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DISKUSSIONSBEITRÄGE

DISCUSSION PAPERS

Public Finances in the European Union -
Is Convergence Sustainable?

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Public Finances in the European Union – Is Convergence Sustainable?

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1 Introduction

Preparing to join the final stage of the European Monetary Union (EMU), governments in the member states of the European Union (EU) in recent years have made considerable effort to tighten fiscal policy. Overall, the EU countries seem to have witnessed remarkable convergence of their public finances, which qualified a safe majority for the single currency [cf. EMI (1998)].¹ However, the limits on public borrowing introduced with the Maastricht Treaty do not provide a meaningful reference to assess the actual sustainability of the convergence process. As Kotlikoff (1993) has demonstrated, conventional fiscal indicators like the debt to GDP ratio or the annual cash-flow deficit do not succeed to describe the long-run viability of public finances. Not only are the reported deficit or debt figures prone to manipulation. More seriously, the basic deficit indicators fail to incorporate the unfunded long-term pre-commitments of the public sector.

The EMU convergence criteria have seduced politicians to focus their stabilisation effort on short-sighted budgetary relief. Harder policy measures which would have taken into account the unfunded claims on future budgets were frequently avoided. Adopting a long-term fiscal perspective, convergence to sound public finances throughout the EU seems less secure. The dominant challenge to future public finances comes from rapid population ageing, which hits the European societies in the course of the next decades. With fertility rates persisting below replacement level, old age dependency is expected to almost double on EU average from 37 in 1995 to 67 in 2035.²

Government finance in the EU member states might pass through this demographic test quite differently. First, the process of population ageing in Europe is actually rather varied. Fertility and mortality developments are considerably uneven across countries. More importantly, tax and transfer systems within the EU are far from harmonised. The largely unfunded social security and public health systems still show particular institutional diversity.³ At present, Bismarckian types of pension insurance,

¹ The only exceptions are Greece and Sweden, which have not managed to meet the EMU criteria for sustainable public finances. Denmark and the United Kingdom (UK), although eligible, have exercised their right not to join the EMU.

² Old-age dependency is defined here as the number of agents aged 60 or above per 100 people of age 20 to 59.

³ For a survey of the institutional settings, cf. Franco and Munzi (1996). In 1995, according to OECD (1997), joint pension and health expenditure ranged from 8.7 percent of GDP in Ireland to 19.7 percent in Italy.

which exhibit a high linkage of personal contributions and benefits compete with tax financed transfer systems which only provide a comparatively basic level of income protection.

To judge the factual state of convergence to sustainable public finances in the EU member states, it is imperative to integrate the future demographic environment and its possible budgetary consequences within the institutional settings of the individual member states. Since introduced by Auerbach et al. (1991, 1992), generational accounting has developed into a preferred tool for this kind of long-term fiscal analysis. As a forward looking budgeting concept which incorporates all levels of government activity including social insurance, it appears vastly superior to annual cash-flow accounting.⁴ The method reveals the unfunded claims on future budgets that continuation of current fiscal policy would introduce. It thereby provides an early indicator for long-term trends that could disintegrate EU fiscal policy in the future.

In this paper, we discuss the latest generational accounting results for 12 of the 15 EU member states, which were prepared on behalf of the European Commission by an international team of experts.⁵ We proceed as follows: Section 2 summarises the characteristic features of the standardised generational accounting concept on which the computations were based. Section 3 investigates the divergence of the European countries in terms of long-run fiscal sustainability, and attempts to work out the fundamental forces behind this outcome. Section 4 focuses on the long-term state of fiscal policy in Germany and the UK. This seems instructive, since the two states run markedly contrasted public pension systems. Counterfactual experiments are used to assess the potential for more balanced fiscal policy. Section 5 concludes the paper.

⁴ For a critical review of generational accounting, cf. Diamond (1994), Havemann (1994), Buiter (1997) and Raffelhüschen and Risa (1997).

