

Public Debt and Generational Balance in Austria

**Christian Keuschnigg, Mirela Keuschnigg, Reinhard Koman, Erik Lüth,
Bernd Raffelhüschen**

Public Debt and Generational Balance in Austria

**Christian Keuschnigg, Mirela Keuschnigg, Reinhard Koman, Erik Lüth,
Bernd Raffelhüschen**

Reihe Ökonomie / Economics Series No. 80

March 2000

Institut für Höhere Studien
Stumpergasse 56, A-1060 Wien
Fax: +43/1/599 91-163

Christian Keuschnigg
Institute of Public Finance, FB2
University of Saarland
P.O. Box 151 150
D-66041 Saarbruecken
CEPR and CESifo

Mirela Keuschnigg
Saarbrücken

Reinhard Koman
Phone: +43/1/599 91-252
E-mail: koman@ihs.ac.at

Erik Lüth
University of Freiburg

Bernd Raffelhüschen
Universities of Freiburg and Bergen

**Institut für Höhere Studien (IHS), Wien
Institute for Advanced Studies, Vienna**

The Institute for Advanced Studies in Vienna is an independent center of postgraduate training and research in the social sciences. The **Economics Series** presents research carried out at the Department of Economics and Finance of the Institute. Department members, guests, visitors, and other researchers are invited to submit manuscripts for possible inclusion in the series. The submissions are subjected to an internal refereeing process.

Editorial Board

Editor:

Robert M. Kunst (Econometrics)

Associate Editors:

Walter Fisher (Macroeconomics)

Klaus Ritzberger (Microeconomics)

Abstract

Based on Austria's fiscal stance in 1995, we compute the generational accounts for currently living as well as future generations. The results reveal the existence of an enormous intergenerational imbalance in favor of currently living generations. Total public sector liabilities may be more than five times as high as the officially recorded level of public debt. Without any action, future generations would face life-time net taxes that are about 65 percent higher than the tax burden of a current newborn. If the government could fully and permanently retain the expenditure cutting and revenue raising effects of the 1996 fiscal consolidation package and the 1997 pension reform, then it might be able to significantly reduce the intergenerational liabilities. However, enacting both the recent tax reform 2000 and the reform of the family support scheme would increase again the fiscal imbalance and intergenerational inequity of fiscal policy in Austria.

Keywords

Fiscal policy, social security, public debt, generational accounting

JEL Classifications

E6, H5, H6

Comments

Helpful comments by B. Böhm, H. Bonin, and seminar participants at the Austrian National Bank are gratefully acknowledged. Furthermore, we like to thank L. Giorgi, K. Kreiter, U. Obermayr, H. Stefanits, E. Fleischmann, and A. Rainer for providing us with particularly useful data and comments on Austrian fiscal policy.

Contents

I	Introduction	1
II	Generational Accounting: The Method	2
III	Generational Accounting For Austria	5
III.1	Recent Fiscal Policy	5
III.2	Tax Benefit Profiles	10
III.3	Baseline Results	11
III.4	Sensitivity Analysis	17
IV	Restoring Fiscal Balance	19
IV.1	Recent Policy Initiatives	19
IV.1.1	The 1996 Fiscal Consolidation Package	19
IV.1.2	The 1997 Pension Reform	20
IV.1.3	Tax Reform 2000	21
IV.2	Results	23
IV.2.1	Consolidation Package	23
IV.2.2	Pension Reform	25
IV.2.3	Tax Reform 2000	26
V	Conclusions	27
	References	28

I Introduction

Public debt was once a mere 19 percent of GDP in 1970. During more than two decades, however, fiscal policy allowed for a secular increase in government debt. Since 1975 the budget has been permanently in deficit. Accordingly, debt grew at an accelerating pace from 37 percent in 1980 to 69.2 percent of GDP in 1995. On top of cyclical effects, expenditure growth was mainly driven by an expanding welfare state and lately by increasing interest payments. Pension obligations and the demand for cost intensive health care increase progressively as a larger share of the population grows old. In addition to numerous new entitlements and generous eligibility rules, social expenditures were inflated also by the upward trend in unemployment (though much lower in Austria than in most other EU countries). With a net deficit in excess of 5 percent of GDP, the situation appeared seemingly unstable in 1995. In the absence of any drastic action, Austria's participation in EMU was threatened. The government finally pushed through a rather courageous consolidation package in 1996 followed by a sizeable pension reform in 1997 and, thereby, was able to improve sustainability in public finance. Government debt as a percentage of GDP is now starting to decline.

