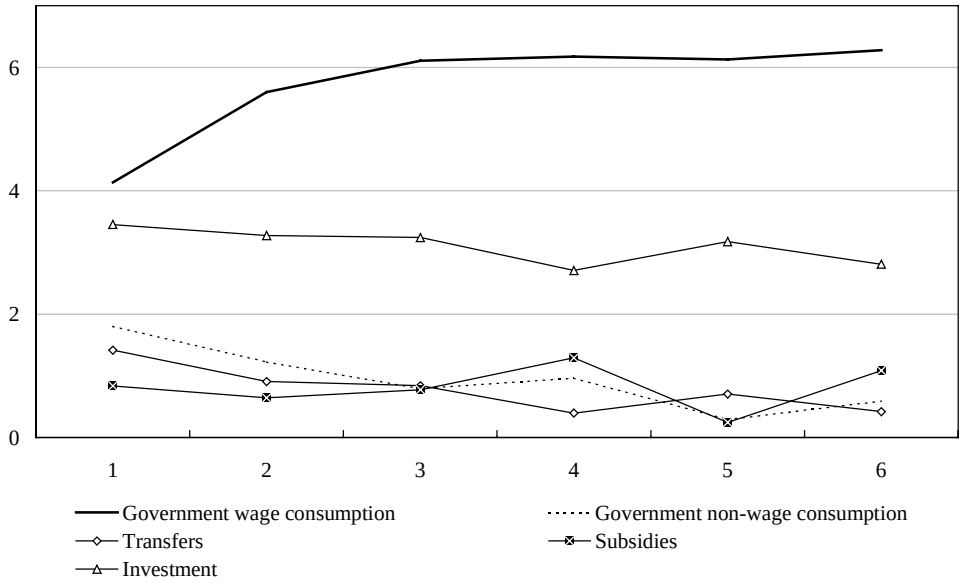
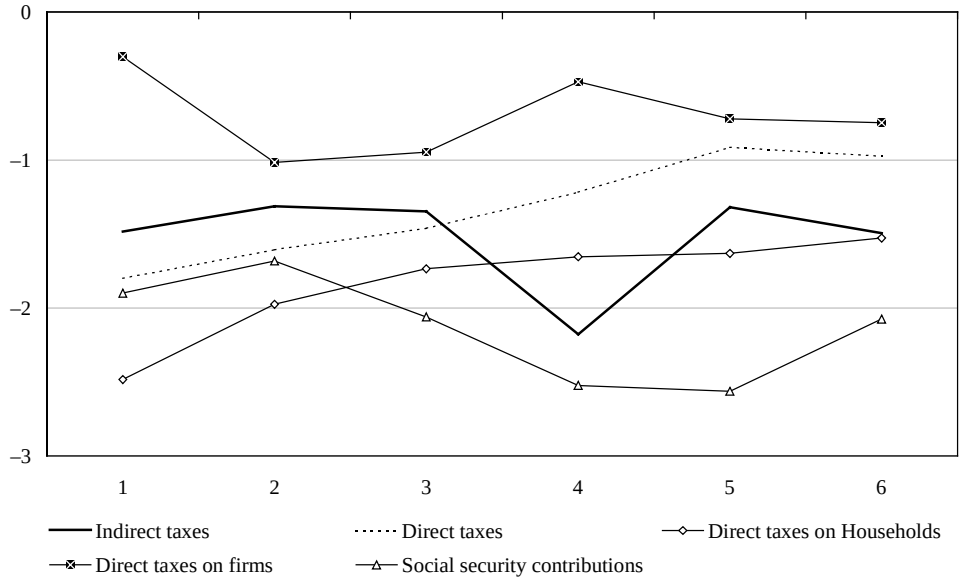


Figure 2b

Debt Dynamics (MAPC) by Composition
(accumulated in percent of GDP)



investment should foster economic growth and thereby have dampening effects on debt dynamics. However, the estimates indicate the opposite.

Alesina and Perotti (1995) obviously do not find persistent effects from revenue-led consolidations. On the revenue side, if anything, they suggest increases in direct taxes on business, but reductions in direct taxes on households and social security contributions. Using the full sample, our regression results do show a significant impact on government debt ratios, with the exception of a change in the ratio of direct taxes on firms. We suspect that the induced reductions of the after-tax profits of companies from the latter measure might discourage investments and encourage relocations of firms, thus leading to reductions in the growth rates of GDP and therefore counterbalance the effect on debt. Overall we obtain quantitatively smaller effects from revenue-side measures than from expenditure-side measures. This is once again a confirmation of the idea that expenditure-led consolidations are more likely to succeed in reducing debt ratios over time than revenue-led consolidations.

In the next step, we shift our attention to specific fiscal policy regimes. Our intention was to check whether the reaction of debt dynamics due to changes in individual revenue and primary expenditure categories during fiscal consolidations, fiscal expansions, excessive deficits and budgets close to balance were substantially different from all times. Following the discussions in the literature, we would have expected a difference in the reaction of debt dynamics in specific fiscal policy regimes compared to all times, showing a potentially different reaction of economic agents to changes in individual revenue and primary expenditure categories. One interpretation of such a result would be that during a consolidation, agents are more willing to accept expenditure cuts without cutting or even increasing their consumption demand, thus supporting the non-Keynesian view on fiscal consolidations. Similarly, during an expansion, if investors react positively to an increase in government expenditures, we would also expect the debt dynamics to evolve differently, which would support the Keynesian view on fiscal expansions.

For this reason, we tested whether interaction terms between a consolidation dummy (taking the value one for a fiscal consolidation and zero otherwise) and the individual revenue and primary expenditure categories were statistically significantly different from zero. However, we had to reject this hypothesis. We repeated this exercise with fiscal expansions, excessive deficits and budgets close to balance as well, with no avail.

In accordance with Alesina and Perotti (1995 and 1996), our results confirm that composition matters. However, whereas they and the subsequent literature focused mainly on these effects in times of consolidation, we find that compositional effects matter not only during consolidations but in fact in all fiscal policy regimes alike. We conjecture that those measures (e.g. a cut in government wages) that reduce public debt ratios successfully during consolidations will exhibit a similarly strong opposite effect during a fiscal expansion. The only difference is a quantitative response of public debt ratios, given that expansions typically generate high primary deficits, whereas consolidations lead to high primary surpluses. Indeed, if the

methodology of Alesina and Perotti had allowed them to analyze all periods, they should have obtained a similar result for all periods as for consolidations only, which was their focus of analysis.

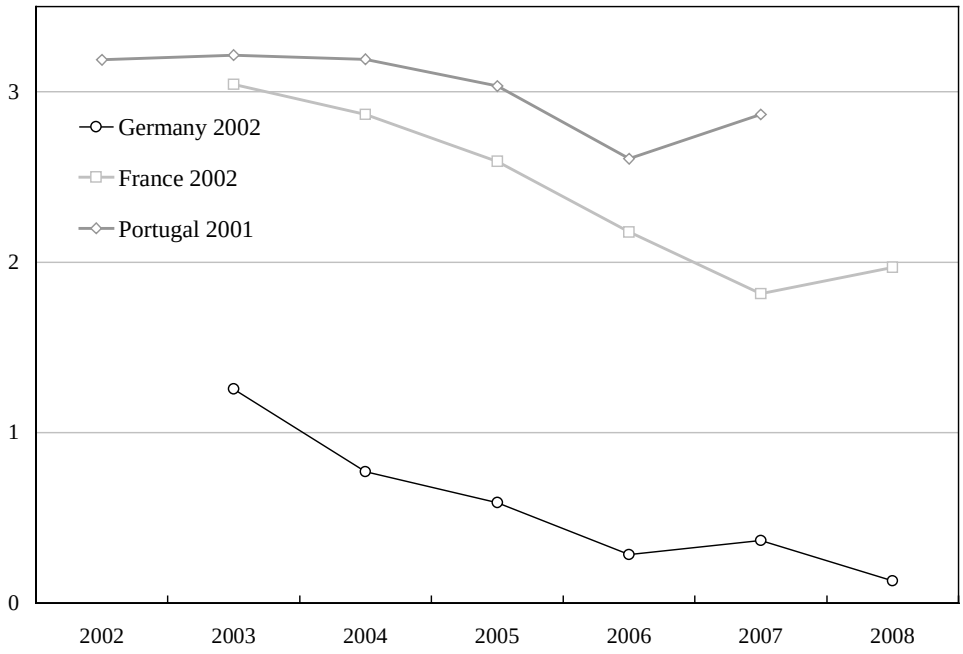
Heylen and Everaert (2000) estimate coefficients for selected revenue and primary expenditure categories during consolidation periods only. Apart from econometrical problems of their method, the lack of an analysis of the full sample of observations poses the question whether their coefficients would be statistically different from all times. Our findings would suggest the opposite.

7. Debt dynamics and excessive deficits

In a thought experiment, we can use our results to derive a hypothetical debt path based on a given composition of revenues and primary expenditures. This seems particularly fruitful for those countries which have recently crossed the 3 per cent budget deficit ceiling introduced in the Maastricht treaty and were found to have excessive deficits, namely Portugal in 2001 and Germany and France since2002. In the subsequent analysis, we are looking at the induced debt dynamics

Figure 3

Hypothetical Debt Dynamics (MAPC)
(accumulated in percent of GDP)



(for the following six years) stemming from the actual composition of the excessive deficits in Portugal in 2001 and Germany and France in 2002.

In this thought experiment, we abstract from any explicit policy measures, changing the composition of the excessive deficit in future years, and we do not adjust for the influence of the cycle. Moreover, we hold constant the snowball effect (*i.e.* the interest-growth differential) at the final year of our sample, which was 2002. What we do consider, however, is the fact that a different composition of an excessive deficit causes differences in the accumulated future compounded primary balances. One explanation for this phenomenon may be that according to our estimation results, a reduction in the government wage consumption will have a longer-lasting debt dampening impact, whilst a reduction in government non-wage consumption will be only transitory. The graph below shows that differences in composition actually matter for the accumulated future compounded primary balances in the three countries under investigation.

The explanation for the high level of persistence of the MAPC in France and Portugal, compared to Germany, can be found among others in the fact that both France and Portugal have increased the government wage bill considerably. Since we do not use cyclically-adjusted series, the large increase in social transfers for Germany may be due to cyclical effects. Note that our estimation of the MAPC may take this into account with a low persistence of social transfers. Table 3 overleaf summarizes the changes in the individual budgetary categories from the year before the excessive deficit to the year where it occurred. Compared to France and Portugal, the composition in Germany has obviously a less dramatic lasting impact, and the MAPC is almost at the initial level after only four years.[12]

Does that imply that Germany does not have to worry about its debt development over the next years? In contrast to the evolution of the MAPC in the previous graph, the following graph exhibits the development of the induced hypothetical debt path for the three economies under investigation. We added the compounded primary deficit ratio in the year of the excessive deficit and the compounded initial debt ratio (according to equation 10') to obtain the overall hypothetical debt ratio, based on the assumption of a constant interest-growth differential for the compounding of these components. The initial debt ratios for Germany, France and Portugal were 59.5 per cent, 56.8 per cent and 53.3 per cent, respectively. This is one reason why debt ratios are consistently higher for Germany than for the other countries. Despite the decline in the MAPC shown above, the situation deteriorates. The reason is that Germany suffers from the highest interest-growth differential among these three economies, with nominal interest rates exceeding nominal growth rates by about 3 percentage points, whereas the difference is only 2 percentage points for France and almost zero for Portugal.

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[12] Note that we could apply the same methodology to evaluate the consequences for debt dynamics of fiscal reform programs, which countries in a deficit procedure according to the Stability and Growth Pact have to introduce.

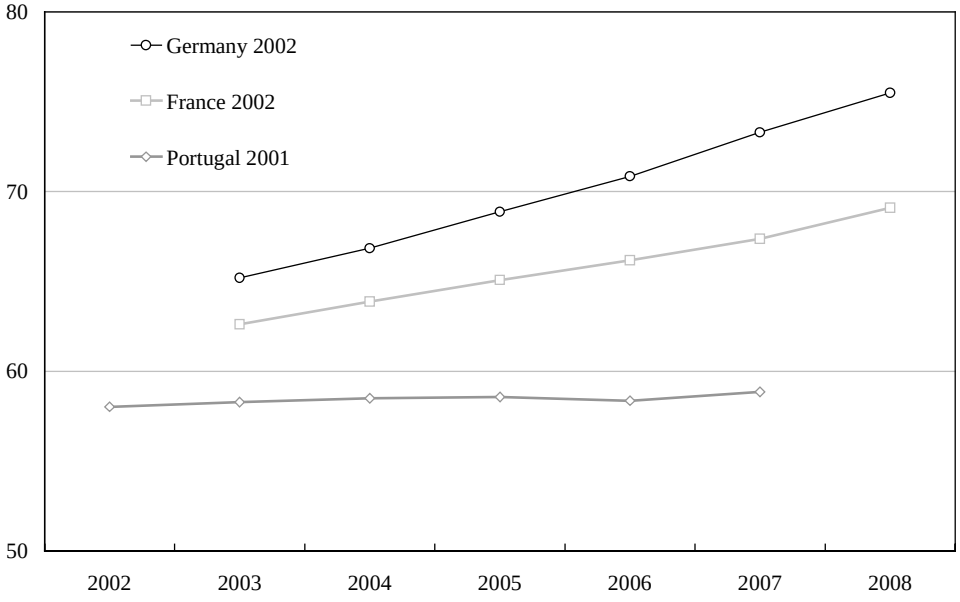
Table 3

Changes in the Composition of Revenue and Primary Expenditure Categories During Excessive Deficits

	Germany 2002	France 2002	Portugal 2001
Indirect taxes	–0.01	0.09	–0.08
Direct taxes	–0.33	–0.89	–0.58
Social Security contributions	–0.07	0.15	0.13
Government wage Consumption	–0.03	0.23	0.22
Government non-wage Consumption	0.19	0.40	0.05
Social transfers	0.58	0.36	0.12
Subsidies	–0.18	–0.05	0.27
Public investment	–0.10	–0.09	0.25

Figure 4

Hypothetical Debt Ratios
(accumulated in percent of GDP)



If we apply the same interest-growth differential for all countries, all debt paths would exhibit a rather similar slope. This suggests that the macroeconomic environment is still the most important aspect in containing bad debt dynamics. Taking this into account it would indeed be of interest to investigate the growth effects of changes in individual revenue and expenditure categories. However, this is beyond the scope of the paper.

8. Conclusions and future research

This paper aimed at investigating the impact of compositional effects on public debt dynamics under different fiscal policy regimes. This analysis was motivated by the vast amount of recent literature on the significance of compositional effects for the success of fiscal consolidation episodes, initiated by a seminal publication of Alesina and Perotti (1995). When looking at the larger picture of consolidation periods, expansionary episodes, excessive deficits and budgets close to balance, we obtained the surprising result that compositional effects do not show statistically significant differences across these specific policy regimes, and indeed cannot be distinguished from all times.

At the same time, we find changes of individual revenue and primary expenditure categories in general to have an important, and above all different, impact on the debt dynamics. On the expenditure side, our results confirm the findings of Alesina and Perotti (1995, 1996) and the subsequent literature in that a reduction in government wage consumption indeed exhibits the strongest dampening impact on debt dynamics. Yet in contrast to much of the literature we find that an increase in government revenues will also lead to a persistent decline in debt ratios, although to a lesser extent than a decrease in certain expenditure categories.

Our contribution to the literature is that the very recipe that was found to bring debt ratios down in consolidation periods can in fact be relied on to keep public finances on a sustainable track at all times. Our findings suggest that policymakers should be particularly wary of increasing those spending categories that exhibit persistent worsening effects on debt dynamics, above all government wage consumption. The novel finding of our analysis is that tax cuts also exhibit a persistent and detrimental effect on the evolution of debt ratios.

Our method allows us to compute hypothetical paths of debt ratios, given changes in specific revenue and expenditure categories. We can show that compositional effects matter for the persistence of induced accumulated compounded future primary balances. However, we must acknowledge that the macroeconomic environment, in particular nominal interest rates and nominal growth rates, is more important, at least in the current environment of a positive interest-growth differential.

There are a number of reasonable extensions for further research. First, we used the Blanchard method to identify the fiscal impulse, mainly for consistency reasons, as this is the method Alesina and Perotti (1995) used. However, other

methods to compute structural deficits may be superior, and should therefore be adopted, even though we would not expect this to alter our results. Second, it may be fruitful to estimate the compositional effects on debt dynamics on the basis of cyclically-adjusted time series. Moreover, given that we focused only on the full sample, there may be reason to substitute the pooled regression (where we implicitly assume identical parameters over all countries and years) with panel estimations. Finally, given the importance of the macroeconomic environment, it may be reasonable to estimate a macroeconomic model or a structural VAR to accommodate for the influence of size and composition of primary deficits on the interest-growth differential.

APPENDIX

Table A1

MAPC and Standard Errors in Different Fiscal Policy Regimes

	1	2	3	4	5	6
All observations	–0.04	0.78	1.78	2.77	3.8	4.95
	(0.531)	(0.706)	(0.873)	(1.036)	(1.190)	(1.334)
Consolidations	–2.82	–3.12	–3.14	–4.03	–3.71	–2.77
	(1.502)	(2.113)	(2.633)	(2.966)	(3.378)	(3.963)
Expansions	7.75	12.31	14.49	15.92	17.27	17.96
	(1.553)	(1.851)	(2.100)	(2.485)	(2.674)	(2.988)
Excessive deficits	6.25	7.57	8.33	8.49	8.51	8.4
	(0.740)	(1.007)	(1.258)	(1.500)	(1.742)	(1.995)
Budgets close to balance	–8.16	–7.94	–6.17	–3.39	–0.26	2.2
	(0.781)	(1.121)	(1.466)	(1.759)	(1.998)	(2.178)

Table A2

The Consequences of Excessive Deficits

	2002	2003	2004	2005	2006	2007	2008
Germany 2002							
MAPC		1.26	0.77	0.59	0.29	0.37	0.13
Primary deficit		0.45	0.46	0.48	0.49	0.51	0.53
Debt (–1)		63.49	65.61	67.8	70.07	72.41	74.83
Hypothetical Debt		65.19	66.84	68.87	70.85	73.29	75.49
France 2002							
MAPC		3.04	2.87	2.59	2.18	1.82	1.97
Primary deficit		–0.05	–0.05	–0.06	–0.06	–0.06	–0.06
Debt (–1)		59.62	61.06	62.54	64.05	65.6	67.19
Hypothetical Debt		62.61	63.88	65.08	66.18	67.36	69.1
Portugal 2001							
MAPC	3.19	3.22	3.19	3.03	2.61	2.87	
Primary deficit	1.11	1.11	1.12	1.12	1.13	1.13	
Debt (–1)	53.73	53.95	54.18	54.41	54.63	54.86	
Hypothetical Debt	58.03	58.28	58.49	58.56	58.37	58.86	

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SUSTAINABILITY OF PUBLIC DEBT IN INDIA: AN ASSESSMENT IN THE CONTEXT OF FISCAL RULES

R.K. Pattnaik, Anupam Prakash and Biswa Swarup Misra[*]

> *"Like obesity, government deficits are the result of too much self-indulgent living as the government spends more than it collects in taxes. And, also like obesity, the more severe the problem, the harder it is to correct".*
>
> *Martin Feldstein*

Introduction

In the context of fiscal consolidation efforts pursued by both industrially advanced and developing economies, sustainability of fiscal policy has attracted considerable attention at the academic as well as the policy level in recent years. Furthermore, recognizing that fiscal sustainability is a critical pre-condition for financial and monetary stability and external vulnerabilities, many countries have designed fiscal rules as an institutional mechanism to enforce prudent fiscal policy. Reflecting this, a large and growing body of research has emerged. In this context, it is pertinent to note that achieving fiscal sustainability is also high on the agenda of Indian authorities since July 1991. Accordingly, the authorities have pursued fiscal correction and consolidation process during the Nineties. Recently, the fiscal adjustment programme has been further strengthened both at the national and sub-national level through enactment of fiscal legislation.

Against the above backdrop, the present paper assesses the sustainability of India's public debt within the fiscal rule framework. The remainder of the paper is organized as follows: Section 1 reviews the literature on sustainability in general as well as in the Indian context. Section 2 deals with the fiscal rules adopted in India against the backdrop of international experience. Section 3 presents an overview of the fiscal situation in India during the reform period. Analytical framework to assess sustainability is presented in Section 4. Section 5 sets out the assessment of fiscal sustainability. The policy recommendations are presented in Section 6. Section 7 concludes.