⁵ This project was conducted under the direction of Bernd Raffelhüschen as principal investigator. Alan Auerbach and Larry Kotlikoff took responsibility as joint investigators. The country reports were contributed by Keuschnigg, Keuschnigg, Koman, Lüth and Raffelhüschen (1999) for Austria, Dellis and Lüth (1999) for Belgium, Jensen and Raffelhüschen (1999) for Denmark, Feist, Raffelhüschen, Sullström and Vanne (1999) for Finland, Crettez, Feist and Raffelhüschen (1999) for France, Bonin, Raffelhüschen and Walliser (1999) for Germany, McCarthy and Bonin (1999) for Ireland, Franco and Sartor (1999) for Italy, Bovenberg and ter Rele (1999) for the Netherlands, Berenguer, Bonin and Raffelhüschen (1999) for Spain, Lundvik, Lüth and Raffelhüschen (1999) for Sweden, and Cardarelli and Sefton (1999) for the UK. The individual country studies will be edited by the European Commission in a forthcoming volume of *European Economy*.

2 Measuring Sustainable Fiscal Policy

Generational accounts measure the present value net tax burden that individuals of a given age can expect to experience over their remaining life-cycle. Their amount is determined by a combination of individual survival probabilities and the net tax payments, i.e. taxes net of transfers, policy allocates to members of specific age cohorts. When distributing lifetime tax burdens between generations, the government is bound by its intertemporal budget constraint. In the long term, the present value of net taxes collected from present and future generations must suffice to finance net government expenditure which does not constitute a personal transfer, and to pay interest on outstanding public debt. The method defines as sustainable a tax and spending policy which, if maintained forever, does not offend against this constraint. Sustainable public finances impose equal life-cycle net tax rates (in terms of present value life-cycle income) on the present newborn and all subsequent cohorts. Any other situation would be intergenerationally imbalanced. If perpetuation of the status quo does not raise enough revenue to meet the intertemporal public budget constraint, the government cannot avoid to increase net tax burdens at some future point of time. In the opposite case, net taxes can be lowered for some present or future generation.

While the basic idea of generational accounting has remained unchallenged, a growing wealth of empirical applications produced a diversity of approaches that rendered cross-country comparisons of fiscal sustainability difficult in the past. Only recently, Auerbach et al. (1999) and Raffelhüschen (1999a, 1999b) have managed to apply a unified framework to a series of country studies. The latter, likely to represent the most advanced standardisation effort to date, constitutes the base for the country results presented in the following section. To ensure comparability across countries, great care has been taken to harmonise the assumptions on long-term fiscal and demographic trends which are fundamental for the sustainability outcome. All computations start from 1995 as the most recent year for which the required data could be assembled for all countries included. The uniform base year guarantees that the economies were faced with a comparable global economic environment, although individual countries might have gone through very different phases of their business cycle.

Population projections generally favour the medium bound of prospects deemed likely by public authorities, with gains in longevity supposed to come to a rather early

halt. Personal taxes and transfers are uniformly uprated for productivity growth which is set to an invariable annual rate of 1.5 percent. This assumption does not reflect current legal practice in some states, but is a conceptual necessity in the present long-term context. For example, continuously delayed adjustment of transfers, which are often linked to the CPI by law, would worsen the net income position of transfer receivers progressively. Permanent growth adjustment, in contrast, preserves the initial share of individual taxes and transfers in GDP, provided population structure does not change. This proceeding also rules out the secular trend of personal health spending growing at a faster rate than productivity. All future payments are taken back to the base year applying a uniform discount rate of 5 percent p.a., which serves as an estimate of the risk-adjusted real pre-tax interest rate in the EU.

The general rule of productivity uprating is only ignored in order to model the fiscal consequences of policy reforms that had been legally enacted in or prior to the base year. This approach accepts some speculation on the insecure revenue and expenditure impact of measures that had not come into full fiscal effect in the base year. Possible ambiguities are tolerated to describe the countries' actual state of fiscal policy more accurately. The analysis could miss existing long-term stabilisation plans in some countries otherwise. Debated, but yet undecided policy measures, however, are not admitted to the baseline fiscal setting. Neither are official medium-term budget plans taken into account, which too often seem dominated by political wishful thinking. The overall guideline for the projection of government revenue and expenditure is rather to assemble a medium set of assumptions that, considered the available information, neither tends to overstate nor underestimate the intertemporal imbalance implied by base year fiscal policy.