The officially recorded level of debt, however, is a rather illusory concept that does not offer much information regarding the sustainability of public finances and the true burden imposed on future generations [cf. Auerbach et al. (1991) and (1994)]. If the government is to remain solvent, it must satisfy its *intertemporal* budget constraint rather than any static net deficit criterion. Intertemporal solvency requires that the present value of spending must not exceed the present value of taxes plus current assets. Based on this concept, one may compute a "total" level of debt reflecting the present value of the excess of upcoming spending obligations over tax receipts that would obtain if current fiscal policy rules were continued forever. Such a measure offers much more meaningful information on the sustainability of public finances, and it may deviate considerably from the officially recorded level of debt.

Apart from the mere fact that consolidation measures may be successful in restoring sustainability, they also involve intergenerational redistribution. For any given path of public consumption, taxes may be collected now or later, and the burden will correspondingly fall on current or future generations. The method of generational accounting records how the public sector, under existing rules of spending and taxing, gives and takes from each generation over the entire life-cycle. Calculating the difference of the present value of tax payments over the present value of benefits over the rest of the life-time gives a single informative indicator that identifies the net fiscal burden of each generation. Such long-term considerations, however, are absent in conventional public sector accounting which usually rests on annual budgets and fails to come forth with projections that go beyond one or two periods. Consequently, not much is known about total government debt as well as the intergenerational effects of actual fiscal policy. We employ the standardized approach to

generational accounting as proposed by Auerbach (1997) and Raffelhüschen (1998) in order to gauge the total level of Austria's public debt and to evaluate the intergenerational impact of its fiscal policy.

We proceed by briefly presenting the generational accounting methodology.¹ After shortly discussing recent developments in the public sector, we turn to the baseline results regarding the intergenerational stance of Austrian fiscal policy in 1995. Finally, we evaluate the intergenerational consequences of the consolidation package of 1996 and the pension reform of 1997. We then calculate the effects from the recently adopted tax reform 2000 including the family support package. In the concluding section, we reflect on the main findings of the study and their policy implications.

II Generational Accounting: The Method

Traditional public sector accounting rests on a budget constraint that relates the accumulation of debt B_t to the size of the primary surplus T_t according to $B_{t+1} = (1+r)(B_t - T_t)$. This equation can be solved forward to obtain

$$B_t = \sum_{s=t}^{\infty} T_s (1+r)^{t-s} + NPG_t, \quad NPG_t = \lim_{s \rightarrow \infty} (1+r)^{t-s} B_s = 0. \quad (1)$$

To remain solvent with a given level of historical debt, the government must run future surpluses that are sufficiently large such that (1) is satisfied together with the No-Ponzi-Game condition $NPG_t = 0$. If it fails to generate the required surpluses, government finances are not sustainable in the sense that the NPG condition, and thereby the intertemporal budget constraint, will be violated. Debt will accumulate at an ever faster rate until government becomes insolvent. Quite intuitively, one may therefore compute a *sustainability gap* that is implied by current fiscal policy. Maintaining base year tax and spending rules, we project future primary surpluses and compare their present value with the current level of debt. The resulting gap reflects the degree to which current policies violate the government's solvency condition and are therefore unsustainable in base year t ,

$$NPG_t = B_t - \sum_{s=t}^{\infty} T_s (1+r)^{t-s}. \quad (2)$$

We measure "total debt", or wealth, by NPG_t . If negative, government spending doesn't exhaust its revenues in present value terms, and fiscal policy may relax without violating

¹ A critical survey on the analytical concept and empirical issues is found in Haveman (1994), CBO (1995) and Diamond (1996). The method employed in this paper follows the standards developed in the European Commission's project *Generational Accounting in Europe* [cf. Raffelhüschen (1999a, b, c)].

solvency. If positive, total expenditure commitments exceed prospective tax revenues under status quo conditions, and current fiscal policy is unsustainable. Eventually, net taxes *must* be increased at some future date to restore solvency. Total government debt, thus, provides a clear indication of the overall extent of future fiscal adjustment that is dictated to keep the government solvent. This measure accurately reflects the burden to future generations induced by currently living cohorts. It makes explicit the government liabilities which are not included in the official debt figures. Such liabilities, for example, include entitlements to pension benefits that young people obtain in a pay-as-you-go system in exchange for their contributions.