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1. Review of literature: Fiscal sustainability

1.1 Standard paradigm

Sustainability is a term that has been used with increasing frequency in the academic literature and recent multilateral policy discussions, but with different connotations under different circumstances (Balassone and Franco, 2000, Chalk and Hemming, 2000). Traditionally, fiscal sustainability has been assessed in terms of indicator analysis. Reflecting this, a large and growing research efforts have not only been directed towards developing *indicators or summary measures of sustainability* but also assessing the fiscal policy with the help of these indicators. This framework was first developed by Domar (1944) which states that a necessary condition for sustainability is that growth rate of income must exceed the interest rate. Subsequently, Buiter (1985) suggests a sustainable policy as one, which is capable of keeping the ratio of public sector net worth to output at its current level. Blanchard (1990) provided two conditions for sustainability:

a) the ratio of debt to GNP should eventually converge back to its initial level, and

b) the present discounted value of the ratio of primary deficits to GNP should be equal to the negative of the current level of debt to GNP.

In the context of a theoretical discussion the rules for sustainability and stability are assumed to convey the same connotation if one examines sustainable level of public debt in terms of stable long run equilibrium path. Government solvency is a necessary but not sufficient condition for fiscal sustainability. In the absence of accompanying assumption of private sector savings and investment behaviour, the application of sustainability condition assumes that the projected paths of primary fiscal balance, interest rate and economic growth are independent. Furthermore, the achievement of fiscal sustainability need not imply optimality of fiscal balances. Some of the important research efforts relating to sustainability of deficit and debt are: Bispham (1987), Blanchard (1990), Chouraqui *et al*. (1990), Horne (1991), Hamilton and Flavin (1986), Haque and Montiel (1992), Masson (1985), Spaventa (1987) and Zee (1988).

Of late, the theoretical literature has focused on whether current fiscal policy can be continued into future without jeopardising stability and growth, which does not necessarily imply that debt has to be non-increasing. In this context, the literature emphasises that to avoid ambiguity and confusion the rules for *sustainability, stability, solvency and optimality* should be clearly defined. Thus, the Government's *inter-temporal or the present value budget constraint* is the central theme of the research on sustainability. According to the inter-temporal budget constraint, the present value of revenues must be equal to the present value of spending including interest on the public debt *plus* repayment of the debt itself.

In order to work out the sustainable level of deficit, a sustainability rule was defined and developed by Blanchard (1990) and by Chouraqui *et al.* (1990). According to Blanchard-Chouraqui sustainability condition, the sustainable rate of revenues (non-interest) is equal to the annuity value of non-interest expenditure plus

the interest rate net of growth times the initial level of debt. Subsequently, this approach has been termed as Tax Gap indicator approach (Chalk and Hemming, 2000).

The sustainability indicators may be backward looking or forward looking depending on the translation and operationalisation of inter-temporal budget constraint in the *ex ante* and *ex post* sense (Blanchard, 1990). The *ex post* analysis explains the indicators of sustainability with a backward looking approach while the analysis on the *ex ante* basis pertains to forward looking indicators. The backward looking indicators help to evaluate a fiscal consolidation programme, while the forward looking indicators serve to assess the sustainability rule for medium term and long term, relative to a chosen base year. There has been analysis also on *strong and weak condition of sustainability* (Quintos, 1995 and Fernandez *et al.*, 2000) The strong condition corresponds to stationarity of the debt process while weak condition requires that the growth rate of debt to be lower than the growth rate of the economy.

In the above context, it is important to recognize that the Banca d'Italia aimed at providing an over view of the theoretical and empirical problems involved in the assessment of fiscal sustainability. It was suggested that policy makers should rely on more than one indicator. Indicators should be capable of handling different challenges. The papers included in the volume addressed conceptual and definitional issues, techniques for assessment of fiscal sustainability, long-term budgetary projections, generational accounting and policy issues and links with the Stability and Growth Pact.

1.2 Major empirical works in India

In the Indian context, the initial period of planned development strategy, when the level of debt and deficit were low, the debate mostly focused on inflationary impact of the deficit financing. For the next three decades a consensus emerged on the virtuous cycle of deficit financing except for a few dissidents such as Rao (1952), Shenoy (1955), and Dasgupta (1955).

The analysis of fiscal sustainability assumed critical importance during the late Eighties, with sharp fiscal deterioration both at national as well as sub-national levels. Accordingly, a large and erudite body of literature has emerged on the subject. The existing literature broadly discussed four aspects, *viz.*, a) concept, definition and measurement of deficit and debt, b) assessment of sustainability, c) macroeconomic impact and d) policy prescriptions. It is pertinent to note that apart from the contributions from the individual authors, there has been substantial research work also contributed by the Reserve Bank of India on the subject.

1.2.1 Contributions of individual authors

Concept, definition and measurement of deficit and debt

The official definition of debt adopted in India is set out in Annex I. However, the researchers and analysts differ with this definition on the ground that the official definition is not meaningful in economic sense. Some of the contributions in this regard were Seshan (1987), Rangarajan, Basu, Jadhav (1989), Rajaraman and Mukhopadhyay (2000), Rangarajan and Srivastava (2003). Seshan (1987) suggested a concept of net debt which exclude certain items like, non-interest and non-negotiable securities issued to IMF and reserve funds which are only intergovernmental debts from the gross debt as presented in the budget documents. Rangarajan, Basu and Jadhav (1989) suggested netting out of all deposits, in addition to the adjustments suggested by Seshan (1987) to derive the net debt of the Government. According to the authors, the net debt thus derived conceptually corresponds to the net primary deficit and is more meaningful in the context of fiscal sustainability. Rajaraman and Mukhopadhyay (2000) defined public debt as the under deemed face value of the accumulated stock of government non-monetary financial liabilities. Thus, they emphasized on the public debt not owned by the Reserve Bank of India.

The concept and measurement of deficit in Indian context has evolved over a period of time. The use of a single measure of budget deficit to assess the impact of fiscal policy has been in vogue till the late Eighties. Rangarajan *et al.* (2003) commented that the official figures of fiscal deficit show discrepancies, as the non-cash transactions are not included. Rangarajan, Basu and Jadhav (1989) for the first time conceptualized multiple deficit indicators as set out in Annex III. Pattnaik (1996 and 2000) extending Rangarajan *et al.* (1989) developed a time series data since 1950-51.

Assessment of sustainability

Seshan (1987) was (probably) the first one to draw a pointed attention to the possibility of domestic debt in India reaching an unacceptably high level in the none too distant future. Subsequently, the Report of the Comptroller and Auditor General (CAG) of India (1988) also warned against "the alarming growth in domestic debt". The initial studies, based on simple trend analysis, were criticised by Rangarajan, Basu and Jadhav (1989), on the grounds that they lacked "analytical constructs" behind the findings. This study which is truly a *"locus classics*" on debt sustainability analysis in Indian context called for a comprehensive and much deeper analysis on measurement of budget deficit and debt. In their pioneering work the authors examined the dynamic nexus between the two. Using data for the Seventies and the Eighties, the authors simulated two alternative scenarios for financing the deficit: a debt-financing scenario and a monetary-financing scenario. Under the debt-financing scenario, they concluded that "the higher interest burden may invariably lead to a squeeze on budgetary capital outlays, thereby stifling economic growth". Under the monetary-financing scenario they concluded "resorting to

monetary financing is likely to set in motion a vicious circle of large deficit, higher monetary financing, greater inflation leading again to a larger deficit".

Chelliah (1991) in his paper demonstrates that maintaining the primary deficit even at a level of 3.5 per cent is unsustainable because this would raise the debt-to-GDP ratio to 77.4 per cent in 2000/01 from 60.2 per cent in 1989-90 and deficit in GDP ratio to nearly 10 per cent. Interest payments would then absorb 6.4 per cent of GDP, casting an unbearable burden on the budget. Therefore, he has suggested that the first stage of fiscal adjustment should consist of measures to enable the Government to reduce primary deficit to 2.5 per cent of GDP by the year 2000/01. If this is done, the growth of public debt would slow down and the total deficit would be contained around 8 per cent of GDP in 2000/01. In order to reduce the primary deficit to 2.5 percentage of GDP, steps must be taken to reduce the deficit on budget's revenue account to take much of the financing of the public enterprises out of the budget, to stabilize the rate of capital formation on Government account, to raise the return on Government lending and investment and to increase the income elasticity through tax reforms. Once the first stage of adjustment is completed loan finance should be largely limited to capital expenditure.

Buiter and Patel (1992) using annual data for 18 years (1970-71 to 1987-88), with four alternative interest rates, demonstrated that discounted public debt in India is non-stationary. They pointed out that without a sharp reversal of the primary deficit to a primary surplus, avoiding repudiation or default would require the mobilization of large seignorage or inflation tax.

Following the tax gap approach developed by Blanchard (1990), Chouraqui *et al.* (1990), an attempt was made in Pattnaik (1996) to assess the sustainability of Central Government finances. The empirical findings in this paper reveals that under a medium-term perspective, the fiscal sustainability requires that the debt/GDP ratio be brought down to 50 per cent by the end of fiscal 2000 from the 1996-97 level of 54 per cent. This is possible by gradual scaling down of the GFD to about 3.90 per cent of GDP by 2002. Assuming a real growth rate of 7 per cent, inflation rate of 5 per cent and real effective interest rate of 7 per cent, a primary balance relative to GDP is required as against a deficit of 1.90 per cent in 1995-96.

Auerbach (1994) concluded that the fiscal problem could linger on for many years before exploding. Similarly, Khundrakpam (1998) and Moorthy *et al. (2000)* found that the Indian public debt is sustainable in terms of Domar's stability condition. This has, however, been questioned when the GDP growth rate is compared with call money rate and commercial bank lending rate, and thus the conclusion which has emerged is that debt is not sustainable (Jha, 1999). Lahiri and Kanan (2000), Acharya (2001, 2002) and Ahluwalia (2002) also commented upon the unsustainable level of deficit and debt. A recent study by Pinto and Zahir (2004) observed that without fiscal adjustment debt/GDP ratio would be 110 per cent in 2006-07 and with adjustment this ratio would be 92.5. Correspondingly, the deficit rises to 11.4 per cent and fall steadily to 7 per cent with reforms. While assessing the debt sustainability for the State Governments, Prasad, Goyal and Prakash (2003)

discussed that the outstanding debt of the State Governments would touch 34 per cent in 2007-08 from the present level of 26 per cent in 2002-03. Public policy scenario would, however, reduce the ratio by 1-2 percentage points.

Macroeconomic impact

In recent years, there has been an intensive debate on the macroeconomic impact of fiscal deficit as the persistence of high level of deficit and debt during the last decade did not have any adverse macroeconomic impact, as it was the case in 1990-91. One school of thought (Pattnaik, 2001, Rakshit, 2000, Chandrashekhar 2000, Shetty, 2001) advocates that it would be appropriate in the Indian context to increase government expenditure on investment even through monetisation of fiscal deficit. Another school of thought has questioned the efficacy of expansionary fiscal policy at the current juncture (Lahiri and Kannan, 2000, Acharya, 2001, and Srinivasan 2001). In this context, both the size and quality of fiscal adjustment assume critical importance (Reddy, 2001). The Report of the Economic Advisory Council (EAC, 2001) stresses that high fiscal deficits, by raising real interest rates, crowd out private investment, especially in the context of the government borrowing being predominantly used to finance revenue deficits. The EAC observed that the existing level of public debt is "too high… and clearly unsustainable". Ahluwalia (2002) observed that India's fiscal and debt indicators are comparable to or worse than that of Argentina, Brazil and Turkey, countries which have actually experienced a serious recent macroeconomic crisis. The author, nevertheless, concludes that India is not vulnerable to a repeat of its 1991 fiscal and balance-of-payments (BoP) crisis because of the build up of foreign exchange reserves, capital controls, flexible exchange rate system and widespread public ownership of banks. Pinto and Zahir (2004) argue for further fiscal adjustment to eliminate the threat to sustained growth stemming from the crowding out of public and private investment, and constraints imposed on the domestic financial system by the financing needs of the government budget. While commenting upon India's recent deficit on capital formation and growth, Felsdstein (2004) observed that if India did not have its current Central Government deficit of some 6 per cent of GDP the gross rate of capital formation could rise from 24 per cent of GDP to 30 per cent.

Policy prescriptions

Most of the authors have suggested for fiscal adjustment in terms of expenditure containment and revenue augmentation. It is also recognized that such consolidation can not be done overnight. It is emphasised that attention needs to be paid to quality of fiscal consolidation as also to its speed. It is critical to avoid the unnecessary cost in terms of growth and welfare of such an adjustment path (Lahiri and Kannan, 2000). For stabilisation of debt/GDP ratio at current or reduced levels, focus on primary balance becomes necessary (Rangarajan and Srivastava, 2003). A programme of robust fiscal reform is needed to contain the unsustainable public debt dynamics and help India achieve its long run growth and poverty reduction targets

(Pinto and Zahir, 2004). At a micro level, policy prescriptions have been to cut non-interest government outlays to increase tax or other revenues and to reduce interest on government debt (Feldstein, 2003).

1.2.2 Research contributions of Reserve Bank of India

Recognising that unsustainable public debt is likely to have a major adverse impact on monetary policy objectives, financial stability and public debt management, Reserve Bank of India in its successive Annual Reports since 1991 has been advocating fiscal prudence. The research conducted in the Department of Economic Analysis and Policy (DEAP), and published in their Report on Currency and Finance (RCF), particularly, for the years 1998-99, 2000-01 and 2001-02 highlighted the issues relating to sustainability of public debt and deficit. The thrust of this analysis was to set out a methodology, to assess sustainability and to recommend policy for achieving fiscal prudence. The RCF 1998-99 assessed sustainability of deficit and debt with the help of an indicator analysis. This Report observed that persistence of significant primary and revenue deficits of the Government sectors over the years is a major concern and would lead to an unsustainable accumulation of Government debt. According to the Report, growth in nominal GDP is lower than the growth in the domestic debt of the Government sector, which may exert pressure on the interest rate and crowd out private investment. In view of this, the Report concludes that the reduction in combined Government debt to a sustainable level in the medium-term horizon, therefore gains immense relevance. The RCF 2000-01 assessed sustainability of Government debt with the help of unit root tests. These tests show that discounted series of nominal stock of Government debt remain non-stationary, implying that Government debt continues to be unsustainable. Sustainability of public debt was assessed in terms of *Domar stability condition* and *present-value budget-constraint approach* (RCF 2001-02). The Report observed that during the Nineties, except for few occasions, the *Domar stability condition* was fulfilled. The *present value budget constraint* approach was tested by the Augmented Dicky-Fuller and Phillips-Perron Unit root tests. Both the unit root tests showed that the discounted series of nominal public debt is nonstationary. The Report therefore, concluded that continuation of current fiscal stance could make public debt of both the Central and State Governments unsustainable unless, corrective measures are undertaken to rein in the fiscal deterioration.

In the above context, it may be mentioned that the RBI Annual Reports 2000-01 and 2001-02 have set out a policy prescription for further fiscal consolidation. According to these Reports, the path of durable fiscal consolidation is through fiscal empowerment, *i.e.* by expanding the scope and size strategy based on revenue maximization would also provide the necessary flexibility to shift the pattern of expenditures and redirect them productively. Revenue maximization requires that the tax system be reformed through widening the tax base, simplification of tax rules, review of exemptions/incentives and strict tax compliance.

2. Fiscal rules

2.1 Background

With growing fiscal stress across countries, irrespective of the level of economic development, it is widely recognized that the discretionary fiscal policy would not always be effective in contributing to fiscal sustainability and stability. In this context, many countries introduced medium-term fiscal consolidation programs, which were mostly followed by fiscal rules (with or without legislations). These rules have been designed with the goal to ensure that national policies keep a sound fiscal stance while allowing sufficient margins for budgetary flexibility in bad times (Balassone and Franco, 2001). A fiscal policy rule is a permanent constraint on fiscal policy, expressed in terms of summary indicators of fiscal performance, such as government budget deficit, borrowing, debt or a major component thereof (Kopits and Symansky, 1998).

It is important to recognize in the above context the seminal contribution of Banca d'Italia in conducting the third workshop on Public Finance on Fiscal Rules in February 2001. The papers presented in this seminar analysed the pros and cons of fiscal rule, European fiscal rule, fiscal rule and budgetary procedure and fiscal rule in a decentralized framework. What follows is broadly a summary of the papers presented in the above seminar.

The route to adoption of fiscal rules across countries may be classified into three distinct phases (Kopits, 2001). In the first phase, sub national governments in some federal systems autonomously adopted the golden rule. The golden rule of fiscal policy states that over the economic cycle, the Government will borrow only to invest and not to fund current spending. In the second phase, after World War II, several industrial countries (Germany, Italy, Japan, Netherlands) introduced balanced-budget rules that underpinned their stabilisation programmes, following monetary reform. The current phase, starting with New Zealand's Fiscal Responsibility Act of 1994, has seen an increasing number of industrial and emerging market economies introducing fiscal rules.

There are two dominant but distinctly different views, *viz., institutional irrelevance view* and *public choice view* on the effectiveness of fiscal rules in improving public finances. According to the former, rule-based systems may be bypassed through creative accounting, *i.e*., fiscal frameworks may not succeed as the budget rules can be circumvented by modifying accounting practices and changing the nominal timing or other classification of taxes and expenditure (Resichauer, 1990, Auerbach, 1994, IMF, 2001 and Premchand, 2003). The latter, on the other hand contends that fiscal institution place important constraint on the behaviour of political actors, and thereby, prove to be successful in improving the fiscal outcome (Gramlich, 1990, von Hagen and Harden, 1995 and Poterba, 1997).

Though rules have been an important factor behind the fiscal consolidation in the latter part of the Nineties in both industrialized and emerging economies, it is difficult to establish the specific contribution of rules to good fiscal performance

(Hemming and Kell, 2001). In an inquiry of the effectiveness of fiscal rules, Poterba (1996, 1997) reviews the nature of balanced budget requirements at the sub-national level in the U.S., and his findings suggest that changes in budget rules and, more broadly, fiscal institutions can affect fiscal policy outcomes. In a study on the effectiveness of tax and expenditure limits, Stansel (1994) shows that the relative growth of spending in states with tax and expenditure limits declined significantly within five years of the implementation of the limits. Given this correlation, however, the introduction of a tax and expenditure limit could potentially be used as a signal of commitment to reduce tax and expenditure growth on part of the policymakers. Eichengreen and Bayoumi (1994) argue that a tax and expenditure limit reduces the likelihood of future surges of borrowing and hence the likelihood of default. Such limits may also have a positive impact by way of reduction in the interest cost of borrowings. Poterba and Rueben (1999) and Goldstein and Woglom (1992) find that states with limits on deficits/borrowings face a lower cost of borrowing. An interesting analysis by Corsetti and Roubini (1996) argues that fiscal rules are more suited to subnational governments than to national governments due to the reason that the supply- and demand-side macroeconomic effects of any action on the part of the subnational government to balance the budget during a recession would be much lower than similar actions at the Centre's level, and insofar as individual States' business cycles are not perfectly synchronized, the actions of any given state trying to balance its budget do not have a national impact. Corsetti and Roubini's arguments are complemented by Bayoumi and Eichengreen's (1995) findings, which emphasize the importance of central governments in providing fiscal stabilization. Similarly, Alesina and Bayoumi (1996) suggest that since State's role in stabilization is not very important, the stringency of fiscal rules would not have much impact on output variability, and hence, balanced budget rules may be more effective for subnational governments.

Despite the debates taking place in several countries about the rationale and effectiveness of fiscal rules, there are universally recognised fiscal policy rules, and legislation incorporating one or several specific targets or ceilings or conditionalities or even prohibitions. There are broadly three types of rules, balanced-budget or deficit rules; borrowing rules and debt rules. Present fiscal policy rules are fairly diverse in both design and implementation. Whereas Anglo-Saxon countries place primary emphasis on transparency (Australia, Canada, New Zealand, United Kingdom), in continental Europe (EMU Stability and Growth Pact, Switzerland's proposal) and emerging market economies (Argentina, Brazil, Colombia, Peru, India's proposal) rely far more on a set of numerical reference values (targets, limits) on performance indicators. Empirical evidence suggests that the type of rules that may be helpful during a phase of deficit reduction may not be sufficient later on. In this regard, it is worth noting that both Canada and Switzerland modified their rules after the initial balanced budget objective was achieved, with Canada shifting the emphasis from deficit to debt reduction and Switzerland adopting an expenditure rule.

In federal systems with strong subnational autonomy, the rules are assumed only by the central government (Argentina), in other federal systems, where

subnational governments also impose rules, this could be done either autonomously or in a coordinated fashion (Kopits, 2001). In federations with concern about potential bailouts and external spillovers of fiscal misbehaviour across jurisdictions, the rules are imposed on each government level in a coordinated manner (Brazil, EMU). Under this top down approach, all subnational governments are subject to uniform rules under the surveillance of a central authority, and each subnational government seeks to establish collective credibility for overall macroeconomic policy. Under the autonomous approach (a bottoms-up approach), the initiative for adopting fiscal rules arises from individual subnational governments. For instance, in Canada, Switzerland and the US, the autonomous approach is adopted wherein the fiscal rules are adopted at the subnational level with varying degrees of stringency. Those countries where subnational governments have direct access to financial markets adopt this approach, and bailouts to insolvent subnational governments by the national government do not exist.