The generational accounting framework provides a varied set of indicators to illustrate the degree of intertemporal imbalance. The present assessment of fiscal sustainability is based on the elementary *sustainability gap*.⁶ The sustainability gap is defined as the present value of intertemporal liabilities that would be accumulated maintaining individual base year tax and spending levels, supposed the government was not bound by the intertemporal budget constraint. This measure provides a clear

indication of the overall extent of fiscal adjustment ahead. If the sustainability gap is positive, government's total expenditure commitments exceed prospective revenue under status quo conditions. Net taxes must be increased to fill the gap. A negative sustainability gap reveals the existence of an intertemporal budget surplus that permits to reduce tax burdens.

As an indicator, the sustainability gap has the advantage of being invariant to differences in the tax and transfer structure across countries. Moreover, the measure is not affected by different approaches to define net tax payments.⁷ It does not permit, however, to draw immediate conclusions on the associated change in generations' net tax burdens, or even personal welfare. *Ceteris paribus*, a given sustainability gap will interfere the less with individual consumption possibilities, the larger future cohort sizes. As the question of long-term fiscal policy convergence in the EU member states is predominantly a macroeconomic issue, the decision to use an aggregate sustainability measure seems nonetheless adequate.

3 The Prospect of Divergence

The second column of Table 1 reports the sustainability gaps in the 12 selected EU member states as a fraction of their base year GDP. Rather than alphabetically, the countries have been ordered by the degree of long-term sustainability observed for their fiscal policies. Ranking the country with the intertemporally most balanced fiscal policy first, the line runs from Ireland, which even accumulates small intertemporal wealth amounting to 4.3 percent of base year GDP, to Finland, whose intertemporal liabilities tower up to more than 250 percent.

The overall European perspective is one of severe intertemporal fiscal imbalance. With the notable exception of Ireland and Belgium, according to the generational accounting analysis none of the selected EU countries can be said to have achieved sound public finances for the long-term. Already the two countries which rank third and fourth in terms of fiscal sustainability, Denmark and the Netherlands, are burdened by

⁶ As this indicator was developed only recently, there is still some confusion of labelling. The measure is also referred to as *generational balance gap*, *true debt* or *intertemporal public liabilities*. Cf. Raffelhüschen (1999c) for a broader discussion.

⁷ The EU country studies use a net tax concept that opts for the broadest definition of public transfers. Other researchers have limited the transfer concept basically to in-cash transfers.

sustainability gaps as high as 71.2 and 75.9 percent of GDP, respectively. Average intertemporal indebtedness in the EU proves dominated by the Union's single largest economy Germany whose sustainability gap amounts to 136.0 percent of national product. For the combined EU government budgets, the quota is only marginally smaller. The aggregate public liabilities accumulated continuing 1995 fiscal policy exceed the Union's GDP by 25.7 percent.⁸ Adopting a long-term perspective, the actual debt position of the EU is about twice as high as the reference to base year public debt, which amounted to 60.4 percent of GDP, would suggest.⁹

This is a discomfiting outlook. To meet the intertemporal debt burden, public net tax revenue in the EU must rise significantly in the future. If governments wish to maintain their current spending level, for example, an immediate once-and-for-all proportionate increase in all tax revenue by 9.1 percent is required, in order to finance aggregate future expenditure demands. The already high EU tax quota would rise from 41.0 to 44.7 percent of GDP. An even higher tax raise becomes necessary, if adjustment of base year policy is delayed. The resulting disincentives could threaten the competitiveness of the EU in the world economy. Moreover, the sizeable revenue needs ahead might cause pressure on monetary policy in the EMU. Politicians reluctant or unable to further raise current taxation levels could hope to use an inflation tax in order to fill the sustainability gap.

Besides the extent of unfunded public debt, the sizeable variance of intertemporal fiscal imbalance across its member states must be alarming to a EU that strives for sustainable convergence of fiscal policies. Countries which have achieved basically sustainable fiscal policies are found aside member states whose present tax and transfer system is going to accumulate net revenue needs that reach two times their current GDP. Besides Finland, these intertemporally highly indebted countries are the UK, Austria, and Sweden which exhibit sustainability gaps of 184.8, 192.5 and 236.5 percent of GDP, respectively. Between these two extremes, there is a range of countries with medium

⁸ Here and in the following, the average findings for the 12 selected countries are regarded as an approximate for the entire EU of 15 states. The three omitted countries are unlikely to have significant impact on the actual EU average. In 1995, their combined share in EU GDP was only 5.1 percent, that in EU population 5.7 percent.