Apart from measuring total public debt based on the intertemporal budget constraint, the generational accounting method also disaggregates in equation (1) the present value of net taxes, or primary surpluses, across generations. Net taxes are understood as the excess of taxes paid over benefits received. The latter include not only explicit transfer payments, in cash and in kind, but also projected future government purchases of goods and services, which are allocated to individual generations on a per-capita basis,

$$B_t = \sum_{s=0}^D N_{t,t-s} + \sum_{s=1}^{\infty} N_{t,t+s}, \quad (3)$$

where $N_{t,t-s}$ stands for the present value of the net tax payments over the remaining life-time, discounted to period t , by all members of a generation born in year $t-s$. Future values are discounted with a constant pre-tax real interest rate r , and the life-cycle extends over a maximum of D years. The first term on the right-hand-side then equals the present value of net taxes summed over all generations alive in base-year t . The last term stands for the sum of the present values of net tax payments made by future generations, that are those born in year $t+1$ and later. The life-time tax burden of a particular generation is, thus, given by

$$N_{t,k} = N_{t,k}^m + N_{t,k}^f = \sum_{s=t}^{k+D} T_{s,k}^m P_{s,k}^m (1+r)^{t-s} + \sum_{s=t}^{k+D} T_{s,k}^f P_{s,k}^f (1+r)^{t-s}. \quad (4)$$

In equation (4), $T_{s,k}$ refers to the net payment made in period s by a representative member of the cohort born in year $k < t$, while $P_{s,k}$ stands for the fraction of agents born at date k who survive until period s , or the size of generation k . Hence, the respective products represent the net taxes paid by all members of generation k in period s . For all generations born prior to the base-year, the summation begins in period t and extends only over the remaining life-time. For future generations, born in period $k > t$, summation begins in period k and extends over the full life-cycle. Irrespective of the date of birth, discounting is always back to period t .

In order to calculate net tax payments, the demographic structure $P_{s,k}$ must be specified. Using population projections based on official statistics, the survival rates incorporate assumptions concerning future fertility, mortality and net migration. A second step calculates

net tax payments $T_{s,k}^m$ relating to any present or future generation. Let i indicate a particular tax or benefit item. Then we can simply sum over all types of payments in order to derive

$$T_{s,k}^m = \sum_i h_{s-k,i,s}^m, \quad (5)$$

where $h_{s,k}(i)$ indicates the average transfer received or tax paid in period s by agents born in k . Equations (4) and (5) take a life-cycle perspective over different periods while microdata are available only for a particular base period across age groups. This difficulty is solved by identifying agents in (5) according to their age and writing $h_{s,a}(i)$. This notation identifies the date of birth as $k = s - a$. It is generally assumed that both average payments and receipts grow in line with overall productivity at a constant rate g . Then, the average tax/benefit position in period $s > t$ of a person aged a is related to the net tax liability of the same age group in period t according to

$$h_{s,a}(i) = h_{t,a}(i)(1+g)^{s-t}. \quad (6)$$

Equations (4)-(6) are sufficient to calculate the net tax payments of any living or future generation. For individuals of age 0 to D in the base-year, we retrieve average net tax liability from micro-data on a broad range of tax and transfer payments. We thus obtain age-specific tax/benefit profiles which are additionally differentiated according to gender. Note that taxes include all forms of statutory payments to government while transfers reflect both in-cash and in-kind benefits. In some instances, profiles may not vary according to age and gender. This is the case whenever the assumed incidence corresponds to this uniformly distributed profile or whenever sufficient information is not available. The cross-section profiles are extrapolated into the future according to equation (6). They are taken as being representative of the unobserved longitudinal data. With this extrapolation, one derives the present value of net tax payments of the respective current generation as outlined in equation (4). For future generations, we apply the same set of relative tax and transfer profiles as illustrated in equation (6). Given that the status quo policies are preserved, future generations face the same tax benefit rules as currently living agents do, and are thus treated identically. Dividing the present value of future net taxes of a generation born in period k by the respective base-year population of that cohort yields their generational account:

$$GA_{t,k} = N_{t,k} / P_{t,k}. \quad (7)$$

The generational accounts measure the present value of the net tax burden, i.e. taxes net of transfers, that *individuals* of a given age, rather than the entire cohort, must expect to pay over their remaining life-cycle. The life-time net tax burden depends on survival probabilities and net tax payments which fiscal policy allocates to members of specific age cohorts.