2.2 Indian setting

2.2.1 Process

Fiscal rule at national level

A peep into the past reveals that in India there is no certain provocation or realisation for sound fiscal management (Reddy, 2000). The Welby Commission in pre-independent India explored the possibility of reduction in expenditure. Furthermore, in the pre-independent India, while drafting the Constitution of India, the Constituent Assembly debated on the issue of a *limit* on Government borrowing. The issues raised in this context were: (a) no borrowing without Parliament approval; (b) purpose of borrowing; (c) underlying safeguards and (d) consideration for Annual Debt Act (Pandey, 2000).

Constitutional arrangement

The Indian Constitution under Article 292 and 293 prescribes limit on Government borrowing through Parliamentary Law. The mandate under Article 292 is as follows:

"Borrowing by security of the Consolidated Fund of India within such limits, if any, as may from time to time be fixed by Parliament by law and to the giving of guarantees within such limits, if any, as may be so fixed".

According to Article 293, the State Governments as long as they are indebted to Central Government cannot borrow without the approval of Central Government. Furthermore, this article does not permit State Governments to borrow overseas. In addition, there are statutory bodies like Estimate Committee and Public Accounts Committee and also the Comptroller and Auditor General of India (CAG), who evaluate the fiscal performance of the Government. In the past, however, repeated exhortations to adverse impact of widespread fiscal deterioration by the Estimates

Committee, Public Accounts Committee, Comptroller and Auditor General of India failed to elicit desired response. It is of interest to note that the Law contemplated under Article 292 has not been enacted during the last five decades.

Role of the Reserve Bank in recommending fiscal rules

Against the above backdrop, it is important to note that Reserve Bank of India in its Annual Report of 1991-92 made the following observations:

"To ensure that the monetised deficit does not have deleterious effects on the economy, there is a need for a law restricting the extent to which the Centre can run a deficit and moreover there should be a legal ban on the Government borrowing from all sources beyond a certain ceiling with a sub-ceiling on borrowing from the Reserve Bank of India".

The RBI thus was in the forefront of sensitizing the policy makers to the consequences of fiscal dominance (Reddy, 2000). Consequently, on September 9, 1994 Government of India decided to phase out automatic monetisation of the budget deficit through the issue of *ad hoc* Treasury bills over a period of three years. Pursuant to this, the issue of *ad hoc* Treasury bill was discontinued with effect from April 1, 1997 and a scheme of Ways and Means Advances was put in its place on the same day on the basis of the supplemental agreement between Government of India and RBI reached on March 26, 1997. The Ways and Means Advances is an accommodation to provide for temporary mismatches between inflows and outflows in the Government accounts and not a source of financing and as such the use of Ways and Means Advances is to be periodically vacated to enable use of such financing for future mismatches. In the above context, it is important to note that the Reserve Bank highlighted the importance of a statutory ceiling on debt through a technical paper published in the RBI Bulletin of December 1997 (Sabhapathy, Pattnaik and Anand, 1997).

Budget announcement

Recognising the worsening fiscal situation, the Union Finance Minister in his Budget Speech for 2000-01 observed:

"A long history of high fiscal deficits has left us with a legacy of a huge public debt and an ever-growing bill of interest payments… If we do not raise the resources and instead take recourse to even higher borrowing next year, then we will jeopardise our prospects for growth, reignite the flames of inflation. Sow the seeds of another balance of payments crisis and place an unfair burden on the next generation… For medium term management of the fiscal deficit, we also need the support of a strong institutional mechanism embodied in a Fiscal Responsibility Act… I have set up a Committee to examine the issue and make suitable recommendations."

Conceptualization

Following the above announcement, Government of India desired that the Reserve Bank as the monetary authority, banker and debt manager should have a Working Group to assist in the preparation of fiscal responsibility bill. The Committee on Fiscal Responsibility Legislation was constituted by Government of India (Chairman E.A.S. Sarma) on January 17, 2000. Following this, Governor Dr. Y.V. Reddy as the then Deputy Governor and as a member of the Sarma Committee, in his landmark speech conceptualized the objectives, features, institutional accounting, fiscal management and procedural issues.

The Sarma Committee submitted the Report to the Union Finance Minister on July 4, 2000. The draft of the fiscal legislation was named as Fiscal Responsibility and Budget Management Bill 2000. The Bill outlined fiscal management principles to reduce revenue deficit, fiscal deficit and debt, elimination of borrowing from the Reserve Bank of India, measures for fiscal transparency, review committee and measures to enforce compliance. The Bill was placed before the Parliament in December 2000 and also was referred to a Statutory Body, *viz.*, Standing Committee on Finance. With the approval of the Parliament, and clearance from the Standing Committee on Finance, finally the President of India gave his assent on the Bill on August 26, 2003. The Fiscal Responsibility and Budget Management Act, 2003 (FRBM Act, 2003) came into force from July 5, 2004.

The structure and content of the FRBM Act go beyond the conventional fiscal legislation, *i.e.,* setting the ceiling on the fiscal indicators. There is a provision for presentation of fiscal policy statements, *viz.*, Medium-term Fiscal Policy Statement, the Fiscal Policy Strategy Statement and the Macro-Economic Framework Statement. The legislation also lays down the fiscal management principles and combine fiscal transparency, budget integrity and accountability, which has further streamlined the budget presentation process of the Union Government. Apart from these, the legislations make provision for enforcement mechanism, either through a statutory body or other appropriate body, to enable the observance of fiscal prudence. The government is also conferred with the power to make rules for carrying out the provisions of the legislation.

2.2.2 Features of FRBM Act 2003

Objective

The FRBM Act, 2003 provides the responsibility of the Central Government to ensure intergenerational equity in fiscal management and long-term macroeconomic stability by achieving sufficient revenue surplus and removing fiscal impediments in the effective conduct of monetary policy and prudential debt management consistent with fiscal sustainability through limits on the Central Government borrowings, debt and deficits, greater transparency in fiscal operations of the Central Government and conducting fiscal policy in a medium-term framework and for matters connected therewith or incidental thereto.

Fiscal policy statement

The Act sets out three fiscal policy statements, *viz.*, Medium-Term Fiscal Policy Statement, Fiscal Policy Strategy Statement and Macroeconomic Framework Statement, which are to be laid before the Parliament. The Medium-Term Fiscal Policy Statement will set forth a three-year rolling target for fiscal indicators. The Fiscal Policy Strategy Statement shall *inter alia* contain policies for the ensuing financial year related to taxation, expenditure, borrowings, investment, strategic priorities, rationale for any major deviation and an evaluation of the current policies. The Macroeconomic Framework Statement shall contain an assessment of the growth prospects of the economy.

Fiscal management principles

According to the Act appropriate measures will be taken by the Government to reduce fiscal deficit and revenue deficit with annual targets. Revenue deficit will be eliminated by March 31, 2008 and thereafter adequate revenue surplus will be built up. Annual targets for guarantees as percentage of gross domestic products shall be framed. Under exceptional circumstance on the grounds of national security or national calamity, revenue deficit and fiscal deficit may exceed the targets.

Borrowing from Reserve Bank of India

The Central Government shall not borrow from the Reserve Bank of India except for ways and means advances. The Reserve Bank may subscribe to the primary issues of the Central Government upto April 1, 2005. However, Reserve Bank may buy and sell the Central Government securities in the secondary markets.

Other features

The other features of the Act contain measures for fiscal transparency and measures to enforce compliance. Every rule made under this Act shall be laid before each house of Parliament. No suit, prosecution or other legal proceedings shall lie against the Central Government or any officer of the Central Government for anything which is in good faith done or intended to be done under this Act or the rules made thereunder. No civil court shall have jurisdiction to question the legality of any action taken by or any decision of the Central Government, under this Act.

In exercise of the powers conferred by the FRBM Act 2003, the Central Government framed the Fiscal Responsibility and Budget Management Rules, 2004, which became effective on July 5, 2004. The Rules have set annual targets for the phased reduction in key deficit indicators over the period ending March 31, 2008. The rules also impose annual ceilings on Government guarantees and additional liabilities. In accordance with the Rules framed under the FRBM Act, the Government presented the Medium-term Fiscal Policy Statement, the Fiscal Policy

Strategy Statement and the Macroeconomic Framework Statement along with the Annual Financial Statement for 2004-05.

Fiscal legislation at subnational level

At the sub-national level, the background for rule-based fiscal policy was prepared with the setting up of State Fiscal Reform facility (2000-01 to 2004-05) by the Centre in pursuance with the Eleventh Finance Commission (EFC) recommendations. Under this arrangement, a majority of States have entered into a medium term fiscal reforms programme (MTFRP) which sets up targets for broad fiscal indicators, *viz.*, deficit, revenue and expenditure, apart from public sector enterprise reform, power sector reforms and budgetary reforms.

In addition to this, State Governments have also opted for fiscal rules of their own through legislation. So far, five State Governments, *viz.*, Karnataka (2002), Punjab (2003), Kerala (2003), Tamil Nadu (2003) and Uttar Pradesh (2004) have enacted fiscal responsibility legislations, while Maharashtra is still in process (Annex III). Thus, the Indian States have adopted a unique blend of *coordination approach* (MTFRP) and *autonomous approach* (Fiscal Responsibility Legislation) in providing statutory backing to their fiscal reform process. A group of State Finance Secretaries with the technical support from the Reserve Bank of India are at present are engaged to draft the *model fiscal legislation scheme* for the consideration of the rest of the state governments for implementation.

3. An overview of fiscal performance

3.1 Backdrop

3.1.1 Central Government

Developments in the Central Government finances since independence may be classified into four distinct phases: Phase I (1951 to 1981), Phase II (1982-91), Phase III (1991-96) and Phase IV (1997 to the present). It may be noted that the former two phases relate to pre-reform period, while the later two phases reflect the developments during the reform process which started in July 1991. The first phase was a period of surplus in revenue account. Fiscal deficit and debt were maintained at reasonable levels, though monetisation of deficit and debt were predominant, but they were manageable. This period was, however, accompanied by high marginal rate of taxation, predominance of public investment neglecting commercial considerations, and financial repression. The second phase may be truly called the decade of fiscal deterioration as the major fiscal variables were in disarray. The fiscal deterioration eventually destabilized the relationship between the budget and the economy, which was reflected in accumulation of large debt, high debt-service ratio and double-digit inflation. Furthermore, the increasing chasm between the income and expenditure of the Government led to widening of the gap between the income and expenditure of the economy as a whole, resulting in bulging of current

account deficit in the balance of payments. It was widely recognized that the fiscal situation was unsustainable. Accordingly, the fiscal adjustment programme in the form of deficit reduction has been undertaken by the Central Government since July 1991. Concerted efforts to restore fiscal balance began in July 1991 in terms of a fiscal adjustment programme constituting the third phase. These *inter alia,* comprised tax and non-tax reforms, expenditure management and institutional reforms. These initiatives resulted in a significant fall in the fiscal deficit and in public debt as a proportion of GDP till 1996-97, but the trends reversed shortly thereafter. Reversal in the phase four was largely on account of downward rigidity in revenue expenditure, fall in tax buoyancy, slowdown in PSU restructuring and continuation of uneconomical user charges particularly at the State level.

Although the present levels of fiscal deficit, revenue deficit and primary deficit relative to GDP exceed those at the beginning of reform period, it should be noted that elimination of automatic monetisation and reduction in preemption of institutional resources by the Government has provided a conducive environment to generate market liquidity and softening of interest rate in the economy. Paradoxically, the Indian economy is on a high growth profile and inflation is generally benign.

3.1.2 State Government

The fiscal position of the State Governments broadly followed the pattern witnessed for the Central Government. There has been a severe fiscal stress in respect of finances of State Governments since the mid-Eighties. The fiscal stress emanates from inadequacy of receipts in meeting the expenditure requirements. The low and declining buoyancies in tax and non-tax receipts, constraints on internal resources mobilisaton due to losses incurred by State Public Sector Undertakings and decelerating resources transfer from Centre have contributed to worsening of State finances. A survey on worsening State finances as set out in RBI (2003) reveals that the following factors were responsible: (1) reluctance to raise additional resources (Kurian, 1999), (2) competitive reduction in taxes, absence of service tax and agricultural income tax (Rao, 2002), (3) sluggishness in Central Transfer reflecting the precariousness of center's own finances (Chakraborty, 1999), (4) inappropriate user charges (Mohan, 2000) and (5) impact of pay revisions (Acharya, 2002). It is important to recognize that there are large disparities across the States in terms of level of income and the tax and expenditure policies pursued by respective governments. Accordingly, the impact of various are likely to vary across the States. Reflecting the fiscal stress, the expenditure for development activities which are directly related to growth suffered (RBI, 2002).

3.2 Developments

Against the above backdrop, the fiscal performance at Centre, State and General Government is set out in the following paragraphs.

3.2.1 Trends in revenue

The annual rate of growth in revenue receipts has decelerated from around 15 per cent in phase III to around 11 per cent in phase IV. The deceleration is more in Central revenues than those for the States. If the States' own revenue receipts are considered, then the deceleration is from around 16 per cent to around 13 per cent during the same period.

Figure 1

Revenue Receipts

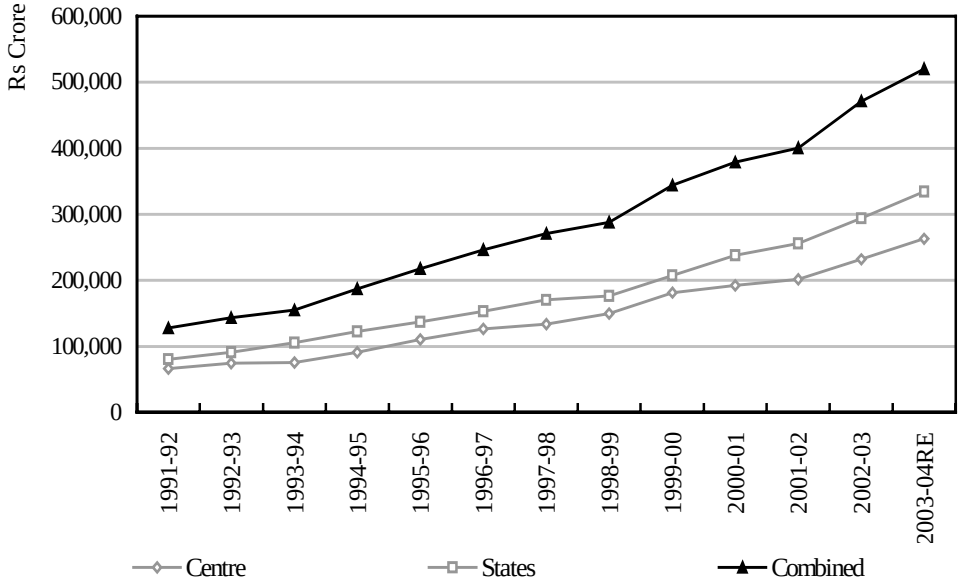


Table 1

Revenue Receipts

		Centre	State	Combined
1991-92 to 1996-97	Growth Rate	15.1	14.9	15.2
	percent of GDP	9.4	11.9	18.6
1997-98 to 2003-04	Growth Rate	11.2	11.9	11.4
	percent of GDP	9.0	11.1	17.7

Figure 2

Revenue and Capital Expenditure

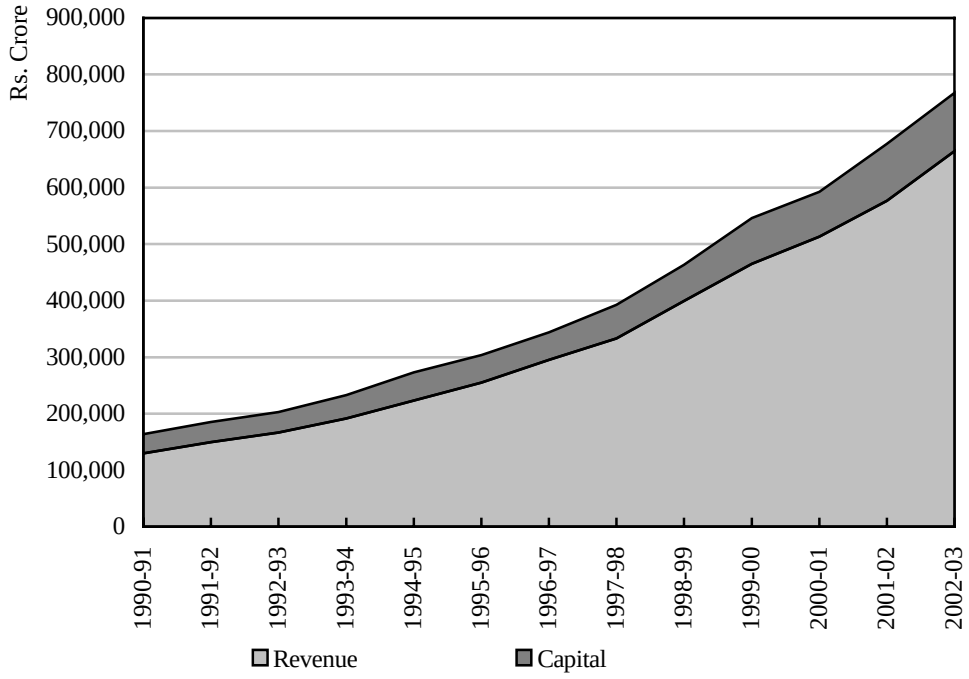


Table 2

Expenditure of the Government Sector*
(percent)

Item	1990-91 to 1996-97		1997-98 to 2001-02	
	Average Growth	Ratio to GDP	Average Growth	Ratio to GDP
Total Expenditure	13.1	27.0	14.6	27.7
Development Expenditure	11.0	15.3	13.4	14.3
Non-developmental Expenditure	16.1	11.7	16.0	13.4

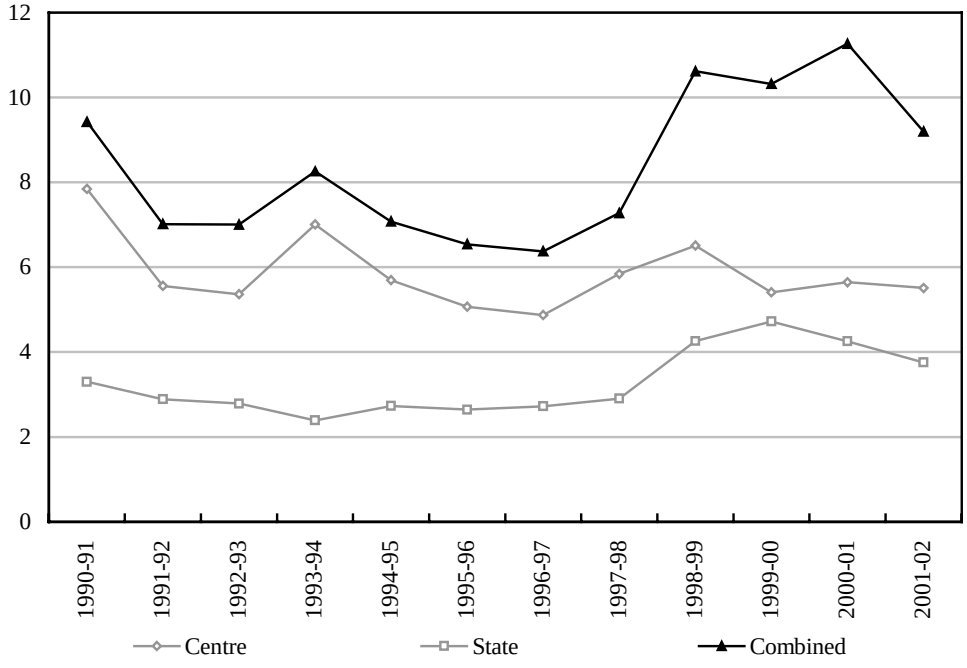
* Government sector refers to finances of Central and State Governments.
Source : Union and State Governments' Budgets.

Since the onset of tax reforms, the tax/GDP ratio of the Central Government has suffered a persistent decline – from an average of 9.7 per cent in the first half of the Nineties and further to 9.0 per cent in the second half of the decade. In the Indian context, the expected increase in tax buoyancy *à la* "Laffer curve effect" did not occur (RBI, 2002). Though the direct tax collection to GDP ratio rose to 2.3 per cent in the first half of the Nineties and further to 2.9 per cent in the latter half of the decade, the ratio of indirect tax collection to GDP declined from 7.3 per cent and 6.1 in the first and second half of the Nineties, respectively.