⁹ The definition of public debt employed in the generational accounting analysis is not in accordance with the EMU convergence criteria. Generational accounting takes into account net indebtedness, i.e. outstanding debt net of financial wealth.

intertemporal debt that broadly equals their GDP of year 1995. Denmark, the Netherlands, France and Italy belong to this group that also includes Germany at the upper bound.

In light of the disparate intertemporal states of fiscal policy in the EU member states, future harmonisation efforts could be undermined by the progressively diverging revenue demands of national governments faced to pay off their intertemporal debt. Countries which are forced to raise net tax revenue by a great amount to meet their public expenditure commitments could be attracted to use a feigned need to reconcile fiscal policy as a pretext to call for net tax increases on a European level. Of course, those EU member states whose public finances are expected to fare rather well in the long-term are likely to reject this claim. In addition, the sharply rising revenue requirements in some countries might induce their governments to direct additional financial demands against the EU. In the future, the distributional conflict about EU resources could seriously aggravate between governments with high and low intertemporal liabilities.

To take early policy measures directed at achieving sustainable convergence of fiscal policies in the EU, it would be helpful to identify the major sources of intertemporal imbalance in the individual member states. Unfortunately, there are no unambiguous answers to this question. A country's specific sustainability gap is the result of a complex, multidimensional interplay of factors, including the initial revenue and expenditure structure of the government's budget and the associated personal tax and transfer levels, the institutional organisation of the tax and transfer system, the fraction of expenditure bound to meet interest on outstanding public debt, and the prospective demographic environment. Nevertheless, one might work out some general trends.¹⁰

The third column of Table 1 allows to compare the selected governments' explicit net financial liabilities of year 1995 with the long-term implicit debt as measured by the sustainability gap. Since outstanding debt predisposes part of prospective public revenue to pay interest, one might expect base year debt to be positively related to the intertemporal liabilities of the public sector. Table 1 illustrates, however, that explicit debt is actually a poor indicator for the long-term sustainability of a country's fiscal policy, as is claimed by the advocates of generational accounting. In Belgium, the country with the single highest explicit debt in the EU (122.2 percent of GDP), continuation of base year

¹⁰ For a much deeper analysis of fiscal imbalance in the 12 selected countries the reader is referred to the individual country studies to be found in European Commission (1999).

fiscal policy generates future budget surpluses which are sufficient to pay off (almost) the entire initial public debt. The remaining sustainability gap of 18.8 percent of GDP requires only minor corrections of the current tax and transfer levels. In contrast, fiscal policy in Finland, the only EU country that commands over financial wealth in the base year due to a partially funded Social Security system, is most severely imbalanced. The initial public sector assets are rapidly exhausted, because in the baseline scenario future tax revenue persistently fails to meet the government's expenditure commitments.

If at all, one might detect an inverse relation between the explicit base year debt and the long-term sustainability of a country's fiscal policy. It strikes that the four countries with the least sustainable fiscal policies start from comparatively low explicit debt quotas, while the four EU member states which accumulate the smallest intertemporal liabilities were rather highly indebted in the base year. Incentives to curb fiscal policy, it seems, do rise with the significance of outstanding conventional debt. This impression could be partly owed to a special development, however. In the base year, the most highly indebted EU countries (Belgium, Italy, Ireland) had already begun to pursue a particularly restrictive fiscal course, in order to become eligible for participation in the EMU. Generational accounting presumes that the countries succeed to maintain the newly tightened fiscal policy forever, which decisively contributes to the observed intertemporally rather balanced outcome.

A second factor influencing fiscal sustainability in the EU is the future demographic development. The more rapid and severe prospective population ageing, the higher are the constraints on future public budgets, as the ratio of (income) tax payers to (pension and health) transfer receivers deteriorates. The last two columns of Table 1 illustrate the varied ageing prospect in the EU member states. They report old-age dependency in years 1995 and 2035, the year of the most serious demographic pressure in the EU. Overall, the correlation of old-age dependency and sustainable fiscal policy appears less clear than one might reckon. As the large sustainability gap of the UK demonstrates, a comparatively favourable demographic trend itself does not suffice to achieve intertemporally balanced public finances.