To restore sustainability in public finances, it may be necessary to increase the aggregate present value of net taxes. According to (3), the government may raise the life-time net tax burden of either present or future generations. To avoid an intergenerational imbalance of fiscal policy, and for a “fair” treatment of present and future generations, government may preferably impose equal life-cycle net tax rates (in terms of present value life-cycle income) on both present *and* all future cohorts. An alternative hypothetical scenario that reveals the potential for intergenerational redistribution induced by current fiscal policy, would raise tax burden only on future generations born in period $t+1$ or subsequently while keeping the life-time tax burden of currently living generations constant. Under this scenario, the tax increase on future generations, necessary to restore sustainability and to eliminate total debt, will be much higher, of course. To implement a specific scenario, we adjust scaling constants $\mathbf{q}_k(i)$ which relate to types of payment i and to generation k , and compute net payments $T_{s,k}$ by

$$T_{s,k} = \sum_i \mathbf{q}_k(i) h_{s,k}(i). \quad (8)$$

As above, $h_{s,k}(i)$ stands for the transfer received or taxes paid by agents of age $a = s - k$ in period $s > t$. The scaling constants $\mathbf{q}_k(i)$ are chosen to eliminate total debt, $NPG_t = 0$, and thereby to restore sustainability of fiscal policy, see equation (2). For example, the vector $\mathbf{q}_k(i)$ might apply only to future generations who are born after the base year, or it might include currently living old generations as well. It might reflect a decrease in all transfers or a proportional increase in all taxes, depending on the specific scenario to be implemented.

III Generational Accounting For Austria

This section estimates total public sector debt and generational imbalance of Austrian fiscal policy in 1995. Before reporting our baseline results, we briefly discuss some recent trends in fiscal policy that led to the public sector budget in base-year 1995.

III.1 Recent Fiscal Policy

Debt Dynamics: Besides EU membership, the greatest political difficulties in the mid 90s have been created by the fiscal problems encountered in preparing for EMU [cf. Genser and Holzmann (1995) for a discussion]. Since 1975, the budget was permanently in deficit. Already in 1987, the situation became seemingly unsustainable when the deficit exceeded 4 percent of GDP. The 1994 tax reform delivered significant tax cuts and further aggravated the situation. In addition, weak economic growth caused social security spending to accelerate. A deficit in the social security system, mostly determined by accelerated early retirement, required large federal transfers that were in large part unexpected [see OECD (1998)]. On top of that, contribution payments to the EU had to be financed for the first time.

The public deficit hit the 5.1 percent mark in 1995 which seemingly threatened Austrian qualification for EMU.

Clearly, the Maastricht Treaty imposed a precise timing in fiscal consolidation and forced the government to take prompter and more drastic action than would have been politically opportune otherwise. At the end of 1995, the new coalition government finally delivered a rather drastic fiscal consolidation package amounting to 4.5 percent of GDP over a two year period [see Kramer and Lehner (1996), Lehner (1997), EC (1998)], one third to be covered by higher revenues and two thirds by lower spending. On the revenue side, the government relied predominantly on wage and personal income taxes, and to a lesser extent on corporate and interest income taxes, an energy tax as well as a variety of indirect taxes. Spending cuts mainly targeted compensation and employment of civil servants, and general administration. Additional savings came from stricter eligibility criteria for unemployment benefits and tightening of other social transfers. Transfers to the public pension scheme were restricted, especially by limiting early retirement. In view of the long-run non-sustainability of the current pension system, exacerbated by an aging population and increasing life expectancy, an additional and more extensive pension reform was agreed upon by the end of 1997.

According to the latest numbers, the objectives of the consolidation package have been more than achieved. The net deficit of the entire public sector now stabilized at 2.5 percent of GDP, well below the envisaged 3 percent mark, and is expected to remain at that level for the next few years [cf Lehner (1998), IAS (1998)]. The primary surplus is approaching 1 percent of GDP. Public sector debt finally started to decline in 1997 to 66.1 percent of GDP, down from 69.5 percent in 1996.