Under the existing federal fiscal structure, the States' rights to collect taxes are largely confined to indirect taxes, predominantly commodity taxes like sales tax and other indirect levies, such as State excise duties, service tax on entertainment, on betting and gambling and on passengers and goods. There has been a fall in buoyancies in States sales tax during the reform period mainly on account of competitive tax reductions by States to attract trade and industry (Government of India, 2000). The decline in buoyancies also follows from higher growth in services, which are not adequately taxed but raises the Net State Domestic Product (NSDP) (RBI, 2003). Thus, on average, tax/GDP ratio for States during the reform period was higher than that of the Eighties.

Figure 3

Gross Fiscal Deficit
(percent of GDP)



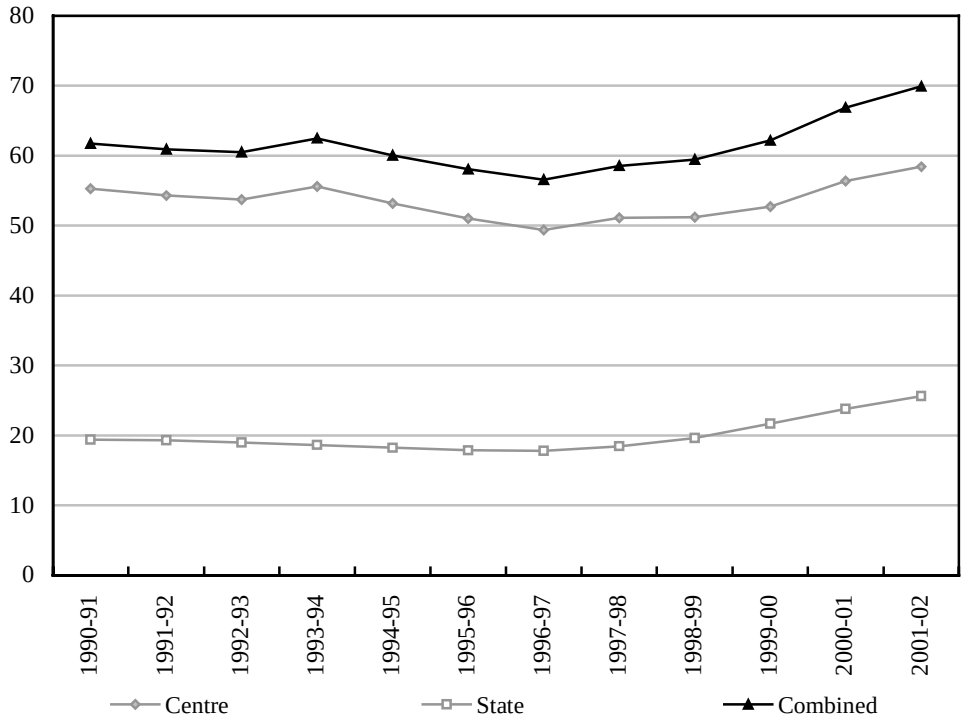
3.2.2 Trends in expenditure

The combined expenditure of Centre and State Governments as a ratio to GDP after declining from 28.8 per cent in 1990-91 to 25.1 per cent in 1996-97, began to follow an upward movement after 1996-97 and reached 29.5 per cent in 2001-02. This was due to the fact that at, both, the national and sub-national levels of Government, the revenue expenditure increased by about 3.6 percentage points between 1996-97 and 2001-02. The efforts to augment investment expenditure by cutting consumption expenditure did not materialize during the post reform period.

The major contributing factor imparting a downward rigidity to the revenue expenditure relates to items of committed expenditure, mostly those on interest payments and expenditure on wages and salaries. Though the cost of borrowings declined consistently due to fall in market interest rates, interest payments continued to rise unabated reflecting the impact of sizeable amount of past debt contracted at higher interest rates. With the implementation of the Fifth Pay Commission award towards the late Nineties, the wage bill and the pension bill could not be kept constricted.

Figure 4

Outstanding Debt
(percent of GDP)



3.2.3 Trends in deficit and debt

Reflecting these developments, the gross fiscal deficit of the government which had declined to 6.4 per cent of GDP by 1995-96, began to increase thereafter to about 10 per cent of GDP in recent years. Consequently, there was an accumulation of a huge stock of debt which is estimated to be 69.9 per cent as at end March 2002. The growing size of liabilities eventually generated a considerable debt-service burden and rising interest payments.

The composition of Central Government debt reveals that the debt is mostly internal in nature. The share of internal liabilities in the total has increased from 90 per cent at end-March 1991 to around 95 per cent at end-March 2002.

State Governments are not allowed to borrow from external sources. The public debt of States comprises internal debt (including market borrowings, loans from banks and financial institutions (FIs), special securities issued to the National Small Savings Fund-NSSF); loans from Centre; and small savings and Provident Funds, etc. Loans from the Centre form the most important constituent of States' debt. In recent years, market borrowings have emerged as the cheapest source of raising funds for the State Governments with the average rate of interest declining continuously from 14.0 per cent in 1995-96 to 6.2 per cent by March 2003. Both for the Central and State Governments, the share of market borrowings has increased during the past decade. Market borrowings which formed around 22 per cent of the total outstanding liabilities of the Centre at end-March 1991, increased its share to about 40 per cent as at end-March 2003.

3.2.4 External debt

The debt position presented in the Budget documents as explained above includes external debt at the historical exchange rate. In terms of current exchange rate, the actual level is higher. For example, at end-March 2003, the external debt to GDP ratio at historical exchange rate is 2.4 per cent but at current exchange rate it worked out to around 8 per cent. Subsequently, with prepayment the ratio at current exchange rate has come down to around 7 per cent of GDP. India's external debt position posted spectacular improvement with the debt/GDP ratio declining from 28.7 per cent at end-March 1991 to 20.1 per cent at end-March 2003. Responding to the reform in the external sector based on the recommendations of the High Level Committee of Balance of Payments, 1992-93 (Chairman: C. Rangarajan), the external sector has gained considerable strength, resilience and stability. This is evident from an unprecedented accretion to reserves (US$ 109 billion at present), modest current account deficit (a surplus in 2001-02 and 2002-03), larger non-debt-creating capital inflows, orderly exchange rate movements and containment of external debt within sustainable levels. India's share of multilateral and bilateral debt during 1990-2003 ranged between 41-51 per cent, most of which were incurred by the Government of India mainly from a few multilateral creditor sources, *i.e.* IBRD, IDA, ADB; and bilateral official agencies from Japan and Germany – or the "big five". Apart from multilateral and bilateral debt, external

commercial borrowings and non-resident deposits are the other two major components contributing to around 21 per cent and 22 per cent in India's total external debt.

It is important to recognize six basic facts which emerge from the changing practice of India's external debt. First, level of debt is relatively low. Second, the debt portfolio is characterized by high share of concessional and low share of short term debt. Third, there has been a sustained improvement in key indicators reflecting solvency and liquidity. Fourth, when compared with other emerging market economies, India's external indebtedness position is relatively less vulnerable and has improved overtime. Fifth, the external debt position in net terms (debt minus outstanding reserves) is nearly zero. Sixth, India prepaid the high cost debt from the foreign exchange reserve.

3.2.5 Contingent liabilities

With restrictions on borrowings by the States, the State Governments have taken recourse to off-budget borrowings, which are in the nature of contingent liabilities, which include guarantees, indemnities, etc. Although contingent liabilities do not form a part of the debt burden of the States, in the event of default by the borrowing agency, the States will be required to meet the debt service obligations. The outstanding guarantees of State Governments have shown a rising trend during the Nineties. As per the available data, the outstanding guarantees extended by 17 major States rose from Rs. 40,159 crore (6.1 per cent of GDP) in 1992 to Rs. 1,68,712 crore (8.1 per cent of GDP) in 2001 and declined marginally to Rs. 1,66,116 crore (7.2 per cent) in 2002. The conventional accounting system of government finances followed in the preparation of the budgets which does not consider guarantees/contingent liabilities as debt obligations of the State Government. Since government's off-budget liabilities could pose potential threats to fiscal and financial stability of the system, adoption of appropriate accounting practices to gauge the government's true net worth is crucial.

The fiscal reforms programme initiated in 1991 was able to bring down the level of fiscal deficit upto 1996-97 through rationalization of tax measures and expenditure compression measures. Although there have been some slippages in fiscal consolidation since 1997, there has been a renewal of the commitment to improve the quality of fiscal adjustment through monitorable reform programmes, debt consolidation and measures designed to bring back buoyancy to the tax/GDP ratio. The implementation of fiscal rule at both the levels of government has further strengthened the process of fiscal consolidation.

4. Analytical framework

Following the standard paradigm as alluded to earlier, four distinct approaches to assess the sustainability of fiscal policy have been framed, *viz.*, Domar

Stability Condition, Sustainability Indicators, Present Value Budget Constraint; and the Model Based Approach. What follows is a design of the broad contours of each approach in the Indian context.

4.1 Domar stability condition

The Domar stability condition has been defined as:

$$y - r > 0 \quad (1)$$

$$r = (IP)_t / (OD)_{t-1} \quad (2)$$

where:
y = Growth of GDP at Current Market Prices
r = Average Interest Rate
IP = Interest Payment
OD = Outstanding Debt
t = Time Period

Equation (1) and (2) imply that the debt/GDP ratio (d/y) is stable if the nominal GDP growth (g) exceeds the nominal interest rate (r) on government debt. According to the Domar stability condition, larger the gap between the interest rate and growth rate the higher will be the d/y. Thus, to stabilise debt/GDP ratio (d/y), rate of interest should be lower than the output growth ($r < g$).

In this study the Domar stability condition has been tested in respect to market related borrowings rates and administered interest rates both for the Center and States.

4.2 Sustainability indicators

According to the contemporary literature as discussed in the preceding section, fiscal sustainability rule requires real growth rate to exceed real interest rate and primary balance to be non-negative for the debt/GDP ratio to be stable. The necessary condition is that real interest rate (r) is lower than real GDP growth (y) and the sufficient condition is that adequate primary surplus is maintained to finance debt services. Considering this rule, a host of alternative conditions to test fiscal sustainability are set out below:

$$\Delta d = \Delta y \quad (3)$$

$$PD/Y > 0 \quad (4)$$

$$r^* - y^* > 0 \quad (5)$$

$$OD/Y\,(r - y) - PD < 0 \quad (6)$$

$$IP/Y,\ IP/RR,\ IP/RE \downarrow\downarrow\downarrow \quad (7)$$

$$PRB > 0 \tag{8}$$

$$PRB = IP \tag{9}$$

$$ROC = COB \tag{10}$$

$$ROC = IR_t / OFA_{t-1} \tag{11}$$

$$COB = IP_t / OD_{t-1} \tag{12}$$

$$[\{IP + REP) - PRB\} / TGB] > 1 \tag{13}$$

$$TNB / TGB\uparrow\uparrow\uparrow \tag{14}$$

Δd = Rate of Growth of Debt	*RR* = Revenue Receipts
Δy = Rate of Growth to GDP at Current Market Prices	*RE* =Revenue Expenditure
PD = Primary Deficit	*PRB* = Primary Revenue Balance
Y = GDP at Current Market Prices	*ROC* = Rate on Return on Capital Investments
*R** = Rate of Real Interest	*COB* = Cost of Borrowing
*Y** = Real Output Growth	*IP* = Interest Payments
IP = Interest Payment	*PRB* = Primary Revenue Balance
TNB = Net Borrowing	*TGB* = Total Gross Borrowing
REP = Repayments of Government Debt	*IR* = Interest Return
OFA = Outstanding Financial Assets	

Alternative conditions set out above, could be used to guage the various aspects of the fiscal sustainability, keeping in view the Indian budgetary practices and fiscal system. While conditions 3 to 6 analyse the sustainability of the fiscal system in aggregate terms, conditions 7-9 examines from the point of view of revenue account and condition 10 tests the capital account sustainability. The conditions 11 to 12 could be employed to focus on fiscal vulnerability to debt trap. Closely related to the concept of sustainability of debt is the concept of debt trap. In an accounting sense, if interest payments or repayments or both, exceed total gross borrowings, it is argued that there is a debt trap.

In the above context, it is pertinent to note that the condition of debt trap only takes into account developments in the budget. The sustainability rule, however, as

defined above, represent the developments in the budget as well as the economy. The budget because it recognizes adequate primary surplus and the economy because, it recognizes inflation rate, interest rate and growth rate. Therefore, the sustainability rule has the advantage of superior analytical insight than the debt trap conditions.

4.3 Present value budget constraint approach

Extending the conventional sustainability indicator, *i.e.*: $d = pd\ (r - g)$, another approach to assess the sustainability is the present value of budget constraint. Solvency requires that the future primary surpluses should be sufficient to repay the current stock of public debt. According to this approach, the present value (PV) of the sum of future primary surpluses should not be less than the current outstanding liabilities of the Government. Following the methodology set out in the contemporary literature, the testing of the sustainability under this approach involves discounting of nominal stock of government debt backwardly to a given date with an appropriate discount rate. Thereafter the discounted series is tested for stationarity. If the series is non-stationary it implies the insolvency of the debt.

4.4 Model based approach

4.4.1 Dynamics of debt-deficit nexus

The outstanding debt at a given point of time is the accumulation of past deficit. If the deficit grows it leads to higher debt and given the rate of interest higher debt leads to higher interest payments. On account of higher interest payments expenditure increases. Given the constraints of augmenting revenue from conventional sources deficit would increase with every increase in expenditure thus what is otherwise called a vicious cycle of deficit and debt is created. Analytically, an unsustainable fiscal policy with unsustainable level of fiscal deficit leads to an unsustainable level of debt. This economic reasoning of dynamic nexus between debt and deficit within the framework of an inter temporal budget constraint is set out below:

$$OD_t = \sum_{i=0}^{n} GFD_{t-1} \tag{15}$$

$$GFD_t = OD_t - OD_{t-1} \tag{16}$$

$$GFD_t = PD_t + IP_t \tag{17}$$

$$IP_t = [i\ (BF_{t-1})] + [i^*\ (MF_{t-1})] + [i^{**}\ (EF_{t-1})] \tag{18}$$

$$PD_t = (TE_t - IP_t) - (RR_t - IR_t) \tag{19}$$

$$TE_t = RE_t + CO_t + NL_t \quad (20)$$

$$RR_t = T_t + NTR_t + DISINT \quad (21)$$

$$PD_t = (TE_t - IP_t) - RR_t \quad (22)$$

OD	Outstanding Debt
GFD	Gross Fiscal Deficit
PD	Primary Deficit
IP	Interest Payments
BF	Bond Financing
MF	Money Financing
EF	External Financing
TE	Total Expenditure
RR	Revenue Receipts
RE	Revenue Expenditure
T	Tax Revenue
NTR	Non Tax Revenue
DISINV	Disinvestment Proceeds

Against the above an empirical model to study the dynamic interrelationship between the internal and external balances for the Indian economy is postulated. The model is eclectic in nature. The model follows a disaggregated approach to the determination of government revenues and government expenditure. The level of Government is taken to be the general Government comprising both Centre and States. Financing of fiscal deficit by the monetary authority has been assumed to be zero reflecting the elimination of automatic monetization. The objective of the model is to examine the level of deficit and debt in the medium term and also the possible impact on the trade balance, inflation, interest rate and private investment and consumption.

4.4.2 Specification of model

Keeping in view the objectives stated above, the model has got four blocks *viz.*, fiscal, monetary, external and real. The individual equations and the model have

been estimated for the period 1991 to 2002. The detailed exposition of the model is set out below.

Fiscal sector

Revenues

All the three components of revenue, *i.e.*, direct tax (*DT*), indirect tax (*IDT*) and non-tax (*NTAX*) have been modeled separately. The total revenue receipts (*RR*) is thus derived as an identity summing up these variables.

Tax Revenue

Revenue from direct and indirect taxes and also from non-tax sources is defined as a function of real GDP (*GDP*) and prices (*WPI*). Increase in real income is expected to increase both the tax and non-tax revenue. Similarly, rise in price level would also enhance the revenue if not indexed to inflation. Accordingly, the following specifications are set out:

Direct Tax:

$$LDT = f(LGDP, LWPI) \tag{23}$$

Indirect Tax:

$$LIDT = f(LGDP, LWPI) \tag{24}$$

Non-tax Revenue:

$$LNTAX = f(LGDP, LWPI) \tag{25}$$

Expenditure

Revenue expenditure (RE) has been defined as the summation of non-interest revenue expenditure (NIRE) and interest payments (IP) through an identity. Interest payment is modeled to depend on the fiscal deficit and its own past levels. NIRE is expressed as a function of past GDP, revenue receipts and the revenue deficit. While net lending (NL) has been modeled to depend on its own lag, real GDP and prices; capital outlay (CO) on real GDP only. Accordingly, the following specifications for the different components of expenditure are set out.

Non-interest Revenue Expenditure:

$$L(NIRE) = F(LGDP(-1), RR, RD) \tag{26}$$

Interest Payment:

$$LIP = f(FD, IP(-1)) \tag{27}$$

Capital Outlay:

$$LCO = f(LGDP) \tag{28}$$

Net Lending:

$$LNL = f(LGDP, LWPI, LNL(-1)) \tag{29}$$

External sector

Indicators of the external sector, *viz.*, exports, imports, and unit value index of exchange rate have been modeled separately. World output, and past level of exports are taken to influence exports. Imports are modeled to depend on real GDP, exchange rate and domestic prices. Unit value index of exchange rate has been estimated as the function of GDP and prices. Notationally,

Exports:

$$LXP = f(LWOUT, LXP(-1)) \tag{30}$$

Imports:

$$LMP = f(LGDP, EXCH, LWPI) \tag{31}$$

Unit Value Index of Exports:

$$LUVIEXP = f(LWPI, LGDP) \tag{32}$$

Real sector

Private consumption has been expressed as a function of real disposable income and domestic prices. The effect of inflation on consumption has received considerable attention in the developing economies. It is expected that in low-income countries, rise in prices may lead to cut in savings. Investment by the private sector has been explained in terms of the level of economic activity proxied by the real GDP and the lagged interest rate (weighted lending rate of the commercial banks). Notationally,

Private Consumption Expenditure:

$$LPFCE = f(LGDP, LWPI) \tag{33}$$

Private Investment:

$$LIPVT = f(LGDP, WLR(-1)) \tag{34}$$

Monetary sector

Interest rate (*R*) defined by the yield on ten years *G-Sec* and the inflation rate (*WPI*) have been modeled under the monetary sector. Lagged values of the money supply, and fiscal deficit (*GFD*) in addition to *WPI* are taken to influence *R* and the inflation rate (*WPI*) is explained in terms of the reserve money and past inflation. Notationally,

Interest Rate:

$$LR = f\,(LWPI,\ LFD\ (-1),\ LM3\ (-1)) \tag{35}$$

WPI:

$$LWPI = f\,(LRM,\ LWPI\ (-1)) \tag{36}$$

The Deficit Indicators are derived from the following identities:

$$RR = DT + IDT + NTX \tag{37}$$

$$RE = NIRE + IP \tag{38}$$

$$RD = RR - RE \tag{39}$$

$$PRB = RD - IP \tag{40}$$

$$FD = RD + CO + NL \tag{41}$$

$$Debt = Debt\ (-1) + FD \tag{42}$$

$$DYR = (Debt/GDP) * 100 \tag{43}$$

$$TB = XP - MP \tag{44}$$

$$PD = FD - IP \tag{45}$$

$$WLR = R + 3 \tag{46}$$

List of Endogenous variables	
GDPMP = Nominal Gross Domestic Product	*DT* = Direct Taxes
RR = Revenue Receipts	*IDT* = Indirect Taxes
RE = Revenue Expenditure	*NTX* = Non Tax

PFCE = Private Final Consumption Expenditure	*RD* = Revenue Deficit
IPVT = Private Investment Expenditure	*FD* = Fiscal Deficit
WPI = Wholesale Price Index	*IP* = Interest Payment
R = Weighted Average Interest Rate of Government Dated Securities	*PRB* = Primary Revenue Balance
XP = Exports	*MP* = Imports
EXCH = Exchange Rate (Rupees per US $)	*TB* = Trade Balance
Debt = Outstanding total Liabilities of the Government	*UVIEXP* = Unit Value Index of Exports
DYR = *Debt*/*GDPMP* Ratio	
Exogenous variables	
WOUT = World Output	*GDP* = Real GDP
WPR = World Price Index of Exports	*M3* = Money Supply
RM = Reserve Money	*WLR* = Weighted Lending Rate of the Commercial Banks

* The Prefix L denotes the log of the variable under consideration.

The model attempts to assess the fiscal situation till 2010 with a base line and a policy-induced scenario.