Nevertheless a favourable population prospect eases attaining sustainability. This seems especially true for Denmark, where a distinctly small gain in life expectancy markedly alleviates the ageing process, which helps to maintain a rather generous welfare

system. It is also evident for Ireland and Belgium, which are predicted to rank among the youngest nations in the EU of year 2035. In Ireland, also the initial population structure seems relevant to explain the very favourable sustainability outcome. The present median age of 31 years – 7 years less than in Sweden – is by far the lowest in Europe. As the consequence Ireland experiences sizeable budget surpluses throughout the next two decades, since tax revenue is particularly large, while transfer obligations remain small. A similar process brings down the sustainability gap in the Netherlands.

In general, countries with a prospect of high old-age dependency find it more difficult to sustain their fiscal policy. In Sweden, Germany and Spain, whose populations will be older than the EU average by the year 2035, sustainability gaps range above the EU average, too. In comparison, fiscal policy in Italy, the most severely ageing country in Europe, fares rather well. Sizeable and early measures to reduce the generosity of the public pension system seem to have been rather successful to prepare public finances for soaring old-age dependency.

Although both explicit indebtedness and the ageing perspective can provide valuable insight into the basic sources of fiscal imbalance, one should take care not to overemphasise the impact of these factors. For a correct understanding of the sustainability outcome, a more detailed analysis of country-specific economic and institutional aspects would be advised. At closer inspection, for example, intertemporal fiscal balance in Ireland is not primarily owed to the country's favourable demographic environment, but mainly due to generous EU transfers which compensate a structural deficit. If EU transfers were removed, as seems likely as a consequence of Ireland's recent economic success, fiscal policy would become considerably imbalanced.

At the opposite extreme, fiscal perspectives in Finland could be less bleak than the sustainability gap of 253.2 percent of GDP seems to suggest. In the common base year 1995, the Finnish economy actually went through a deep depression, due to the complete breakdown of traditional trade patterns with Eastern Europe. Perpetuation of this unfavourable economic status quo is responsible for the immense intertemporal liabilities observed. Presuming reasonable economic recovery, fiscal policy in Finland appears significantly more balanced. A similar argument could not be applied to the equally imbalanced fiscal policies in Sweden and Austria. The sustainability gaps in these

countries are mainly caused by extended and generous welfare systems which are strained to the limits by population ageing.

4 Pathways to Sustainable Fiscal Policy

The basic generational accounting analysis in the previous section has revealed a serious need for long-run oriented policy reform throughout the EU to shield public budgets against the demographic transition ahead. Considered the high general level of fiscal imbalance, it is impossible to recommend one of the existing tax and transfer schemes as a model to rectify fiscal policy.¹¹ This section rather relies on counterfactual policy tests, in order to assess strategies for intertemporally more balanced fiscal policies.

The analysis is focused on the UK and Germany, since the two countries follow opposite strategies to provide for Social Security benefits. Germany runs a generous mature pay-as-you-go pension insurance characterised by a high linkage of personal benefits and payroll contributions. Federal grants add only a minor fraction to the social insurance budget. In contrast, public pensions in the UK are dominantly pure transfers providing only basic income protection, which are financed out of general tax revenue. Not before recently basic pensions were complemented by a yet immature system of statutory earnings related pensions (SERP).

On a first inspection, little in the UK data set would hint at the severe intertemporal imbalance revealed by the basic generational accounting analysis. Next only to Denmark, the ageing process in the UK is the least pronounced in Europe, and net financial liabilities ranged well below EU average in the base year. Natural oil resources provide the government budget with a steady source of public revenue that remains unaffected by demographic changes. Finally, the UK system of basic public pension transfers, which similarly extends to health care provision, appears well protected against population ageing. First, the system limits the share of government expenditure directed into age-sensitive transfers. In 1995, combined pension and health expenditure amounted to only 10.5 percent of GDP, which was almost 5 percentage points below the EU average [cf. OECD (1997)]. Second, the broad revenue base of the system ensures a better pooling

¹¹ One might argue that Belgium could provide this reference, but sustainability in this country is achieved only at the cost of extremely high net tax burdens for the present living. Ireland cannot serve as model either, considering its dependency on EU transfers, and the singular demographic development.

of demographic risks, compared to a social insurance system that depends exclusively on payroll contributions.