Public Expenditures: Over the last three decades, public expenditure increased from 41 percent of GDP in 1970 to 57.5 percent in 1995. Most of expenditure growth materialized in the 1970s. Both larger purchases of goods and services as well as more and better paid government personnel contributed to increasing public consumption. In 1995, public consumption absorbed about 19 percent of GDP, 4.6 percent higher than in 1970. As compared to the increase in transfers, the growth in public consumption was still moderate. The share of transfers in GDP amounted to almost 30 percent in 1995, 12 percentage points higher than in 1970. Pension expenditures increased from about 10 percent of GDP in 1970 to almost 14 percent in 1995. Demographic change, including longer life-expectancy as well as excessive use of early retirement and disability pensions, is responsible for an ever larger number of pensioners. In the presence of slower growth, the larger number of claimants and the past generosity in the benefit levels resulted in a heavy pension burden as of 1995. New benefits introduced during the 1970s and again in the 1990s together with a large rise in early retirement inflated social security benefits and assistance grants in these periods. Last but not least, transfer spending is importantly driven by higher interest payments which

quadrupled over the period, an unavoidable consequence of the rapid accumulation of public debt.

Public Revenues: Starting from a level of 35.3 percent in 1970, taxes and social security contributions amounted to 43 percent of GDP in 1995. The composition of revenues shifted towards social security charges (from 9 percent of GDP in 1970 to 15.4 percent in 1995), which are now about a third of total tax revenues. The last decades saw a cut in nominal tax rates together with elimination of exemptions and a broadening of the tax base. The importance of capital income taxes declined since the 1970s while an increasing part of the tax burden was shifted to labor. Recently, the debate focused much on the proper balance between business and labor taxation. Even by international comparison, Austria's current tax system is characterized by a high tax burden on labor.

In terms of revenues, the value added tax is the single most important tax in Austria. It contributes two thirds of all revenues from indirect taxes. With a standard rate of 20% and a reduced rate of 10%, Austria seems to have exhausted its potential VAT revenues. Neighboring Germany levies considerably lower rates (16 percent and 7 percent, respectively). Also, Austria's standard rate is very close to the EU average which is 19.4 percent in 1998.

Social Insurance System: Austria has steadily built its welfare system over a long time and runs now one of the more generous and complete systems in Europe. Social expenditures accelerated rapidly in the 1970s and again in the early 90s. In addition to new entitlements and generous eligibility rules, expenditure growth was nurtured by an aging population and, lately, by an upward trend in unemployment. Compared to the EU12 average in 1994, Austria affords a slightly higher percentage of GDP for social welfare. Furthermore, Austria is more generous with family and old age support but spends markedly less for unemployment, housing and other social purposes. A problem of the social insurance system is that lately an ever larger part of expenditures must be covered out of general taxes rather than contributions. In 1980, about 78 percent of social insurance benefits were still covered by contributions, while in 1995, contributions covered no more than 72 percent of benefits.

The pension system in Austria is a very generous PAYG (pay-as-you-go) one [see Koch and Thimann (1999), Rürup and Schröter (1997) and Stefanits (1998)]. The maximum replacement rate is 80 percent, among the highest in Europe. As for 1995, pension assessment is based on the best 15 years of salary, and benefits are indexed to net wages. One of the distinctive features of the Austrian pension system is the large share of disability and early retirement pensions. Given the increasing tendency to grant early retirement, the share of regular old-age pensions declined from 25 percent for men (62 percent for women) in 1970 to 13 percent (28 percent) in 1994. At the same time, both the life-expectancy and the average duration of pensions increased. For these reasons, the old-age dependency

ratio² reached 22.6 percent in 1995, being similar to that in Germany, the UK, France and Italy. According to population projections, it is expected to grow to 41.4 percent until year 2030.

Contributions from the workforce are the main source of revenues. Contribution rates are among the highest in Europe and amount to 22.8 percent of gross income. They are almost double those in the 1960s. For the past 20 years, however, contributions have not fully covered pension outlays. In 1995, contributions funded only 80 percent of total pension expenditures. The rest is paid by transfers out of the government budget.