5. Analysis and assessment

5.1 Domar debt stability condition

Domar stability condition has been tested and results are in Table 3 for Centre and States. Average interest rate *R* (*D*) is calculated as a ratio of interest payment to the previous year's total liability of the Centre. The second series *R* (*ML*) is the

Table 3

Domar Condition of Debt Sustainability for Centre and States

Year	Centre			All States	
	y	*r*(*C*)	*R*(*ML*)*C*	*r*(*S*)	*R*(*ML*)*S*
1990-91	16.65	8.02	11.41	9.19	11.50
1991-92	14.85	10.43	11.24	9.92	11.84
1992-93	14.58	10.44	10.86	10.46	13.00
1993-94	14.81	11.33	13.36	11.11	13.50
1994-95	17.87	11.94	14.10	12.13	12.50
1995-96	17.30	11.76	12.50	11.89	14.00
1996-97	15.17	11.66	13.88	12.05	13.82
1997-98	11.28	12.04	12.01	12.37	12.82
1998-99	14.35	13.09	11.68	12.76	12.35
1999-00	11.25	13.34	11.77	13.21	11.89
2000-01	8.64	12.15	10.95	12.31	10.99
2001-02	9.11	11.32	9.44	12.95	9.20
2002-03	8.21	10.69	7.34	12.27	7.49

Notes:
y = Growth Rate of GDP at Current Market Prices
r(*C*) = Average Interest Rate Centre
R(*ML*)*C* = Weighted Average of Central Government Market Borrowing Rates
r(*S*) = Average Interest Rate States
R(*ML*)*S* = Weighted Average of State Government Market Borrowing Rates

weighted average rate on current loans. The series *G* (*Y*) gives the growth rate of GDP at current prices.

The movements in the average interest rates *vis-à-vis* nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1991. This is because sizeable proportion of the domestic debt had been contracted at administered interest at higher level. In recent years, however, the rates on market related borrowings have come down and are lower than the nominal GDP growth rate. These developments confirm to weak sustainability condition.

Table 4

Fiscal Sustainability of Centre: Indicator Analysis
(percent)

Indicators	Symbolic representation	1993-97	1998-2002
1. (a) Rate of growth of GDP (Y) should be more than rate of growth of debt (D) (b) [$Y - D > 0$]	Y	16	10.9
	D	14.4	15.7
	$Y - D$	1.6	–4.9
2. Real output growth (y) should be higher than real interest rate (r) growth [$y - r > 0$]	y	6.2	5.5
	r	4.7	6.3
	$y - r$	1.5	–0.8
(a) Primary deficit (PD) should not be rising faster than GDP [$PD / GDP < 0$]	$PD / GDP < 0$	1.2	1.3
(b) Net Primary deficit (NPD) should not be rising faster than GDP [$NPD / GDP < 0$]	NPD / GDP	1.4	1.8
(c) Primary revenue balance (PRB) should be in surplus and adequate enough to meet interest payments (IP) [$PRB - IP > 0$]	PRB / GDP	–1.4	–0.8
	IP / GDP	4.3	4.6
	$(PRB - IP) / GDP$	–5.7	–5.4
3. Proportion of repayments (REP) to Gross Borrowings (TGB) should be falling over time [$REP / TGB \downarrow\downarrow$]	REP / TGB	38.4	31.8
4. Interest payments (IP) and repayments (REP) adjusted for primary revenue balance (PRB) should not exceed total Gross Borrowings (TGB) [$\{(IP + REP - PRB) / TGB\} < 1$]	$(IP + REP - PRB) / TGB$	2.05	1.34
5. Interest Burden defined by interest payments (IP) to GDP ratio should decline over time [$IP / GDP \downarrow\downarrow$]	IP / GDP	4.3	4.6
6. Interest payment as a proportion of revenue expenditure should decline overtime [$IP / RE \downarrow\downarrow$]	IP / RE	35.6	36.0
7. Interest payment as a proportion of revenue receipts should fall over time [$IP / RR \downarrow\downarrow$]	IP / RR	46.4	51.3

Note: Figures are 5-Year Averages.

Table 5

Fiscal Sustainability of States

Indicators	Symbolic representation	1993-97	1998-2002
1. (a) Rate of Growth of GDP (Y) should be more than Rate of (b) Growth of Debt (D) [$Y - D > 0$]	Y	15.9	10.9
	D	14.0	19.4
	$Y - D$	1.9	–8.5
2. (a) Primary Deficit (PD) should not be rising faster than GDP [$PD/GDP < 0$]	PD / GDP	0.01	0.02
(b) Net Primary Deficit (NPD) should not be rising faster than GDP [$PD/GDP < 0$]	NPD / GDP	1.5	2.7
(c) Primary Revenue Balance (PRB) should be in surplus and adequate enough to meet Interest Payments (IP) [$PRB - IP > 0$]	(PRB) / GDP	–1.13	–0.02
	(IP)	1.8	2.3
	$PRB - IP$	–3.0	–2.2
3. Real Output Growth (y) should be higher than Real Interest Rate (r) Growth [$y - r > 0$]	y	6.7	5.5
	r	4.6	6.6
	$y - r$	2.1	–1.1
4. Proportion of Repayments (REP) to Gross Borrowings (TGB) should be falling over time [REP / $TGB\downarrow\downarrow$]	(REP / TGB)	0.05	0.08
5. Interest Payments (IP) and Repayments (REP) adjusted for Primary Revenue Balance (PRB) should not exceed Total Gross Borrowings (TGB) [{($IP + REP - PRB$) / TGB} < 1]	$IP + REP - PRB$ / TGB	5.93	3.53
6. Interest Burden defined by Interest Payments (IP) to GDP ratio should decline over time [IP / $GDP\downarrow\downarrow$]	IP / GDP	1.8	2.3
7. Interest Payment as a proportion of Revenue Expenditure should decline overtime [IP / $RE\downarrow\downarrow$]	IP / RE	14.8	17.6
8. Interest Payment as a proportion of Revenue Receipts should fall over time [IP / $RR\downarrow\downarrow$]	IP / RR	15.8	21.4

Note: Figures are 5-year averages.
GFD = Gross Fiscal Deficit
RD = Revenue Deficit
PD = Gross Primary Deficit
NPD = Net Primary Deficit
MD = Monetised Deficit
GDP = Nominal GDP
Primary Receipts = Revenue Receipts Net of Interest Receipts
GFD Receipts include Revenue Receipts and Non-debt Capital Receipts.
GFD Expenditure includes Revenue Expenditure, Capital Outlay, Loans and Advances net of Recovery.

5.2 Sustainability indicators

The contemporary literature defines sustainability as $d = pd(r - g)$ with a necessary and sufficient condition where $d = debt/GDP$ ratio, PD = primary deficit, r = real interest rate and g = real growth rate. The necessary condition is akin to the Domar stability condition, *i.e.*: $g > r$. The sufficient condition explains that the debt/GDP ratio stability may not serve as an appropriate indicator of sustainability. If (r) exceeds (g), even with primary balance the interest burden on the existing debt may be translated into perpetual growth in debt/GDP ratio. In such a scenario adequate primary surplus is required to offset the gap between (r) and (g) and to stabilise debt/GDP ratio. Reflecting this, sustainability indicators for the Central Government and State Governments are set out in Tables 4 and 5, respectively.

Indicator analysis presents an unsustainable fiscal position, particularly in the latter half of the Nineties. An analysis of sustainability indicators reveals that though there has been some improvement in terms of rate of interest and real GDP growth rate (satisfying the necessary condition of sustainability); the fiscal indicators have shown significant deterioration for both the Centre and the States. This is evident both in the revenue as well as the capital account. While the domestic debt position has shown sharp deterioration, the external debt has witnessed spectacular improvement over the years. The sustainability of external debt assessed in terms of a set of solvency and liquidity indicators, *viz.*, (a) external debt too GDP ratio; (b) ratio of debt service payments to exports of goods and services; (c) ratio of short term to total debt; (d) ratio of short term debt to foreign exchange reserves; and (e) debt service to current receipts are the lowest for India with the exception of China among the top 15 debtor countries of the world (World Bank, 2002).

5.3 The present value of budget constraint approach

Sustainability of debt has been tested by performing the unit root tests on the present discounted value of combined debt (*PDVDEBT*) for the period 1990-91 to 2001-02 for which actual data are available. The results are as under:

Unit Root Test Results

Unit root test	*PDVDEBT*	1% level	5% level
Augmented Dicky Fuller	3.46	–5.52	–4.10
Phillips-Perron	4.78	–5.12	–3.93

The results of the unit root tests indicate that the null hypothesis of a unit root could not be rejected at 1 per cent level of significance. However, at 5 per cent level of significance the PDVDEBT series becomes stationary, and satisfies the weak sustainability condition. Since the series is non stationary at 1 per cent level of significance it may be inferred that the combined debt position is unsustainable under the strong sustainability condition.

5.4 Model-based approach

5.4.1 Model structure and model solution

The model comprises of 14 stochastic equations and 10 identities. In total there are 36 variables in the model with 24 endogenous and 12 exogenous variables. There are 2 simultaneous and 2 recursive blocks in the model structure. Block-1 consists of 8 recursive equations consisting of equations for capital outlay, exports, WPI, indirect tax, direct tax, interest payment, non-tax receipts and revenue receipts. Blocks 2 and 3 consist of three simultaneous equations each. Block-2 has non-interest revenue expenditure, and identities for revenue expenditure and revenue deficit in a simultaneous framework. Equation for net lending and identities for debt and fiscal deficit constitute the second simultaneous block. Block-4 has got 10 Recursive Equations for Imports, interest rate, private investment expenditure, private final consumption expenditure, price of exports, unit value of exports, trade balance, weighted lending rate, primary revenue balance and primary deficit.

Deterministic simulation has been applied to solve the model. Deterministic simulation involves first an analysis of block structure of the model. The equations of the model are then solved for each observation in the solution sample, using an iterative algorithm to compute values for the endogenous variables. The model solution uses a Gauss-Seidel iterative scheme across all the observations of the sample. The values for the exogenous variables for the forecast period has been drawn from univariate (autoregressive) forecasting except for real GDP, which is assumed to be grow at 7 per cent *per annum*.

5.4.2 Baseline scenario

The empirical results based on the above methodology for the equations specified in the analytical framework are presented in Annex IV. The summary results for the baseline scenario are presented in Table 6. As it may be seen, the revenue deficit and the fiscal deficit, though gradually decline from the levels of 2002-03, but remain at a high level 6.6 per cent and 10.4 per cent, respectively, by the end of fiscal 2009-10. Reflecting this, the level of debt relative to GDP increases from around 81 per cent in 2002-03 to 90 per cent in 2009-10. The primary deficit though declines but still remains at 2.8 per cent. Thus the fiscal situation remains grim. However, there is no evidence of spillover of fiscal deficit to external sector as the trade gap is maintained at 3 to 3.5 per cent during the period 2002-03 to 2009-10. Similarly, the benign inflation condition also continues during the period

Table 6

Baseline Scenario
(percent to GDP)

	2001-02	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
DT	3.83	3.85	3.97	4.07	4.10	4.14	4.17	4.21	4.24
IDT	10.22	11.10	11.27	11.43	11.31	11.20	11.58	11.66	11.83
TAX	14.05	14.94	15.24	15.50	15.42	15.34	15.76	15.87	16.07
NTAX	4.06	3.92	4.08	4.24	4.31	4.37	4.44	4.51	4.57
RR	18.11	18.86	19.33	19.74	19.72	19.71	20.19	20.37	20.65
RE	25.11	27.28	27.73	27.97	27.98	27.90	27.74	27.52	27.25
IP	6.23	7.38	7.59	7.67	7.71	7.72	7.70	7.66	7.59
NIRE	18.84	19.89	20.14	20.31	20.28	20.18	20.03	19.86	19.66
RD	7.00	8.42	8.40	8.24	8.26	8.19	7.54	7.15	6.60
PRB	0.73	1.03	0.81	0.57	0.55	0.47	–0.16	–0.51	–0.99
CO	2.82	2.67	2.76	2.85	2.85	2.86	2.86	2.86	2.87
NL	0.49	0.22	0.35	0.46	0.50	0.59	0.67	0.79	0.92
GFD	10.31	11.30	11.51	11.54	11.61	11.63	11.07	10.80	10.39
PD	4.08	3.92	3.92	3.87	3.90	3.91	3.37	3.14	2.80
XP	9.33	9.83	10.01	10.06	10.10	10.14	10.17	10.20	10.23
MP	11.96	12.92	13.31	13.62	13.65	13.65	13.62	13.56	13.46
TB	–2.63	–3.09	–3.30	–3.56	–3.55	–3.51	–3.45	–3.35	–3.23
DEBT	71.10	80.53	80.87	83.10	85.05	86.80	88.26	89.44	90.36
WPI	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
R	9.44	9.14	9.48	9.21	8.96	8.72	8.49	8.27	8.06
RIPVT	0.11	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10
RPFCE	0.23	0.20	0.18	0.17	0.15	0.14	0.12	0.11	0.10

Table 7

Corrected Scenario through Adjustment in Revenue and Expenditure
(percent)

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
DT	3.83	4.07	4.31	4.55	4.79	5.03	5.27	5.51	5.75
IDT	10.22	10.46	10.70	10.94	11.18	11.42	11.66	11.90	12.14
TAX	14.05	14.53	15.01	15.49	15.97	16.45	16.93	17.41	17.89
NTAX	4.06	4.30	4.54	4.78	5.02	5.26	5.50	5.74	5.98
RR	18.11	18.83	19.55	20.27	20.99	21.71	22.43	23.15	23.87
RE	25.11	24.96	24.81	24.65	24.50	24.35	24.20	24.05	23.89
IP	6.23	7.38	7.59	7.67	7.71	7.72	7.70	7.66	7.59
NIRE	18.84	17.57	17.22	16.99	16.79	16.63	16.49	16.39	16.31
RD	7.00	6.13	5.26	4.38	3.51	2.64	1.77	0.90	0.02
PRB	0.73	–1.26	–2.33	–3.28	–4.20	–5.08	–5.94	–6.76	–7.56
CO	2.82	3.12	3.42	3.72	4.02	4.32	4.62	4.92	5.22
NL	0.49	0.22	0.35	0.46	0.50	0.59	0.67	0.79	0.92
GFD	10.31	9.47	9.03	8.56	8.03	7.55	7.06	6.60	6.17
PD	4.08	2.08	1.44	0.89	0.32	–0.17	–0.64	–1.05	–1.42
XP	9.33	9.83	10.01	10.06	10.10	10.14	10.17	10.20	10.23
MP	11.96	12.92	13.31	13.62	13.65	13.65	13.62	13.56	13.46
TB	–2.63	–3.09	–3.30	–3.56	–3.55	–3.51	–3.45	–3.35	–3.23
DEBT	71.20	79.68	79.59	81.35	82.77	84.03	85.01	85.74	86.22
WPI	4.66	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
R	9.44	9.14	9.48	9.21	8.96	8.72	8.49	8.27	8.06
RIPVT	0.11	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10
RPFCE	0.23	0.20	0.18	0.17	0.15	0.14	0.12	0.11	0.10

with inflation rate measured in terms of WPI is stabilized at 4.3 per cent. Even though fiscal deficit predominates, there is an evidence of the softening of interest rate as it declines from 9 per cent in 2002-03 to 8 per cent in 2009-10. The decline in private investment and consumption over the baseline period indicates some evidence of crowding-out.

5.4.3 Corrected Scenario

As the baseline scenario indicates, there is no adverse macroeconomic impact even though fiscal situation does not fulfill the sustainability criteria. Therefore, taking into account the inertial and macroeconomic effect of the baseline scenario, the required fiscal correction in the context of fiscal rules is attempted in Table 7. The main assumptions are: (a) elimination of revenue deficit by 2009-10 (this is on the basis of Centre's FRBM Act, 2003 which mandates to reach the target by 2007-08 and most of the State Governments are actively considering implementing FRBM); (b) enhancement of revenue receipts to 18 per cent as assumed in the Tenth Plan; (c) reduction in non-interest revenue expenditure; and (d) higher provision for capital outlay for helping higher growth and inducing private investment. The results are summarised in Table 7.

In the corrected scenario, revenue deficit is eliminated mainly on account of enhancement in revenue, particularly indirect tax revenue. This would be possible due to extended coverage in respect of service tax, improved collections under customs and excise duties and better compliance. The substantial reduction in revenue deficit would be helpful for providing higher capital outlays, which would go up from around 3 per cent to 5 per cent during the period. The GFD would decline to 6 per cent and the debt/GDP ratio would reach 86 per cent.

6. Policy recommendations

Sustainability of budget deficit is essentially about good house keeping by the Government. It gives a correct picture whether Government is in a position to continue the present fiscal policy or not, and if it continues, what is the extent of fiscal malaise it is going to generate in the economy; and if it does not continue, what is the extent of fiscal correction necessary. The important precondition for sustainability of fiscal policy is that Governments should have their revenues cover expenditures and where they do not, returns from investment should cover amortisation costs. The sustainability of Government deficits and domestic debt primarily depends upon the size and nature of resource mobilization as well as the disposition of public expenditure.

The path to durable fiscal consolidation is through fiscal empowerment *i.e.*, by expanding the scope and size of revenue flows into the budget. A fiscal strategy based on revenue maximisation would also provide the necessary flexibility to shift the pattern of expenditures and redirect them productively. There has been some

progress in restructuring the tax system; however, the leakages in the tax base through exemptions continue to pose problems. Higher tax revenue should be achieved mainly through buoyancy and expansion of the tax base. A central issue remains the coordination of central excises (CENVAT) with a State-level VAT, with the objective of structuring a national VAT. In this context, the issue of a State-level VAT that includes interstate trade assumes critical significance. It is also imperative to introduce comprehensive taxation of services at the central level with appropriate assignment to States and local bodies. The VAT requires integration of various stages of commodity taxation between the Centre and the States. It also involves managing the problems in transition from the existing structure, including the long run effects of State VAT on the economy and on public revenue. Consensus among all the States on the principle and rates is essential so that exemptions and escape clauses in VAT rate structures and anomalies in legislation are limited.

Revenue maximisation covers not only taxes but also non-tax revenues, especially cost recovery in respect of all commercial services directly (*i.e.*, water) or indirectly (*i.e.*, power) in which investments have been made. Improvement in fixing and collection of user charges, extension of the same to non-merit goods and progress in cost recoveries is also central to the issue of fiscal empowerment. Reductions in non-obligatory revenue expenditures, such as subsidies and administrative services, improvement in non-interest non-tax revenue receipts as well as tax revenue.

The thrust of expenditure compression measures should be on restricting non-interest outlays to less than the growth of GDP. A comprehensive approach to the management of public expenditure would require explicit recognition of macroeconomic linkages of Government expenditure policies, setting of expenditure priorities and ensuring that specified activities are undertaken efficiently and effectively. In this context, accumulated empirical evidence shows that public sector investment in the infrastructure sector "crowds in" private investment. Considerations of growth and fiscal consolidation require that predominantly large amount of resources of the government are channelised for investment purposes. This has a special significance in the context of the trends witnessed in public investment outlays in recent years and the urgent need to step up infrastructure investment for improving the growth prospects of the economy.

The strategy of fiscal empowerment is of special significance for States since the bedrocks of socioeconomic welfare, *i.e.*, law and order and social services are in the State sector. There is considerable merit in emphasizing the quality aspects of fiscal adjustment in the process of reduction in the fiscal deficit and this means fiscal empowerment rather than fiscal enfeeblement as an appropriate strategy.

Pension reforms would assume priority in the coming years with the availability of a menu of schemes, diversification of risk and independent regulatory oversight. Steps are being taken to identify and provide for the fiscal risk embodied in State Government guarantees with limits imposed to restrain their growth. These structural changes are expected to impart sustainability to public debt over the medium term. A High-Level Expert Group to provide a roadmap for pension

reforms. The Eleventh Finance Commission underscored the need for some viable scheme of pension funding. In this context, a new pension scheme based on defined contributions for central Government employees entering service after October 2001 has been announced.

Contingent liabilities arising on account of formal guarantees extended by Central and State Governments need to be considered within strategies to ensure the sustainability of public debt. The quality of financial assets in terms of ownership in PSEs and Government-owned financial entities need to be assessed keeping in view the health of their balance sheets as a whole, since the Government is the owner. In addition, a holistic view of the assets and liabilities as well as incomes and expenditures of the public sector as a whole would add to the quality of fiscal adjustment and the health of public finances.

7. Concluding observations

Indian economy in recent years has seen significant improvement. Growth prospects are robust; inflationary outlook is benign; external sector is strong and resilient with large accretions to foreign exchange reserves mainly due to non-debt capital inflows and orderly management of the exchange rate. These positive factors have contributed to a softer interest rate regime. Notwithstanding these spectacular achievements, one of the major problems facing the Indian economy is large budget deficit and the resulting high national debt. The paper assessed the sustainability condition in terms of four different approaches: (a) Domar condition, (b) sustainability indicators, (c) present value budget constraint, and (d) model based approach. The results under different approaches are set out below.