If fiscal policy in the UK nonetheless accumulates significantly higher intertemporal liabilities than Denmark, which assembles a similar list of alleviating factors including pension provision on a tax-transfer scheme, this can be attributed to three particular circumstances. First, the near maturing of the SERP system rapidly inflates the revenue needs of this social insurance type of complementary pensions. Past attempts to slow down the expenditure dynamics of the system have been only partially successful. Second, the fact that ageing in the UK starts earlier than in the rest of Europe aggravates the financial problem, since the government has less opportunity to discount the large unfunded claims on SERP and basic pensions, which accumulate already over the next two decades. Finally, the transfer pension system appears generally underfunded. In 1995, the UK tax quota (38.3 percent of GDP) was the third lowest in the EU. In Denmark, for comparison, the tax quota amounted to 46.4 percent of GDP at this time. The scant tax base in the UK fails to generate sufficient revenue, as soon as the number of pensioners begins to rise.

As Cardarelli et al. (1998) have stated, moving to sustainable fiscal policy in the UK requires considerable fiscal restraint and prudence. One obvious solution to reduce future spending dynamics consists in strictly pursuing the existing transfer regulations, which provide for annual benefit uprating with prices, rather than nominal indexation to wages. This strategy has some considerable advantages. First, it guarantees a rather smooth and gradual reduction in transfer levels relative to earnings. Given real productivity growth reaches 1.5 percent p.a., indexing public spending with the CPI until years 2000, 2015 and 2030 implies a relative transfer cut by 7.2, 25.8 and 40.6 percent, respectively. Second, CPI adjustment does not greatly interfere in property rights acquired through personal contributions.

The first part of Table 2 reports the impact of transfer indexation to prices on the sustainability gap in the UK. Overall, CPI uprating turns out as an effective strategy to improve fiscal balance.¹² If price uprating is limited to contributory transfers, the improvement of fiscal balance remains comparatively small however. This is due to the

¹² This finding is supported by a similar outcome for France, where a switch from wage to price indexation of pensions has lowered the sustainability gap from 136.0 to 81.3 percent of GDP.

limited role of these transfers in the social system of the UK. To reduce the sustainability gap by only 30 percent, it is necessary to carry CPI indexation of contributory transfers through the year 2030. The same goal could be reached more effectively, if price uprating is adopted for all personal transfers. Then, five years of CPI indexation are sufficient to reduce the sustainability gap to 159.5 percent of GDP. If this policy can be maintained until 2030, the intertemporal liabilities fall by almost two third to 66.5 percent of GDP. It is unlikely, however, that politicians manage to load the necessary adjustment exclusively on transfer recipients, which would become increasingly detached from the general income development. A realistic strategy to achieve fiscal sustainability in the UK apparently cannot do without also taking steps to broaden the base of taxation.

In Germany, the conditions for sustainable public finance in general appear less favourable than in the UK. Base year outstanding liabilities are higher, and the demographic prospect is significantly worse. Moreover, current public budgets bear significant burdens to accommodate the transition of the former East German command economy. Finally, the generous scheme of social insurance is predisposed to generate sizeable deficits when the ratio of labourers to pensioners starts to deteriorate. Past pension reforms were timid to cut entitlements, and did not manage to eliminate structural problems of the system. For example, the plan to reduce the present pension replacement level of 70 percent using a long-run oriented 'demographic factor' was just abolished. Despite some effort to improve the actuarial fairness of the system effective retirement age is still almost five years below normal retirement age of 65. At the same time, since payroll contributions to social insurance have reached a historic height at almost 40 percent of total payroll, there seems little room for contribution raises to finance the future claims of current contributors.

In light of these obstacles, it is surprising to find that Germany manages to keep intertemporal liabilities significantly below the UK sustainability gap. This outcome suggests that fiscal policy outside the social insurance system is well balanced intertemporally. In fact, the unfunded liabilities of the pension, health and long-term care insurance system can be shown as the fundamental source of fiscal imbalance in Germany. Policy measures to reduce the sustainability gap hence must be directed at social insurance finance.

Germany, like the majority of EU member states, experiences a particularly favourable demographic environment in the first decade of the coming century. Support ratios are low, as the absolute size of the labour size reaches its maximum. Policy might use this demographic breathing space, which eases accumulation of budget surpluses, to achieve a partial funding of social insurance. The second part of Table 2 reports the impact of hypothetical partial funding strategies for German social insurance on the sustainability of overall public sector finance. In all scenarios, partial funding is assumed to achieve sustainability of the isolated social insurance system. Budget surpluses in the first decades are used to counterbalance social insurance deficits when the demographic situation aggravates.