Population aging, increasing life-expectancy and very generous benefit levels make the Austrian pension system unsustainable in the long-run. By international comparison, Austria affords a rather high level of public spending on pensions. In 1995, pension expenditures claimed 13.7 percent of GDP as compared to 9.9 percent in 1970. By way of contrast, the OECD average is only 10 percent. Given the unfunded nature of the pension system, the expected increasing dependency ratio will put an immense pressure on public budgets. According to Koch and Thimann (1999), the fiscal pressure from the pension system is expected to increase significantly until year 2020 and to accelerate afterwards, with a peak in year 2035 when pension expenditures are estimated to reach 16.25 percent of GDP.³

Health expenditures have been one of the most rapidly growing items of public spending. An aging population raises the demand for medical services and increasingly complex treatments inflate costs. In addition, there are particular features of the Austrian health care system which impair efficiency. Spending on health care is now among the highest in Europe, see OECD (1997). Austria also affords a generous system of family assistance. Currently, the main elements of family support are income-tax credits, free social security coverage for dependents, free compulsory education and monthly cash benefits for children up to working age, lump-sum post-birth payments, maternity leave, etc. In 1990, family benefits amounted to 10 percent of GDP, which is among the highest within the OECD [see OECD (1994)].

Consolidated Budget 1995: Table I reports the consolidated budget in Austria for the base-year 1995. Macroeconomic data were retrieved from data bases of the Austrian Economic Research Institutes IAS and WIFO as well as various years of OECD and ÖSTAT National Accounts publications. Compilation of revenue figures was helped by revenue statistics of Eurostat and OECD, various years, and wage tax statistics of ÖSTAT (1994) and (1995). For the purpose of this study, some budget items had to be regrouped and netted out, but the numbers in table I are reconciled with official statistics after some adjustments. For example, filed income taxes have been distributed to wage and capital income taxes. Government

² Defined as the ratio of the population 65 years or older to the population aged 15-64 years.

³ They analyse only the employee and self-employed pension schemes.

consumption expenditure was consolidated with a number of revenue items related to it. Intergovernmental grants and transfers have been canceled out. For these reasons, revenues amount only to 1014.5 billion rather than 1242 billion ATS given in the National Accounts.

Table I. Public Receipts and Expenditures in Austria^a, 1995

<u>Receipts</u>		<u>Expenditures</u>	
Labor Income Taxes	204.189	Pensions	332.682
Capital Income Taxes	73.336	Old Age Care	16.647
Value Added Tax	164.886	Health	138.215
Other Indirect Taxes	93.391	Unemployment	23.376
Social Security Contributions	360.378	Family-Related Benefits	62.757
Public Deficit	118.370	Social Assistance	35.207
		Education Grants	1.901
		Education	100.988
		Government Consumption	200.384
		Interest Payments	102.392
Total	1014.549	Total	1014.549

Notes: ^a Billions ATS.

Source: ÖSTAT, WIFO Database, EUROSTAT, OECD.

On the revenue side, capital income taxes include parts of the personal income tax, corporate tax, wealth and business tax, interest and dividend tax as well as farmers business tax. The most important items of other indirect taxes are special excise taxes on mineral oils, tobacco and alcohol, an energy tax on electricity and gas consumption and a host of smaller taxes. The VAT, labor income taxes and social security contributions alone make up for more than 70 percent of public revenues. Pensions, government consumption and health care are the biggest spending items. Interest spending already exceeds spending on education, family and other social assistance. In the next section on baseline results, we also refer to *net* financial liabilities of the government sector which amount to 49.8 percent of GDP in 1995 according to an OECD estimate. These are derived from the level of public sector debt equal to 69.2 percent of GDP by subtracting various financial assets of the government sector.⁴

Regarding future budget developments, the per-capita receipts and expenditures are projected to grow in line with GDP. More precisely, we take account of both the demographic transition and overall productivity growth. A constant growth rate of labor productivity equal to 2 percent is assumed, and we also apply a uniform real interest rate of 4.5 percent to compute the baseline results. The present values of revenues and expenditures and,

⁴ Such assets may be cash, bank deposits, loans to the private sector, and foreign exchange reserves, see OECD Economic Outlook 63, June 1998.

therefore, the size of total debt as derived from the intertemporal budget constraint in (2) will importantly depend on these two parameters. We thus report some sensitivity analysis in subsection III.4.

III.2 Tax Benefit Profiles

For each person, fiscal legislation defines specific claims and liabilities against the public sector. The benefit entitlements and tax liabilities of a 60 year old female pensioner are very different from those of a 30 year old male wage earner. To quantify the inter- and intra-generational impact of fiscal policy, generational accounting must keep track of the distribution of taxes and benefits across various population groups. Breaking down aggregate budget figures according to their age-gender distribution amounts to formidable empirical work, yet the quality of the results depends very essentially on such effort. The demographic decomposition of the budget is all the more difficult in our case since Austria was not yet the subject of such a study before. We now describe in detail our empirical work and the assumptions that were required to arrive at a consistent data base compiled from different sources.