The movements in the average interest rates *vis-à-vis* nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1991. This is because sizeable proportion of the domestic debt has been contracted at administered interest at higher level. In recent years, however, the rates on market related borrowings have come down and are lower than the nominal GDP growth rate. These developments confirm to weak sustainability condition.

An analysis of sustainability indicators reveals that though there has been some improvement in terms of rate of interest and real GDP growth rate (satisfying the necessary condition of sustainability); the fiscal indicators have shown significant deterioration for both the Centre and the States. This is evident both in the revenue as well as the capital account. While the domestic debt position has shown sharp deterioration, the external debt has witnessed spectacular improvement over the years. The sustainability of external debt assessed in terms of a set of solvency and liquidity indicators, *viz*., (a) external debt too GDP ratio; (b) ratio of debt service payments to exports of goods and services; (c) ratio of short term to total debt; (d) ratio of short term debt to foreign exchange reserves; and (e) debt service to current receipts are the lowest for India with the exception of China among the top 15 debtor countries of the world.

The results of the unit root tests indicate that the null hypothesis of a unit root could not be rejected at 1 per cent level of significance. However, at 5 per cent level of significance the PDVDEBT series becomes stationary, and satisfies the weak sustainability condition. Since the series is non stationary at 1 per cent level of significance it may be inferred that the combined debt position is unsustainable under the strong sustainability condition.

The model based approach under the baseline scenario reveals that the revenue deficit and the fiscal deficit, though gradually decline from the levels of 2002-03, but remain at a high level 6.6 per cent and 10.4 per cent, respectively, by the end of fiscal 2009-10. Reflecting this, the level of debt relative to GDP increases from around 81 per cent in 2002-03 to 90 per cent in 2009-10. The primary deficit though declines but still remains at 2.8 per cent. Thus the fiscal situation remains grim. However, there is no evidence of spillover of fiscal deficit to external sector as the trade gap is maintained at 3 to 3.5 per cent during the period 2002-03 to 2009-10. Similarly, the benign inflation condition also continues during the period with inflation rate measured in terms of WPI is stabilized at 4.3 per cent. Even though fiscal deficit predominates, there is an evidence of the softening of interest rate as it declines from 9 per cent in 2002-03 to 8 per cent in 2009-10. The decline in private investment and consumption over the baseline period indicates some evidence of crowding-out.

In the corrected scenario, revenue deficit is eliminated mainly on account of enhancement in revenue, particularly indirect tax revenue. This would be possible due to extended coverage in respect of service tax, improved collections under customs and excise duties and better compliance. The substantial reduction in revenue deficit would be helpful for providing higher capital outlays, which would go up from around 3 per cent to 5 per cent during the period. The GFD would decline to 6 per cent and the debt/GDP ratio would reach 86 per cent.

In view of the above, the study concludes that there are evidences of weak sustainability (real rate of growth is higher than the real interest rate). Furthermore, though the fiscal position would continue to be grim in the baseline scenario, evidence of lower inflation, no spillover to the external sector and continuation of softer interest rate regime suggest that this would not distort the macroeconomic fundamentals.

The fiscal consolidation efforts through legislative enactment of the fiscal rule would help strengthen fiscal position in eliminating revenue deficit and reducing fiscal deficit and also providing higher expenditure for public investment.

Elimination of automatic monetisation, prudent debt management by the Reserve Bank and Government of India, softer interest rate regime, higher growth trajectory continuation of benign inflationary outlook, strong and resilient external sector would help in smoothening the process of further fiscal consolidation. Thus, the medium term outlook looks positive and favourable. The sustainability assessment as done in the study recognizes inertial impact, macroeconomic effect and fiscal impact. The strong macroeconomic fundamentals would strengthen the

inertial impact. Given the adverse macroeconomic impact of high fiscal deficit, it would be essential that fiscal rules should be followed very stringently to achieve the desired fiscal consolidation.

The revenue augmentation through customs and excise are possible through industrial revival and picking up of imports. The broadening of coverage of service tax would garner higher revenues. And introduction of VAT would be beneficial. Expenditure management of the government has been praiseworthy. This could be further continued with higher provisions in capital outlay. The enactment of fiscal rules is underway. Positive signs have already been seen in 2003-04 where marked improvements have taken place in Central Government budget. It is expected that State Governments would also undertake similar exercise.

It is pertinent to note that the level of primary surplus relative to GDP is conditional on the performance of the economy in respect of economic growth, inflation and interest rate. It is expected that the strong macroeconomic fundamentals along with the enforcement of fiscal rule would ensure fiscal sustainability in the foreseeable future.

ANNEX I
CONCEPT AND DEFINITION OF DEBT

Internal Debt in the budget document comprises loans raised in the open market, Treasury Bills, special securities issued to Reserve Bank and non-interest non-negotiable rupees securities issued to international financial institutions. Other liabilities include small savings, provident funds, special deposit schemes, reserve funds and deposits. However, according to economic analysis, any obligation having repayment and interest payment is debt and are of two types, *viz.*, domestic debt and external debt. Thus, under domestic debt, internal debt and other liabilities (which mainly include market borrowings, small savings, provident funds and reserve funds and deposits) are clubbed together.

In addition, in economic analysis there are also issues relating to gross debt (GD) and net debt (ND). The gross domestic debt (GDD) represents internal debt and other liabilities as given in the budget document. However, it has been susggested by Seshan (1987) that there are certain items like, non-interest and non-negotiable securities issued to IMF and reserve funds which are only intergovernmental debts and thus could be netted out from gross debt. Another concept as developed by Rangrajan *et al.* (1989) is to net out all deposits under reserve funds and deposits in addition to the adjustments suggested by Seshan (1987).

In this paper the gross debt is defined as total liabilities given in the budget document and gross domestic debt is connoted as gross debt *minus* loans and advances (outstanding). As an extension to the net debt concept, the net asset position of the Government has also been examined which is defined as total assets *minus* total liabilities. Total assets according to the budget document are capital investments and loans by the Central Government.

An issue that has significant implication for sustainability of the fiscal position of Governments, particularly in the context of the existing heavy burden of debt, is that of providing guarantees. Government's grant guarantees to promote certain economic enterprises by reducing the credit risk for investors especially in those activities where the nature of investment is characterized by long gestation periods. While guarantees are contingent liabilities do not form part of debt as conventionally measured, these have in the eventuality of default the potential of exacerbating apparently sound fiscal system.

For illustration purpose a statement of liabilities and assets of both levels of Government as set out in the budget document, is presented opposite.

With the change in the accounting system from 1999-2000, States' share in the small saving collections which was earlier included under loans from the Centre are shown as special securities issues to NSSF and included under the internal debt of the States.

Central Government

	Liabilities		**Assets**
A	***Public Debt (A1 + A2)***	***A***	***Capital Outlay (A1 + A2 + A3)***
A.1	Internal Debt (A1.1 to A.1.4)	A.1	General Service (A.1 + A.1.2)
A.1.1	Market Loans	A.1.1	Defence Service
A.1.2	Treasury Bills	A.1.2	Other General Service (Police, Public Works, etc.)
A.1.3	Special Securities issued to RBI	A.2	Social Services (Education, Health, Housing, Urban Development, etc.)
A.1.4	Securities issued to International Financial Institutions	A.3	Economic Services
A.2	External Debt	A.3.1	Agriculture
		A.3.2	Transport
		A.3.3	Industry
		A.3.4	Investment in Financial Institutions
B	***Other Liabilities***	***B***	***Loans and Advances***
B.1	Small Saving Schemes	B.1	States
B.2	Provident Funds	B.2	Public Enterprises
B.3	Special Deposits Scheme	B.3	Government Servants
B.4	Reserve Funds and Deposits		
C	***Total Liabilities***	***C***	***Total Assets (A + B)***

State Governments

	Liabilities		**Assets**
A	***Public Debt (A1 + A2 + A3)***	***A***	***Capital Outlay (A1 + A2 + A3)***
A.1	Internal Debt (A1.1 to A.1.4)	A.1	Social Service (Education, Health, Housing, Urban Development, etc.)
A.1.1	Market borrowings	A.2	Social Services
A.1.2	Special sec. issued to NSSF	A.3	Economic Services
A.2	Loans from the Centre	***B***	***Loans and Advances***
A.3	Small Savings, State Provident Funds etc.		

Note: While calculating the combined debt, the loans from the Centre to State Governments (net of loan recovery) and investment in special securities of States under NSSF are netted out.

ANNEX II
INDICATORS OF DEFICIT

In order to measure different concepts of budget deficit in the Indian context, it is interesting as well as instructive to understand the Indian budgetary system and practice and the fiscal balance sheet.

A. Indian budgetary system and practice

Under Article 112 of the Constitution, a statement of estimated receipts and expenditure of the Government of India has to be laid before Parliament and for the State Governments in the State Legislature in respect of the financial year, which runs from April 1 to March 31. This statement titled "Annual Financial Statement (AFS)" is the main budget document. The estimates of receipts and disbursements in the AFS and of expenditure in the demand for grants are shown according to the accounting classification prescribed under the Article 150 of the Constitution.

The AFS shows the receipts and payments of Government under the three parts in which Government accounts are kept. (i) Consolidated Fund; (ii) Contingency Fund, and (iii) Public Account. All revenues received by Government, loans raised by it and also its receipts from recoveries of loans granted by it, form the Consolidated Fund. The contingency Fund is an imprest placed at the disposal of the President to incur urgent unforeseen expenditure. Besides the normal receipts and expenditure of Government which relate to the Consolidated Fund, certain other transactions enter Government account, in respect of which, Government acts more as a banker, *viz*., transactions relating to provident funds, small savings collections, other deposits, etc. The moneys thus received are kept in the account called Public Account.

Under the Constitution of India, Budget has to distinguish expenditure on revenue account from other expenditure. Accordingly, the Government Budget comprises; (a) Revenue Budget, and (b) Capital Budget. Revenue Budget consists of the revenue receipts of the Government which mainly include tax revenues and interest and dividends on investments made by the Government. Revenue expenditure is for normal running of the government. Broadly speaking, expenditure which does not result in the creation of assets is treated as revenue expenditure with the exception of grants given to the State Governments. Capital Budget consists of capital receipts and disbursements. Capital receipts consist of non-debt components and debt components. The non-debt item is the recovery of loans disbursed in the past by the Government. The disinvestment proceeds also form part of non-debt capital receipts. The debt portion comprises internal debt (market borrowings), other liabilities (small savings, reserve funds and deposits, etc.) and external borrowings. Capital disbursements consists of capital expenditure on acquisition of assets and loans and advances to State Governments. The transactions in the Public Account which include small savings, provident fund, deposits and reserve funds are also covered in the Capital Budget.

Fiscal Balance Sheet

Receipts	Expenditures
Revenue Receipts (*RR*) = *TR* + *NTR*	**Revenue Expenditure (*RE*)**
Tax Receipts (*TR*)	General Services (*GSR*) – of which
Non-Tax Receipts (*NTR*) – of which	Interest Payments (*IP*)
Interest Receipts (*IR*)	Social Services (*SSR*)
Dividends and Profits (*DP*)	Economic Services (*ESR*)
External Grants (*EG*)	Grants-in-Aid (*GIA*)
Capital Receipts (*CR*) – of which	**Capital Expenditure (CE)**
Recoveries of Loans (*ROL*)	Capital Outlay (*CO*)
Disinvestment Proceeds (*DIS*)	Social Services (*SSC*)
Internal Debt (*ID*)	General Services (*GSC*)
Market Loans (*ML*)	Economic Services (*ESC*)
Other Internal Liabilities (*OL*) – of which	Loans and Advances (*LA*) – of which
	Loans to States against small savings collections (*LASS*)
Small Savings (*SS*)	General Services (*GSL*)
Provident Funds (*PF*)	Social Services (*SSL*)
Special Deposits (*SD*)	Economic Services (*ESL*)
Reserve Funds and Deposits (*RFD*)	Other Loans and Advances (*OLA*)
External Borrowings (*EB*)	
Total Receipts (*TR*) = (*RR* + *CR*)	**Total Expenditure (*TE*) = (*RE* + *CE*)**

Concept and Measurement of Deficit Indicators

	Deficit Indicators	Expenditures	Receipts	Measurement
1.	Revenue Deficit (RD)	RE	RR	RD = RE – RR
2.	Gross Fiscal Deficit (GFD1)	TE – ROL = RE + CO + (LA – ROL) = RE + CO + NL	RR + DIS	GFD = (TE – ROL) – (RR + DIS) = (RE + CE – ROL) – (RR + DIS) = (RE + CO + LA – ROL) – (RR + DIS) = (RE + CO + NL) – (RR + DIS) = (RD + CO + NL – DIS)
	GFD2 (concept presently followed by GoI)	TE – ROL – LASS	RR + DIS	RD + CO + NL – LASS – DIS
3.	Primary Deficit (PD)			
	(a) PD1 = GFD1 – IP	TE – ROL – IP = (RE – IP) + [CO + (LA – ROL)] = (RE – IP) + (CO + NL)	RR + DIS	PD1 = (RE – ROL – IP) – (RR + DIS) = [(RE – IP) + (CO + LA – ROL)] – (RR + DIS) = [(RE – IP) + (CO + NL)] – (RR + DIS)
	(b) PD2 = GFD2 – IP	TE – ROL – IP = (RE – IP) + [(CO + LA – LASS – ROL)] = (RE – IP) + (CO + NL – LASS)	(RR – IR) + DIS	PD2 = (TE – ROL – IP) – [(RR – IR) + DIS] = [(RE – IP)+[CO + (LA – ROL – LASS)] – – [(RR – IR)+DIS)] = [(RE – IP) + (CO + NL – LASS)] – [(RR – IR) + DIS]
	(c) PD3 = = GFD1 – (IP + IR)	TE – ROL – IP = (RE – IP) + [CO + (LA – ROL)] = (RE – IP) + (CO + NL)	(RR – IR) + DIS	PD3 = (TE – ROL – IP) – [(RR – IR) + DIS] = (RE – IP) + [CO + (LA – ROL)] – [(RR – IR) + DIS) = [(RE – IP) + (CO + NL)] – [(RR – IP) + DIS]
	(d) PD4 = GFD2 – (IP + IR)	TE – ROL – IP = (RE – IP) + [(CO + LA – LASS – ROL)] = (RE – IP) + (CO + NL – LASS)	(RR – IR) + DIS	PD4 = (TE – ROL – IP) – [(RR – IR) + DIS] = [(RE – IP) + [CO + (LA – ROL – LASS)]] – [(RR – IR) + DIS)] = [(RE – IP) + (CO + NL – LASS)] – [(RR – IR) + DIS]
4.	Net Fiscal Deficit (NFD)			
	(a) NFD1 = GFD1 – NL	TE – NL = (RE + CE) – (LA – LASS – ROL) = (RE + CE) – NL	RR + DIS	NFD = (TE – NL) – (RR + DIS) = [(RE + CE) – (LA – LASS – ROL)] – (RR + DIS) = [(RE + CE) – NL)] – (RR + DIS)
	(b) NFD2 = GFD2 – NL	TE – NL = (RE + CE) – (LA – LASS – ROL) = (RE + CE) – NL	RR + DIS	NFD = (TE – NL) – (RR + DIS) = [(RE + CE) – (LA – LASS – ROL)] – (RR+DIS) = [(RE + CE) – NL)] – (RR + DIS)
5.	Primary Revenue Balance (PRB)			
	(a) PRB1	RE – IP	RR	PRB = (RE – IP) – RR = RD – IP
	(b) PRB2	RE – IP	RR – IR	PRB2 = (RE – IP) – (RR – IR) = RD – NIP

ANNEX III
FISCAL RESPONSIBILITY LEGISLATION OF STATES

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
1. Gross fiscal deficit	Not more than 3% of GSDP by 2006	GFD to 2% of GSDP by 2007	GFD not more than 2.5% of GSDP by 2007	Contain rate of growth of GFD to 2% *per annum* in nominal terms, till GFD is below 3% of GSDP	Not more than 3% of all GSDP by 2009	
2. Revenue deficit	Nil by 2006	Nil by 2007	Ratio of RD to revenue receipt below 5% by 2007	Reduce RD to revenue receipts by at least 5 percentage points until revenue balance is achieved	Nil by 2009	Ensuring that after a period of 5 years from the appointed day, RD to be brought to nil
3. Limiting guarantees	Limit the guarantees within prescribed ceiling under the Government Guarantees Act		Cap outstanding risk weighted guarantees to 100% of the total revenue receipts in the proceeding year or at 10% of GSDP	Cap outstanding guarantees on Long-term debt to 80% of revenue receipts of the previous year and guarantees on short-term debt to be given only for working capital or food credit	Not to give guarantee for any amount exceeding the limit prescribed under any rule or law made by the Government for the purpose	Amount of risk in guarantees issued in a year shall not exceed 1.5% of the expected revenue receipts and to classify the guarantee obligations according to risk of devolvement

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
4. Total liabilities	Total liabilities not to exceed 25% of GSDP by 2015			Ratio of debt to GSDP to 40% by 2007	Total liabilities not to exceed 25% of GSDP by 2018	Restriction on borrowing.
5. Expendi-ture					To be as per the targets to be given in the MTFRP	Achieving non-salary development expenditure not less than 60 per cent of the total expenditure
6. Medium-Term Fiscal Plan (MTFP)	MTFP would include: i) Four-year rolling target for prescribed target, ii) Assessment of the sustainability, and iii)Evaluation of performance of prescribed fiscal indicators	MTFP to review periodically the progress of public expenditure with reference to fiscal target, evaluation of the current trend to budgetary allocations	MTFP include: i) State objectives, ii) Evaluation of fiscal indicators, iii) Strategies priorities for ensuing year iv) Economic trends and future prospects	MTFP include: i) Three-year rolling target for prescribed target, ii) Assessment of the sustainability, and iii) Recent economic trends and future prospects	MTFP would include: i) Five-year rolling targets, ii) Medium term fiscal objectives, iii) Strategies priorities, iv) Evaluation of performance of prescribed fiscal indicators	Multi-year framework and presenting three years forward estimates of revenue and expenditure

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
7. Compli-ance	Half yearly review of receipts and expenditure in relation to budget estimates along with remedial measures to achieve the budget target. GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Public Expenditure Review Committee which would submit a review report giving full account of each item where the deviation from the fiscal target have occurred during the previous year	Independent external body to carry out periodic review for compliance for the provision of the Act. Target GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Quarterly review of receipts and expenditure in relation to budget estimates along with remedial measures to achieve the budget target GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	a) Half-yearly review of receipts and expenditure in relation to budget. The review report to reflect clearly deviation from the budget targets and remedial measures, b) GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Constitution of Fiscal Advisory Board to advise Government relating to implementation of the fiscal responsibility legislation
8. Pension						Present to the legislature every year estimated yearly pension liabilities worked out on actuarial basis for the next ten years
9. Fiscal transpa-rency	Certain fiscal management principles and measures for fiscal transparency	Measures to ensure grater transparency in its fiscal operations	Measures to ensure greater transparency in its fiscal operations	Measures to ensure greater transparency in its fiscal operations	Budget to be made more transparent by better disclosure statements to be included in the budget documents	Bringing budget transparency by identifying all liabilities (past and present), constitution of a Doubtful Loans and Equity Fund

ANNEX IV
ESTIMATION RESULTS

Fiscal sector

Revenue

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*WPI*)			
LOG (*DT*)	0.81 (3.26)	1.66 (7.98)	0.99	2.45	0.018
LOG (*IDT*)	1.36 (7.23)	0.43 (2.71)	0.99	2.07	0.010
LOG (*NTAX*)	1.24 (2.68)	1.20 (3.34)	0.98	2.64	0.023

Non-interest revenue expenditure

Dependent variable	Independent Variable			R^2	*DW*	Theil's U
	LOG (*GDP*(–1))	LOG (*RD*)	LOG (*RR*)			
LOG (*NIRE*)	0.33 (2.36)	0.19 (10.56)	0.62 (13.65)	0.99	2.42	0.010

Combined interest payment

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*FD*)	LOG (*IP*(–1))			
LOG (*CIP*)	0.11 (1.90)	0.86 (14.97)	0.99	2.95	0.006

Capital outlay and net lending

Dependent variable	Independent Variable			R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*WPI*)	LOG (*NL*(–1))			
LOG (*NL*)	10.18 (2.43)	–8.05 (–2.18)	–0.37 (–1.57)	0.50	2.48	0.178
LOG (*CO*)	1.82 (21.52)	-	-	0.98	2.19	0.017

Monetary sector

Interest rate

Dependent variable	Independent Variable			R^2	*DW*	Theil's U
	LOG (*M*3(–1))	LOG (*FD*(–1))	LOG (*WPI*)			
LOG (*R*)	–0.60 (–2.39)	–0.12 (–0.97)	1.20 (3.53)	0.91	2.68	0.013

WPI

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*RM*)	LOG (*WPI*(–1))			
LOG (*WPI*)	0.27 (3.48)	0.41 (3.12)	0.99	3.12	0.088

External sector

Exports

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*WOUT*)	LOG (*XP*(–1))			
LOG (*XP*)	1.65 (3.40)	0.54 (6.71	0.99	1.99	0.024

Imports

Dependent variable	Independent Variable			R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*EXCH*)	LOG (*WPI*)			
LOG (*MP*)	1.05 (2.49)	–0.02 (–2.20)	2.27 (5.37)	0.99	2.67	0.021

Unit value index of exports

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*WPI*))			
LOG (*UVIEXP*)	–0.73 (–1.94)	1.50 (4.72)	0.95	1.24	0.024

Real sector

Private investment expenditure

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*WLR*(–1))			
LOG (*IPVT*)	1.17 (3.74)	–0.02 (–0.70)	0.97	3.31	0.018

Private final consumption expenditure

Dependent variable	Independent Variable		R^2	*DW*	Theil's U
	LOG (*GDP*)	LOG (*WPI*)			
LOG (*PFCE*)	0.87 (14.87)	–1.07 (–22.36)	0.99	2.92	0.003

Notes: Figures in brackets indicate t-values.