In order to accumulate the funds required to maintain intertemporal balance, the counterfactual funding experiments adjust life-cycle net contributions to social insurance permanently from the base year. Sustainable social insurance finance demands to increase payroll contributions by 24.5 percent, to cut benefits uniformly by 19.7 percent, or a linear combination of these policies. Table 2 shows that irrespective of the means employed to accumulate temporary social insurance wealth, partial funding is a powerful strategy to balance fiscal policy intertemporally. Opting for an immediate transfer cut, the sustainability gap of German public sector budgets could be reduced to 21.8 percent of GDP. This intertemporally most favourable strategy is difficult to implement, however, since it imposes very high burdens on current pensioners. But also the generationally more balanced alternative of a combined tax raise and transfer cut still limits the sustainability gap to 34.1 percent of GDP.

The policy experiments for Germany illustrate that partial funding is a recommended strategy in EU member states which run advanced social insurance systems. This policy seems also advised from a macroeconomic viewpoint that lies beyond the core of generational accounting analysis. Partial funding that takes advantage of the demographic breathing space ahead, could endow the European economies with capital, thereby accelerating growth in ageing societies which are endangered to lose their dynamic strength. For the UK, unfortunately, partial funding no longer seems a feasible option. The country enters the period of rapid ageing too soon to accumulate the necessary funds. To cope with the severe intertemporal fiscal imbalance, policy can only be advised to continuously limit transfer growth, and to accommodate spending by a

moderately broader tax base. This mixed strategy would help spreading the necessary adjustment costs more evenly across present and future generations.

5 Conclusions

From the neoclassical viewpoint of generational accounting, public finances in the EU – though successfully meeting the short-sighted budgetary relief defined by the Maastricht criteria – are not converging to a sustainable path of fiscal policy. Rather, growing fiscal imbalances between present and future generations in most EU Member States might induce what is often labelled as the upcoming *age wars*.

Generational accounting studies clearly show the urgent need for long-run oriented fiscal policy reforms throughout the EU as ageing populations, high and still rising unemployment rates and growing debt burdens impose ever more constraints on national welfare programs and public sector transfers. Of course, the diversity of institutional and legal settings necessitates different adjustment strategies for, for example, the archetypal welfare states of most northern European countries and the Bismarckian social insurance systems of central and southern Europe. Definitely, solidarity and social safety nets in an ageing Europe need to be better reconciled with economic efficiency and fiscal sustainability.

A compulsory tool to assess the adequacy of potential future reforms is the method of generational accounting, since traditional indicators using deficit statistics which are based on annual cash-flow budgets completely fail to address the long-run state of fiscal policy. Due to some of the unavoidable infirmities of what is still a fairly new approach, generational accounting might not do a perfect job either. It will, however, certainly do a better job than the traditional fiscal indicators.

Table 1: The Sustainability Gap and Sources of Fiscal Imbalance

Country	Sustainability Gap (% of GDP)	Debt in 1995 ^a (% of GDP)	Old-Age Dependency ^b	
			1995	2035
Ireland	-4.3	72.1	30.2	59.2
Belgium	18.8	122.2	39.0	60.5
Denmark	71.2	59.5	35.2	51.5
Netherlands	75.9	64.6	30.5	65.3
France	81.3	35.6	37.1	62.2
Italy	107.3	105.9	39.5	79.7
Germany	136.0	57.7	35.7	69.2
Spain	151.9	63.2	38.1	74.5
United Kingdom	184.8	51.1	37.7	57.8
Austria	192.5	49.8	34.7	66.2
Sweden	236.5	36.7	41.4	66.8
Finland	253.2	-8.4	34.0	60.9
EU ^c	125.7	60.4	37.1	66.7

^a Public debt net of financial assets.

^b Population aged 60+ as a percent of those aged 20-59.

^c EU member states except Greece, Luxembourg, Portugal.

Source: Country Studies in European Commission (1999)

Table 2: Fiscal Policy Measures and Sustainability Gap (% of GDP)

<i>(a) United Kingdom</i>		
CPI Adjustment of Contributory Transfers until		
2000	2015	2030
173.2	144.0	129.2
CPI Adjustment of All Transfers until		
2000	2015	2030
159.5	97.2	66.5
<i>(b) Germany</i>		
Partial Funding of Social Insurance		
Increased Contributions	Reduced Benefits	Mixed Strategy
46.5	21.8	34.1

Source: Authors' calculations.