Current demographic developments determine the future age structure of the population which, in turn, exerts an extremely important influence on future budgets. Regarding mortality and fertility rates as well as migration, we closely follow the projections of the Austrian Statistical Office [Demographic and Statistical Yearbooks, ÖSTAT (1996), (1997)] which forecasts a slight rise in fertility and life-expectancy. The fertility rate increases from 1.4 in the base-year to 1.5 in 2010 and is assumed to remain constant thereafter. Life expectancy at birth rises linearly from 72.5 in 1995 to 75.3 in 2010 for males and from 79.0 to 81.6 for females, and subsequently remains constant at that level. The Statistical Office instead assumes that life-expectancy increases further after 2010. Given the long horizon of our projection, we choose to be somewhat more conservative. Finally, net immigration expands the labor force by a constant rate of 17,000, that is 0.21 percent of the population per year.

A critical part of generational accounting concerns the construction of age-gender profiles that keep track of the age distribution of tax payments and benefit entitlements. Following the methodology described in Raffelhüschen (1998, section 3), we implemented separate profiles for all major tax and spending categories. The distribution of labor taxes was retrieved from ÖSTAT (*Lohnsteuerstatistik*, 1995), data on social security contributions were directly provided by the Association of the Austrian Social Insurance Institutions (*Hauptverband der Österreichischen Sozialversicherungsträger*). We allocated capital income taxes across age and gender relying on capital income profiles that were available in the European Union Household Panel compiled by Eurostat (1995). Finally, we allocated payments of VAT and other indirect taxes on the basis of the consumer expenditure survey in ÖSTAT (1984).

On the expenditure side, government consumption is determined residually by subtracting from total expenditure all age-specifically distributed taxes and transfers as well as interest payments. Since there is no clear evidence for an age specific demand pattern for government consumption services such as defense, general administration and the like, these expenditures were made flat across age groups. By way of contrast, age-gender profiles are quite uneven for many social expenditure categories. Pension income of all sorts and benefits from old age care can be tracked over life-time according to the household panel. Eurostat (1995) similarly provides necessary information on age-specific transfer income from family allowances, social assistance and unemployment benefits including unemployment insurance.

Spending on education and health care was attributed to household groups based on Eurostat (1995), ÖSTAT (1995/96) and ÖSTAT (1996/97a,b). This way we obtained the tax benefit position for a representative member of each group. Next, one explicitly aggregates by multiplying each group with its population weight and adding up. To reconcile the implied aggregate revenue and spending volumes with actual budget figures, some adjustments were required at various stages which is inevitable due to mutual inconsistencies of different data sources. Decomposing government activity in this way and finding the age-gender profiles of taxes and benefits is at the heart of generational accounting and eventually results in generational tax benefit accounts such as those listed in tables II-IV below.

III.3 Baseline Results

Table II displays the age-specific net payments to the government, in present value terms, of all current and future generations. The figures reflect the structure of public revenues and expenditure in Austria in 1995 under the baseline scenario, assuming that the status quo of current legal provisions is continued forever. For a new born average citizen, the present value of benefits received over the entire life-time exceeds the present value of taxes paid by 262.3 thousand ATS. The negative net transfer payments during the first seven years of life may readily be explained by the fact that benefits relating to family support, education and social assistance are received early in life and weigh much more than the present value of income taxes that are paid only later in life.

Table II. Generational Accounts, Austria^{ab}

Generation's Age in 1995	<u>Average</u>	<u>Male</u>	<u>Female</u>
0	-262.3	212.4	-761.3
5	-186.3	354.6	-755.8
10	171.2	788.3	-473.7
15	684.9	1374.1	-54.2
20	933.3	1684.2	165.5
25	829.4	1582.7	51.8
30	546.6	1207.0	-155.0
35	168.9	701.4	-397.8
40	-253.2	171.2	-691.8
45	-867.4	-567.6	-1177.1
50	-1559.1	-1376.2	-1740.0
55	-2388.0	-2457.8	-2320.0
60	-3085.4	-3559.4	-2651.9
65	-3068.6	-3551.8	-2648.5
70	-2732.0	-3216.8	-2445.6
75	-2339.8	-2714.6	-2143.0
80	-1871.8	-2150.6	-1743.9
85	-1439.0	-1680.1	-1346.0
90	-1097.0	-1305.0	-1030.0
95	-794.6	-974.6	-758.2
100	-305.2	-392.7	-291.0
Instantaneous Tax Increase (percent)	18.8	-	-
Future GA	1712.1	2544.3	838.4
Absolute Diff.	1974.3	2331.9	1599.8
Total Gov. Debt	285.9	-	-

Notes: a Thousands ATS (1995 present values); b $r=0.045$, $g=0.02$.