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COMMENTS ON SESSION III: PUBLIC DEBT, AGEING AND FISCAL SUSTAINABILITY

Jagadeesh Gokhale[*]

All of the authors in this panel are to be complimented for providing well researched and thought provoking papers. This panel contains four papers on country studies, one paper on the saving effects of tax-favored saving plans, one paper on dynamic deficit impulses, and one on the policy implications of fiscal imbalances. The last paper by Charles Steindel extensively refers to my paper with Kent Smetters (published in this volume as the last one of the first session). Hence, much of the discussion is devoted to addressing the issues raised by Dr. Steindel. I also discuss the papers on deficit dynamics by Köhler-Töglhofer and Zagler, and the paper on tax-favored saving by Antolín, de Serres and de la Maisonneuve.

The question posed by Steindel's paper is: "Is there evidence of a connection between the prospect of future rapid debt growth arising from entitlement payments and higher current levels of consumption (and reductions in saving and capital formation)?"

The argument is constructed as follows: if economic agents anticipate more in public retirement and health care benefits than their cumulative payroll tax payments, they would consume more today, eroding saving and capital formation. This would reduce the economy's output potential and the ability to continue paying benefits in the future. In turn, this could trigger entitlement reforms to reduce future debt. Steindel remarks that the standard tax-smoothing argument justifies an earlier implemenation of fiscal reforms. However, he argues, if there is no evidence of a positive link between high anticipated debt and high current consumption, reforms will not release investible resources at the margin, detracting from their urgency.

Steindel notes, correctly, that mere existence of a large fiscal imbalance alone is not sufficient to trigger a change in current consumption-saving behavior. Economic agents' expectations about how and when the imbalance will be resolved matter as well. Steindel examines whether past policy changes that presumably induced large changes in the federal fiscal imbalance prompted large changes in aggregate U.S. consumption. He finds that although prospective Social Security benefits were increased substantially in 1972, the share of consumption in GDP showed no change. Social Security reform in 1983, when future benefits were retrenched significantly, was also not associated with a large decline in the consumption-to-GDP ratio.

Although I agree with Steindel's reasoning, I find his methodology questionable and therefore, disagree with his conclusions. First, a closer examination of the precise sequence of events suggests that the absence of a correlation between

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aggregate consumption and the two fiscal policy episodes cited by Steindel is not surprising. As already noted, expectations about how credible or permanent those policy changes are, would also affect agents' consumption behavior. During the 1972 Social Security episode, benefits were increased immediately by 20 per cent but the indexation of benefits to inflation – which was *the* major element of that legislation – was not to become operative until after 1975. Inflation, however, increased soon after 1972 and was running at an annual rate of almost 10 per cent by 1974, quarter II. Hence, prior to 1974, inflation indexation of benefits was not in effect and high inflation was continuing to erode real benefits. Hence, the announced policy of indexation may not have been credible prior to 1974 and the fact that total consumption was not stimulated immediately after the law was changed is not surprising.

The opposite change in Social Security benefits was enacted in 1983: benefits were made subject to income taxes, the normal retirement age was increased, and payroll taxes were hiked. However, the benefit cut did not undo the ongoing resource transfers toward the elderly. Indeed, immediate hike in payroll taxes on employers and employees – which rose from 11.4 per cent in 1980 to 12.4 per cent in 1983 in two steps – probably confirmed that such transfers would continue. In addition, the increase in normal retirement age was not to commence for two more decades, diluting any effect on current consumption. Hence, again, the absence of a contemporaneous consumption effect is not remarkable.

Steindel also suggests, correctly, that to properly analyse these questions, one should focus on the responses of different age cohorts to large changes in government programs. However, he incorrectly reports the lack of appropriate data sources. I coauthored two studies some years ago which implements precisely the cohort-based approach that Steindel suggests (Gokhale, Kotlikoff and Sabelhaus. 1996, and Auerbach, Gokhale, Kotlikoff, Sabelhaus and Weil, 2001).

These studies show that over longer horizons, fiscal policy's differential tax treatment of cohorts affects their consumption in the expected direction. Specifically, they show that:

a) the cross-cohort distribution of consumption is strongly dependent on the cross-cohort distribution of resources;

b) the theoretical prediction that the propensity to consume out of resources rises with age is confirmed by the data;

c) the secular decline in U.S. national saving coincides with a significant, secular increase in the lifetime resources available to current retirees relative to those available to younger workers;[1]

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[1] A cohort's resources are measured as the sum of its human wealth (present value of future earnings), non-human wealth (financial and non-financial assets including cash value of life insurance and balances in defined contribution retirement accounts), pension wealth (present values of private-sector defined benefit pension benefits), and their generational account – the present value of prospective taxes net of transfers *vis-à-vis* federal and state governments.

d) that most of this resource transfer toward the elderly can be traced to growth in Social Security and Medicare.

This transfer occurs in two ways:

i) directly by providing retirees more by way of benefits than their past payroll tax contributions and

ii) via the forced annuitization of benefits which, by insuring retirees against outliving their resources, enables them to consume at a faster rate and reduces involuntary bequests.

The study also confirms that retirees have not undone thei forced annuitization of resources via Social Security and Medicare by increasing their purchases of life insurance.

Other studies that are also relevant are those by Altonji *et al.* (1992, 1997) and Hayashi *et al.* (1996). These studies suggest that the distribution of intra-extended-family consumption follows the distribution of intra-extended-family income and that a transfer of resources from children to parents prompts a very small reverse private transfer. Given that a positive fiscal imbalance implies operative public transfers from younger workers and future generations toward retirees, these studies imply that much of the resources transferred toward the elderly would be consumed rather than saved and bequeathed to their children and grandchildren.

To me, these studies constitute more substantial and credible evidence favoring the hypothesis that the current generational stance of U.S. fiscal policy provides dependable resource transfers toward retirees and prompts higher consumption. This evidence appears more credible to me than the casual empirical correlations of aggregate U.S. consumption offerred in the paper.

Based on the literature, I draw the following conclusions: a large fiscal imbalance implies an ongoing transfer toward current generations, especially retirees. Credibility that the current generational stance of fiscal policy will be maintained appears to be quite high: witness the recent passage of a Medicare prescription drug benefit in the United States that substantially increases the government's commitment to make such transfers. Large and credible transfers induce more consumption by the cohorts that receive them and, all else equal, reduces national saving. Hence, reforms that terminate such transfers would stem the decline in national saving and a larger share of U.S. domestic investment would be financed out of domestic saving. Output growth may be faster and more of it would be preserved for use by U.S. citizens. Although the standard tax smoothing argument suffices for justifying an earlier correction of fiscal imbalances, the likely positive impact of such reforms on national saving implies they should be implemented immediately.

The paper by Köhler-Töglhofer and Zagler on dynamic deficit and debt impulses builds on the literature developed after Alesina and Perotti's (1995) study on the same topic. The idea is to decompose debt expansions and contractions according to their driving components – whether taxes or expenditures, whether on

pensions, health care, government consumption or investment, etc. to identify changes that lead to sustained vs. temporary debt reductions, and long-lasting versus fleeting debt expansions.

This paper focuses on the impact of a current debt reduction or increase on future debt levels. It is not directly concerned with the impact of current debt change and the manner of its achievement on real economic variables. This is a significant omission because of the well known result that there is no necessary one-to-one relationship between explicit debt impulses and real economic outcomes. A simple policy change whereby both taxes and outlays are increased equally in all future periods could alter real economic outcomes but also leave the levels of annual deficits and debt unchanged.[2] The most well known applications of this type of policy are pay-as-you-go pension programs – used by many countries. However, tax funded welfare programs qualify as well if, over the long haul, their revenues and outlays balance out in present value. All that's needed to associate a given set of deficit and debt series with different real outcomes is to use the government as a redistributive agent – to reallocate resources among population sub-groups with different propensities to consume out of their resources.

The converse is also true: a given time path of real economic outcomes could be associated with several different debt and deficit impulses. For example, Smetters (2001) shows that government investment in private assets (setting up enterprises that are partly publicly and partly privately owned with a variable share of public ownership, or investing pension fund surpluses in private securities) can deliver this result. It occurs because government ownership of private sector securities is an alternative to capital income taxation, which also gives the government a "stake" in private sector profits. In such a regime, the government could increase its investment in private securities and simultaneously impose a symmetric cut capital income taxes (that results in lower revenue when capital income is positive and provides a smaller credit against capital losses).

The initial purchase of private securities would be balanced by the initial outlay on that purchase leaving the initial net debt unchanged. The reduced capital income taxes, however, would register as changes in future deficits and debt levels. Smetters (2001) demonstrates that this policy change could be designed such that every current and future private agent remains in exactly the same real economic position – implying that the government also remains in exactly the same real economic position. Hence, there will be no change in real economic outcomes. It is important to note that this result holds in a fully specified Arrow-Debreu world, including the case where some agents are borrowing constrained.

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[2] This is not strictly true because post-policy changes in real economic outcomes will have a second-order impact on future outlays and revenues. However, marginal adjustments to outlays and revenues could be made to hold deficit and debt levels equal to those projected without the policy change. Despite these adjustments, real economic outcomes would be different from those projected to occur without the policy change.

These observations compel the conclusion that deficit and debt impulses are neither necessary nor sufficient as measures of the real impact of fiscal policies on the economy. Hence, assessing the impact of various components of government spending and taxes on future debt levels and their sustainability appears to be an uninformative exercise since, ultimately, we really care about real outcomes and not the time paths of explicit debt and deficits. To capture the argument in a nutshell, examining the impact of various types of policies on explicit debt and deficits are insufficient. Implicit debt levels could be changed independently and could influence real economic outcomes.

The paper by Antolín, de Serres and de la Maisonneuve investigates the impact of tax-favored plans on saving. There is a long standing debate about how much net new saving tax-favored saving plans generate. This debate remains in a stalemate (at least in the U.S) and disagreements continue to erupt on occasion about the impact of specific tax-saving plan proposals. Recently, the focus has been on the future revenue impact of tax-favored saving plans. Boskin's (2003) suggests that the asset accumulations in such plans would spur future U.S. federal tax revenues on account of both, future account withdrawals and higher corporate and personal capital income taxes. However, Auerbach, Gale, and Orzag (2003) suggest that the revenue impact would be modest.

The current paper implements a detailed analysis to estimate the net revenue impact of tax-saving incentive plans in 17 OECD countries. The revenue impact depends on several factors: the differences in tax rates during contribution and withdrawal phases, the marginal tax rates that would be applicable during the accrual phase were accruals subject to taxation, and the extent of new saving spurred by the plans.

The authors' successfully undertake a massive task in analyzing tax incentive plans' fiscal impacts for 17 OECD countries. To do so they must calibrate and project values of key determinants of contributions and withdrawals – the number of participants, initial assets, earnings, contribution rates, income accruals, and withdrawals. Also, they must make assumptions about average marginal tax rates applicable today and in the future on contributions (to estimate lost revenues due to plan participation), income accruals on plan assets, and on withdrawals.

The authors' implementation probably cannot be improved upon, given the limited sources of information on each country's economy, demographics, and plan performance to date. The authors take great pains to achieve accurate estimates – especially with regard to lost revenues on income accruals within tax-favored accumulations.

The authors main results are that most countries face significant tax losses as a result of offering tax-saving incentive plans. These losses would be mitigated if introducing tax-favored plans generated net new saving. However, how much new savings are generated is not easy to estimate. To the extent that such schemes are mostly utilized by upper-income individuals, the likelihood of generating new savings remains low.

One avenue for more accurate estimates not considered in the paper is the possibility of tax interactions. For example, in the United States, larger taxable withdrawals from tax-favored accounts could potentially expose a larger amount of retirees' Social Security benefits to income taxation. Such interactions could magnify (or reduce, depending on the type of interaction) the fiscal impact of such plans over the next two decades as large cohorts of baby-boomers, who own substantial tax-favored assets, retire and begin to draw their Social Security benefits.

Second, the exercise assumes that current fiscal policies will continue indefinitely. However, it is well known that the fiscal policies of many OECD economies are unsustainable. All countries with unsustainable fiscal policies must soon begin to adjust them to bring future outlays and revenues back toward balance. If these adjustments involve higher future income taxes, they will reap much larger revenues than those estimated by the authors. Any future income tax hikes will essentially be "non-distortionary" *vis-à-vis* the asset accumulations: once accumulated, the assets cannot be rapidly decumulated to avoid the new higher tax rates. Hence, the size of country-specific "fiscal assets" could be considerably understated. Notwithstanding these observations, the authors are to be commended for a significant contribution to the literature on the revenue effects of tax-favored saving plans.

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COMMENTS ON SESSION III: PUBLIC DEBT, AGEING AND FISCAL SUSTAINABILITY

John Janssen[*]

Together the papers in this session provide a useful base for thinking about the issues of public debt, ageing and fiscal sustainability. I would like to thank the contributors for providing a number of important insights on both analytical and policy issues.

The paper by Antolín, de Serres and de La Maisonneuve on the budgetary implications of tax favoured pension schemes provides a perspective on an aspect of the projections that often gets simplified for modelling purposes, namely tax revenues. Whether tax favoured pension schemes succeed in boosting private saving has an important bearing on the net fiscal outcome and so provides another angle to the discussion of public and private saving in Steindel's paper.

Because they are typically associated with long-lived infrastructure assets, Public-Private Partnerships (PPPs) are similarly concerned with long-term fiscal issues. In terms of the IMF work on PPPs by Cangiano and Ter-Minassian, I would reiterate the importance of the government gaining a cost saving and transferring risk. Success in achieving this is more likely when there is:

1) a high degree of certainty that the government and other stakeholders will commit and that the tender process is transparent and credible.
2) a gain to both parties sufficient to cover contract and other transactions costs. Although the size of the arrangement may be a factor, the complexity of arrangements is the biggest driver of costs. Small straight forward arrangements would need to have relatively small contracting costs to be viable as PPPs.

The paper by Köhler-Töglhofer and Zagler on debt dynamics and policy regimes extends the analysis on so-called expansionary fiscal contractions. The analysis in this paper seems appropriate to papers in Session II on the relationship between deficits and interest rates. It is also relevant to the implementation of fiscal adjustments implied by long-term sustainability analysis.

Höppner and Kastrop note the proposal for the Federal Ministry of Finance to produce a sustainability report covering the long-term implications of population aging on Germany's public finances. Such a report is in line with the growing body of analysis worldwide.

Countries such as the United Kingdom and Australia have incorporated specific long-term fiscal reporting requirements into the frameworks guiding their fiscal policy:

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1) the Australian Charter of Budget Honesty requires that an Intergenerational Report, covering a 40 year projection period, be produced every five years.
2) the United Kingdom's Code for Fiscal Stability requires the annual Economic and Strategy Report to present illustrative projections of the outlook for key fiscal aggregates for a period not less than 10 years. Published projections have covered longer time periods as the paper by Robert Woods in Session II illustrates.

Currently, New Zealand's Fiscal Responsibility Act requires the annual Fiscal Strategy Report to include projections for the variables identified as long-term fiscal objectives (including the operating balance and debt). The projections are for a period of ten or more years. Proposed changes to the Act will require:

1) the government to specify the time period to which its long-term fiscal objectives apply (being a minimum of 10 years).
2) the Treasury to prepare a statement, at least every four years, on the long-term fiscal situation. The Treasury would provide its best professional judgement about the risks and the outlook over at least the next 40 years. These judgements will be informed by qualitative and quantitative information including the use of various analytical indicators.

The proposed legislative requirement has been drafted to give sufficient flexibility around what is required in the statement. A flexible approach is important because it allows for projections and indicators spanning a range of issues (e.g., pensions, health, education and the aggregate fiscal position). There are sufficient caveats to the analytical indicators and fiscal projections to not want to rely on any particular method and to also warrant the consideration of alternative scenarios.

The importance of scenario analysis is highlighted in the paper by Klyvienė on population ageing in Lithuania. The potentially significant implications of changes in net migration and the role of alternative pension reform options are hinted at rather than explored through scenarios. Similarly, the paper by Pattnaik, Prakash and Misra would benefit from a consideration of the cyclical influences on the Indian fiscal position and whether demographic changes are important for longer term debt sustainability.

Steindel's paper surveys fiscal sustainability type estimates for the United States. He reminds us that a full assessment of potential changes in programs needs to go beyond fiscal consequences and consider the effect of such changes on the ability of the economy to deal with the imbalance. The key channel for these effects is through saving and capital accumulation.

Finally, the paper by Kajaste on public debt sustainability and the fiscal framework of EMU highlights the significant challenge in designing fiscal frameworks and reporting systems that:

i) give credit and so create incentive for policy changes with longer term sustainability benefits, and

ii) make the most of fiscal "good times". The lesson from the New Zealand experience is that meeting this challenge requires ongoing refinements to fiscal reporting and budgetary frameworks.

COMMENTS ON SESSION III: PUBLIC DEBT, AGEING AND FISCAL SUSTAINABILITY

Karine Hervé[*]

Let me start by thanking Franco Daniele and the Banca d'Italia for inviting me to this conference. I also would like to congratulate the contributors for their excellent and interesting papers. I have learnt lots of things. But I need to apologise because the time frame given to me is too short to provide an in-depth analysis of each individual paper. Indeed, these papers are quite heterogeneous and they deal with various problems related to ageing.

Moreover I want to mention that I joined the Banque de France only four months ago. Before I used to deal with international topics that are remote from these ones. Thus far, I am not very familiar with these issues and especially ageing problems. Therefore, my comments and remarks, particularly the focus on the impact of ageing on overall economies, will probably appear to be very naive for most participants. I will first consider demographic evolutions. Then, I will turn to the impact of ageing on public expenditures, labour market and saving ratios. Finally, I will try to open the debate giving some proposals.

1. Demographic evolutions

Demographers have more certainty than economists when it comes to forecasting. Relying on age pyramids and a stable trend of the life-expectancy lengthening, the part of risk is reduced to one element: the fertility rate. Of course, the latter is unknown: demographers did not forecast either the "baby boom" or the decrease of the fertility rate around the Seventies.

Nevertheless, important changes in the size and composition of the population will occur in most industrialised countries. For the main industrialised countries, we can retain five major changes that will be very significant over the period 2000-25:

- the size of the population will fall. Across the EU Member States, Italy, Spain and Germany are particularly concerned with respectively a change of –17 per cent, –11 per cent and –8 per cent by 2050,
- the number of young persons will also diminish,
- the number of elderly persons (aged 65 and over) will rise significantly,
- the working age population will fall by some 20 per cent,
- the life expectancy will be higher especially for males.

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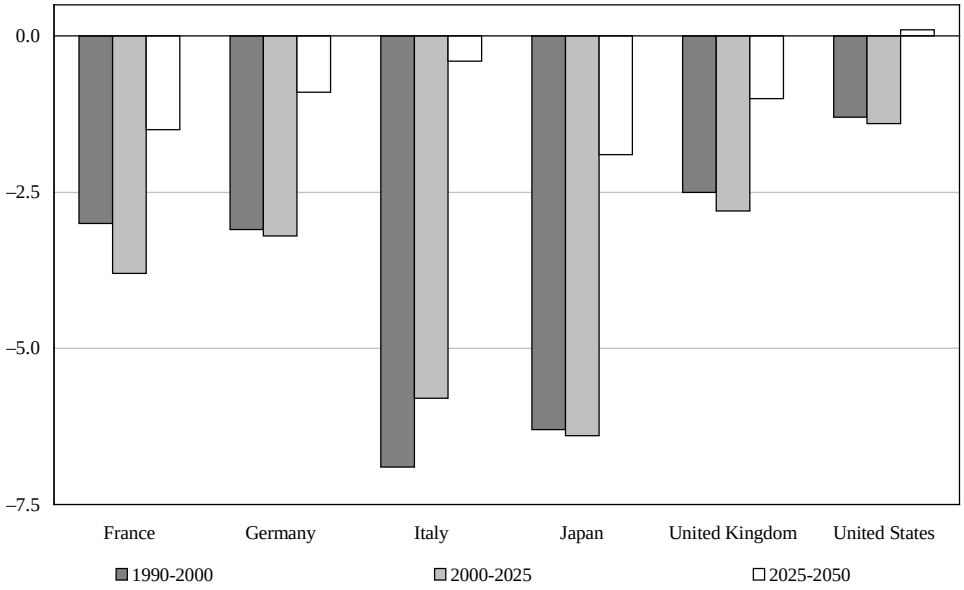
[*] Banque de France.