References

- Auerbach, A., J. Gokhale, and L. Kotlikoff (1991), *Generational Accounting: A Meaningful Alternative to Deficit Accounting*, in: D. Bradford (ed.), *Tax Policy and the Economy*, Vol. 5, Cambridge: MIT Press, 55-110.
- Auerbach, A., J. Gokhale, and L. Kotlikoff (1992), *Generational Accounting: A New Approach to Understand the Effects of Fiscal Policy on Saving*, *Scandinavian Journal of Economics*, 94, 303-318.
- Auerbach, A., W. Leibfritz, and L. Kotlikoff (eds.) (1999), *Generational Accounting Around the World*, Cambridge: Cambridge University Press.
- Berenguer, E., H. Bonin and B. Raffelhüschen (1999), *The Spanish Need for a Broader Tax Base*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Bonin, H., Raffelhüschen, B. and J. Walliser (1999), *The German Squeeze: Unification and Ageing*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Bovenberg A. and H. ter Rele (1999), *Government Finances and Aging in the Netherlands*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Buiter, W. (1997), *Generational Accounts, Aggregate Saving and Intergenerational Redistribution*, *Economica*, 64, 605-626.
- Cardarelli, R. and J. Sefton (1999), *Rolling Back the UK Welfare State?*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Crettez, B., Feist, K. and B. Raffelhüschen (1999), *Generational Imbalance and Social Insurance Reform in France*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Dellis, A. and E. Lüth (1999), *Does Belgian Fiscal Policy Cope with Debt and Aging?* in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Diamond, P. (1994), *Generational Accounts and Generational Balance: An Assessment*, *National Tax Journal*, 49, 597-607.
- EMI – European Monetary Institute (1998), *Convergence Report 1998*, Frankfurt.
- European Commission (1999), *Generational Accounting in Europe*, *European Economy, Reports and Studies*, Brussels, forth.
- Feist, K., Raffelhüschen, B., Sullström, R. and R. Vanne (1999), *Macroeconomic Turnabout and Intergenerational Redistribution in Finland*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Franco, D. and T. Munzi (1996), *Public Pension Expenditure Prospects in the European Union: A Survey of National Projections*, in: European Commission (ed.), *Ageing and Pension Expenditure Prospects in the Western World*, *European Economy, Reports and Studies 3/96*, Brussels.
- Franco, D. and N. Sartor (1999), *Italy: High Public Debt and Population Aging*, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.

- Havemann, R. (1994), Should Generational Accounts Replace Public Budgets and Deficits?, *Journal of Economic Perspectives*, 8, 95-111.
- Jensen, S. and B. Raffelhüschen (1999), Reconsidering the Danish Welfare State, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Keuschnigg, C., M. Keuschnigg, R. Koman, E. Lüth and B. Raffelhüschen (1999), Restoring Generational Balance in Austria, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Kotlikoff, L. (1993), From Deficit Delusion to the Fiscal Balance Rule – Looking for a Sensible Way to Measure Fiscal Policy, *Journal of Economics*, 7 (suppl.), 17-41.
- Lundvik, P., E. Lüth and B. Raffelhüschen (1999), The Swedish Welfare State on Trial, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- McCarthy, T. and H. Bonin (1999), EU Transfers and Demographic Dividends in Ireland, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- OECD (1997), Ageing in OECD Countries – A Critical Policy Challenge, *OECD Social Policy Studies*, no. 20, Paris.
- Raffelhüschen, B. (1999a), Generational Accounting in Europe, *American Economic Review*, P&P, forth.
- Raffelhüschen, B. (1999b), Aging, Fiscal Policy and Social Insurance: A European Perspective, in: A. Auerbach and R. Lee (ed.), *Demographic Change and Fiscal Policy*, Cambridge: Cambridge University Press, forth.
- Raffelhüschen, B. (1999c), Generational Accounting: Method, Data and Limitations, in: European Commission (ed.), *Generational Accounting in Europe*, Brussels, forth.
- Raffelhüschen, B. and A. Risa (1997), Generational Accounting and Intergenerational Welfare, *Public Choice*, 93, 149-163.

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