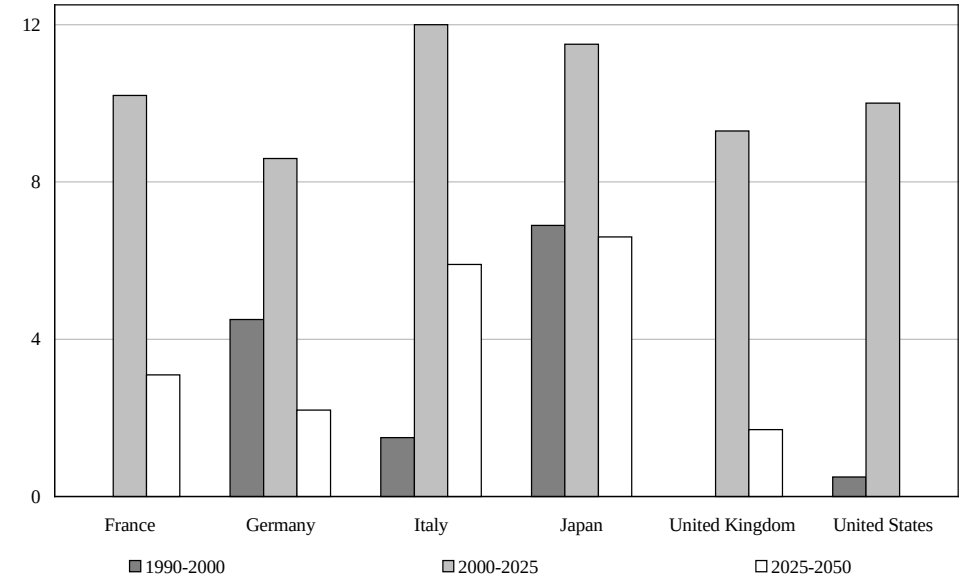
Demographic Evolutions of Youths (0-24)

(percentage-point change of share in total population over the period considered)



Demographic Evolutions of Olders (55 and over)

(percentage-point change of share in total population over the period considered)



These evolutions pose two separate problems. The first one is that the absolute reduction of population will result in a lower population of countries affected relative to the world population. The second concerns the structure by age of population which will lead to a higher part of elderly population. There is a growing recognition that ageing populations will pose major economic and budgetary challenges in coming decades. More precisely different issues come to the fare: future public expenditures, labour market and saving rates.

2. Impact of ageing on future public expenditures…

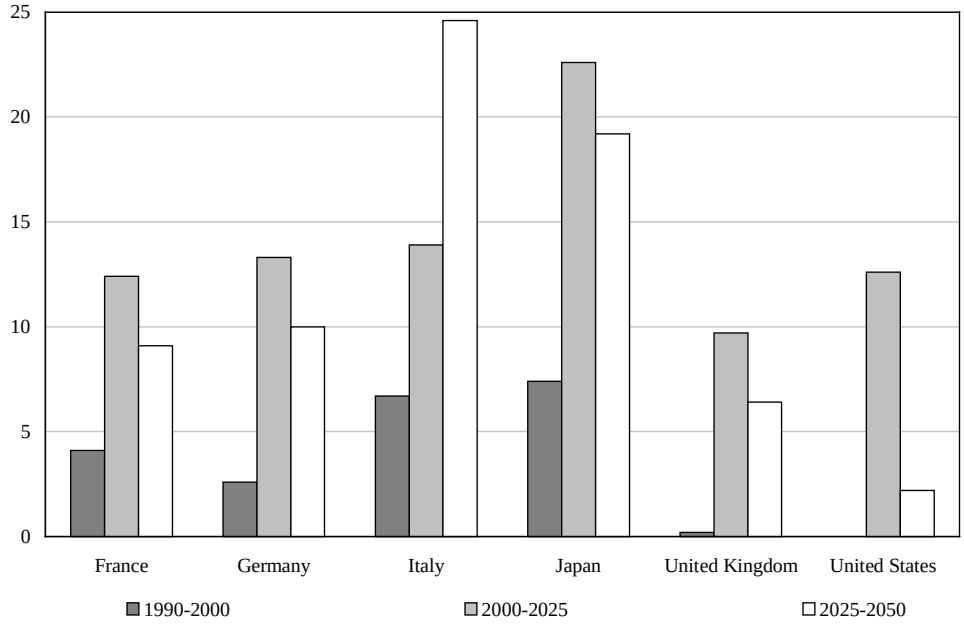
…on pension expenditures

The old age dependency ratio will more than double between 2000 and 2050. In other words and on average, the ratio of the working age population to the retired age population will continue to decline from 4 to only 2 by 2050.

The rising old-age ratio is the main force behind increasing levels of public pensions. But, when considering pension expenditures, the key variable is not so much the old-age dependency ratio as the balance between active and inactive persons. Other variables such as employment, eligibility, *i.e*., elderly persons allowed to receive pensions and benefits, might be taken into account. Old-age ratio

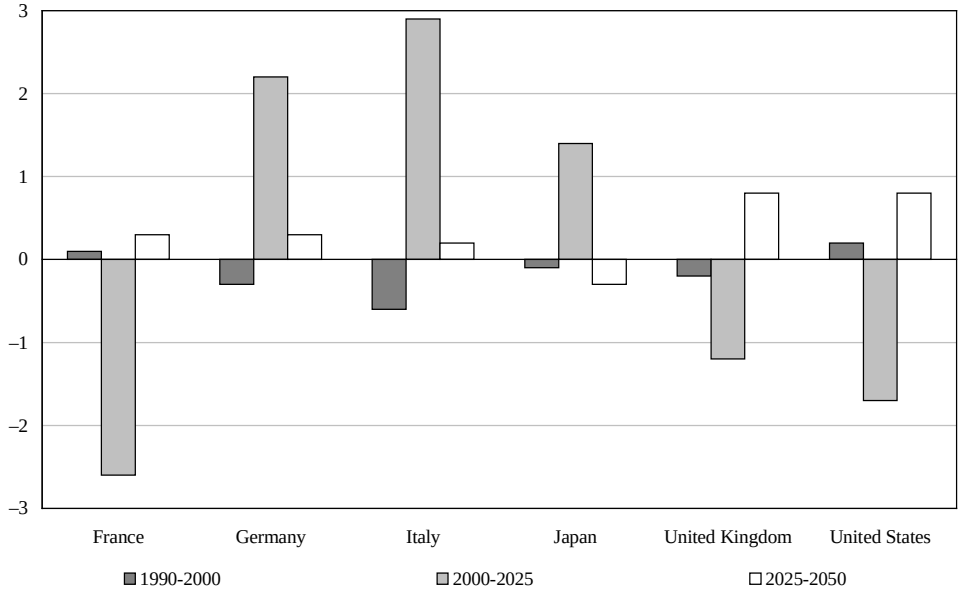
Old-age Dependency Ratio

(ratio of the population aged 65 and over to the population aged 15 to 64)



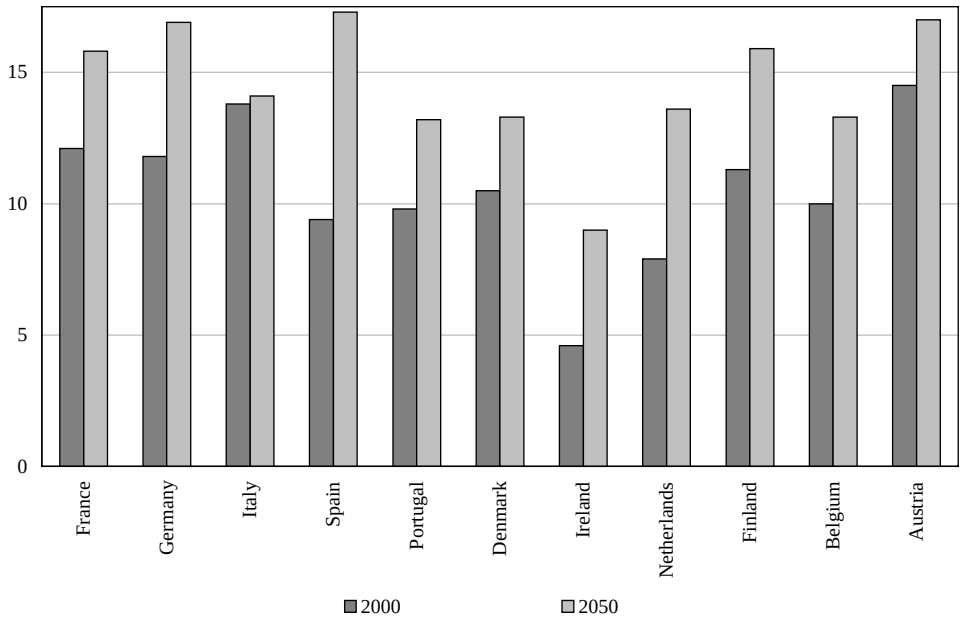
Participation Rate

(rate of the active to the total population aged 15 to 64)



Ratio of Public Pension Expenditure to People Aged Over 55

(percent of GDP)



and eligibility will increase pension expenditures but should be partly offset by changes in the employment rate (for instance: female participation) and the decline in the benefit ratio (average pension as a ratio of output per worker).

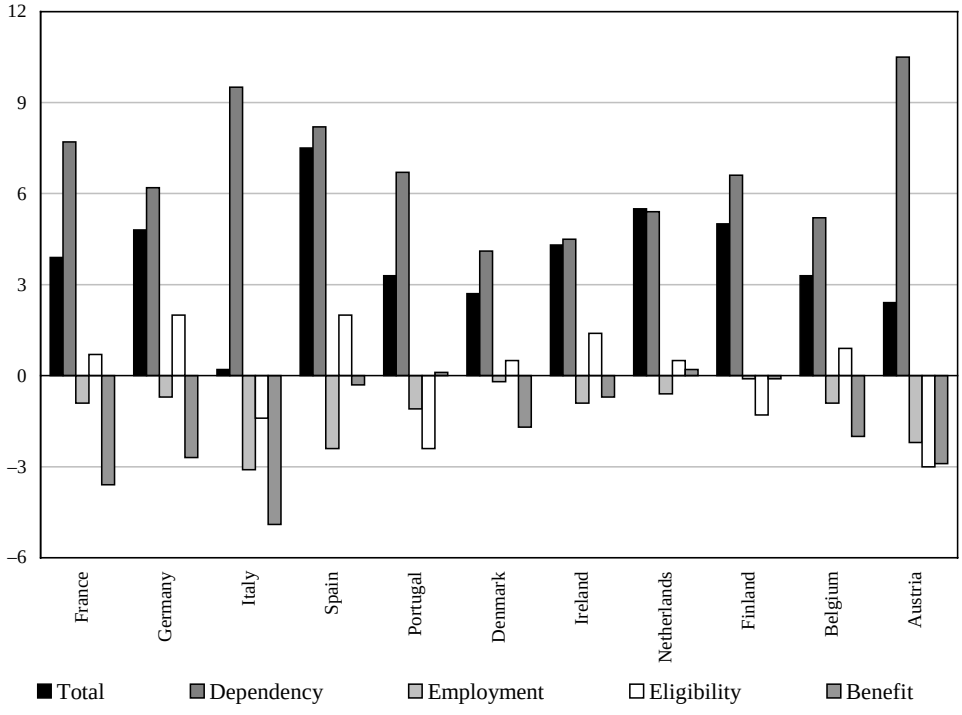
Nevertheless, most of the projections (OECD, INSEE etc.) show a substantial increase in public pension expenditures. Overall, the results of the OECD indicate that spending on public pensions will increase by between 3 and 5 per cent of GDP in most EU Member States. However, there are very large differences in the timing and scale of changes across countries.

But even assuming a stabilisation of the participation rate ratio (due to the improvement in female participation for instance) and a decrease in unemployment, the problem of future retirement pensions would not be solved since these two latest factors would not offset the wide impact of dependency.

…and on health and long term care expenditures

Ageing populations could have a two-pronged impact on health and long-term care systems. Some OECD simulations on EU Member States show that

Factors Behind the Change in Public Pension Spending
(variation between 2000 and 2050)

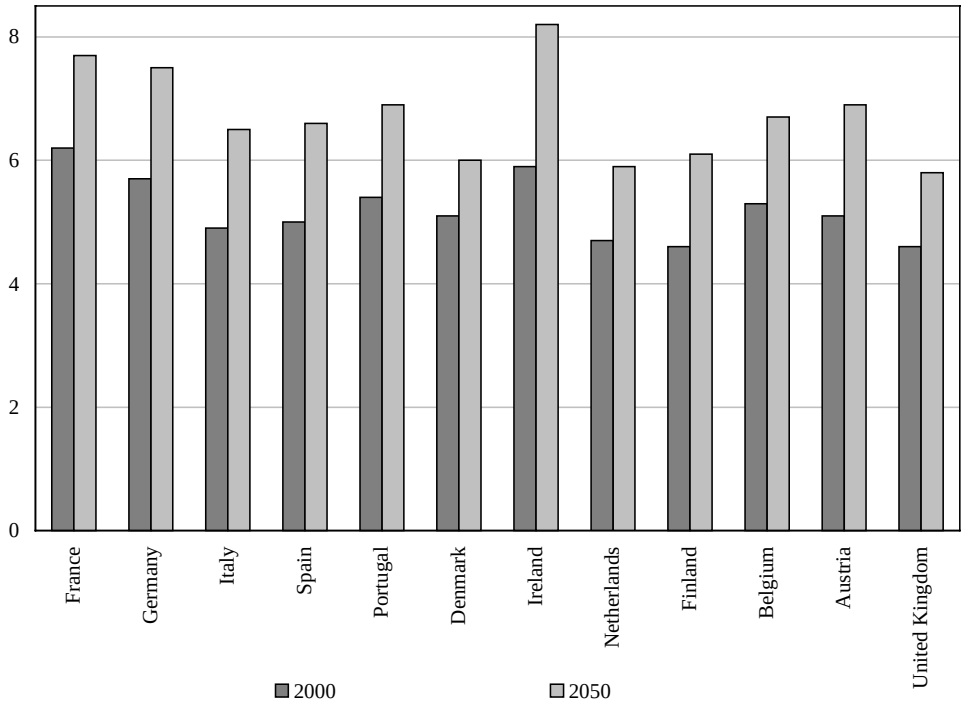


by 2050, public spending on health and long-term care is projected to increase by 1.7 and 3.9 percentage points of GDP in countries reporting results for both expenditure components.

According the OECD projections, demographic changes would lead to increased public spending in the range of 0.7 to 2.3 percentage points of GDP over the next fifty years.

For long term care, ageing would increase expenditure ranging from 0.2 to 2.5 percentage points of GDP. The increase is especially high in Denmark, Sweden and Netherlands with respectively 3, 2.8 and 2.5 per cent.

Impact of Demographic Changes
on the Future Expenditure Level of the Health System



…all in all

Always according to the OECD projections, the total of public spending (pensions, health and long term care) could rise by between 4 and 8 per cent of GDP in most EU Member States in coming decades.

3. Impact of ageing on labour market

Ageing populations would theoretically lead to a decrease in unemployment because active population will fall. All things being equal, this evolution of unemployment would ease the burden on public spending. This prognostication is based on the idea that unemployment stems from an unfavourable trends in growth. Nevertheless, if we believe that unemployment is due to structural problems as the discrepancy between labour supply and demand (labour cost, rigidities…), the decreasing size of the labour market (on account of a fall in the active population) would not resolve the structural problems and the unemployment would hover at the same level.

Empirically, this prognostication is no more validated in the past periods. Indeed, in many countries unemployment rose during the Seventies while the active population started to increase a long time before. Given the absence of relationship between employment and demographic developments, the slowdown or the reversion of active population growth could not be interpreted as a reduction of unemployment.

In this context, it is not because the size of the labour market will decrease that structural problems, which lie at the roots of unemployment, would disappear. It should even be the opposite if the diminution of active population will be accompanied by transfers on favour of retirement and an increase in social contributions.

Moreover, as wages grow with seniority, ageing in companies could lead to an higher unemployment of elderly persons. This is a real contradiction with the fact that in an ageing society in order to balance the pension systems, old people would have to work more and more while for demographic or economic reasons the companies would try to exclude them sooner and sooner.

4. Impact of ageing on saving rates…

…on private saving rates

Ageing populations would be expected to result in a lowering of the private savings ratio if the saving pattern of consumers were to comply with the traditional "life cycle" hypothesis. This type of model suggests that saving propensities and the overall dependency ratio are expected to be negatively correlated.

Unfortunately, the empirical supporting evidence is more heterogeneous. On the one hand, most econometric studies, especially Meredith (1995), show that:

- Data source used impacts significantly on the results obtained, with studies based on microeconomic or macroeconomic time-series or cross section data, producing widely divergent estimates of the responsiveness of the saving ratio to changes in the dependency ratio.

- Changes in elderly dependency ratio have a greater effect on saving patterns compared with the youth dependency ratio. For instance, for every one percentage point increase in the elderly and youth dependency ratios respectively, the saving rate is falling by 0.86 and 0.61 of a percentage point.

On the other hand, other studies using household survey evidence suggest that any effects on the saving rate may be negligible. Some of them conclude that although demographics are important determinants of private saving rates, the size of the dependency ratio effect is lower than that found in the above series of studies. Masson *et al.* (1995) for instance find that one percentage point increase in the dependency ratio leads to a reduction of only 0.14 per cent in the private saving ratios of industrial countries.

…but also on public saving rates

Ageing would increase public expenditures and on the basis of unchanged policies public saving is likely to decrease.

…and on national saving ratios

Assessing the national saving implications is not simply a matter of aggregating the separate effects of private and public savings because that would ignore the existence of potentially important interactions between both of them such as the Ricardian equivalence.

5. What could be envisaged to address these problems

In order to address the problems of ageing, various political measures will have to be taken by governments. Nevertheless, as some of these measures are politically unpalatable, most governments fail to address the problems. Thus, as some contributors have already mentioned, in many countries increasing efforts will have to be undertaken to inform the public that the situation will be unsustainable if nothing is done. I will try now to open the debate by proposing different measures that would ease the burden of ageing.

Increasing the rate of fertility

The idea that a revival of fertility could restore the pension system is fairly obvious. In France, for instance, studies show that in order to make the system of pensions balanced by 2020, the rate of fertility would have to increase to be three children per woman. Of course, this solution seems unrealistic in so far as this rate is higher than that observed during the baby boom. Moreover, this “super baby boom” would have to be permanent.

Increasing immigration

Even if migrations could only bring a partial and limited solution to the issue of ageing, they can, particularly in the French case, revert the current trend of depopulation. On this topic, studies are missing, especially in France. The UNO simulations are only proxies and they do not deal with the issue of this migration absorption by national labour markets. But they set a very interesting discussion framework and the scale of the problem. According to the French case simulations, the stabilisation of the total population is achieved with some 100,000 immigrants per year, which is not unrealistic.

Changing labour market structures

In order to neutralise the demographic developments, labour markets needs to be reformed. By this way, several measures could be envisaged:

- Lowering structural unemployment: the reduction on the unemployment rate represents a budgetary saving due to decreased transfer spending and increased tax receipts.
- Raising labour force participation rates: two ways of acting could be considered. The first one would consist in increasing the participation rate of females. The second one is related to elderly work. Early retirement programmes and financial disincentives to remain longer in the labour force should be removed. Elderly employment would have to be promoted.
- Extending working lifetimes: with life expectancy having increased and continuing to do so, with jobs becoming less physically strenuous and with entry into the labour market occurring at a progressively later age, governments would lengthen the average working life time.

These policies, more than offset adverse demographic developments could also increase potential output and tax revenues but also decrease public expenditures on the elderly (due to the slower rate of rise in the effective dependency ratio).

Making public finances healthier

One of the problem of ageing populations is their impact on national saving. Indeed, when focusing on the current evolutions of public finances namely emergence of deficits in most countries and a growing debt ratio, the initial situation which is not optimal would worsen in the future.

A sounder fiscal position will ensure more favourable debt dynamics when the public sector spending pressures from ageing start to emerge. In that sense, respect of the Stability and Growth Pact would be a good way to protect against negative impacts of ageing populations. Moreover, as highlighted in various papers, the criteria of the debt ratio should be reinforced.