Net payments increase during the first two decades reaching a maximum of 933.3 thousand ATS at age 20 when most individuals start working and, therefore, bear the full burden of wage taxes and social security contributions. Thereafter, generational accounts gradually decline as the remaining working phase becomes shorter and the retirement period approaches. Health care benefits increase with age as well. Consequently, life-time income is increasingly dominated by old age pension transfers and health care benefits rather than by the tax burden associated with current wage and capital income. At around age 38, the tax benefit position breaks even, the present value of future tax payments equals that of benefits over the remaining life-cycle. From now on, old age transfers start to dominate until the present value of net transfers received over the remaining life-time approaches a maximum of 3085.4 thousand ATS at the age of 60. Thereafter, net benefits decline along with remaining life-expectancy.

Table II also shows the age-specific generational accounts separately for males and females. The Austrian fiscal system implies a large amount of redistribution between genders. Males face high net payments for at least four decades, while females only for one. Furthermore, the maximum present value of net payments by females at age 20 represents a mere 10 percent of the burden faced by males. However, females' maximum net benefit position at age 60 makes up for three quarters of the males' account.

Tables III and IV split up the overall net liability of males and females into various tax and transfer components and, thereby, provides more information with respect to the implied redistribution between generations and genders in Austria. Among transfers, government consumption is spread rather evenly across life-time, and the present values decline evenly along with remaining life-expectancy. Pensions and health care benefits are received later in life and mainly benefit the old. The other social transfers, in particular education and family related transfers, are targeted towards the young. On the tax side, VAT and excise taxes tend to be distributed more evenly over life compared to the other components and, therefore, tend to be rather neutral in terms of intergenerational redistribution. The present value of social insurance payments and of labor income taxes weighs more heavily for younger generations. By way of contrast, capital income accrues later in life, reflecting life-cycle savings patterns. That's why the present value of capital income taxes stays rather constant for many cohorts even though remaining life-time becomes shorter with aging.

Tables III and IV also provide evidence for significant intra-generational redistribution across genders. Indirect taxes do not differentiate very much across genders. Transfers such as social assistance, education and government consumption are rather evenly distributed as well. By way of contrast, health and family related benefits are much larger for women, especially during their first three decades of living. Given lower female labor force participation, labor income taxes of females are much lower. They are only between 20 to 41 percent of taxes for males. A similar pattern holds for unemployment benefits. Capital income taxes paid by females represent only 36 percent to 71 percent of their male counterparts. Reflecting past wage incomes, pensions are again higher for males than for females.

Table III. The Composition of Male Generational Accounts, Austria^{ab}

Generation's Age in 1995	Tax Payments					Transfer Receipts					
	Labor Income Taxes	Capital Income Taxes	VAT/ Excise Taxes	Social Ins.	Pensions/ Old Age	Health	Unempl. Ins.	Social Assis- tance	Family- Related Benefits	Educ.	Gov. Cons.
0	853.7	277.0	935.5	1531.4	996.3	398.3	92.5	158.7	154.6	724.0	860.9
5	966.3	313.5	993.1	1733.4	1127.7	422.2	104.7	162.3	174.9	819.6	840.3
10	1090.9	353.9	1055.6	1957.1	1273.2	448.1	118.2	165.9	197.5	651.6	814.7
15	1230.2	393.7	1121.4	2209.2	1437.1	477.2	133.4	162.9	222.7	361.4	785.7
20	1364.8	407.4	1161.1	2371.3	1626.8	516.5	149.4	142.8	249.0	179.6	756.2
25	1470.0	411.1	1135.7	2315.0	1843.1	555.0	138.9	116.8	276.9	94.9	723.5
30	1510.4	408.1	1095.4	2126.7	2085.3	598.0	126.6	108.2	293.4	36.5	685.9
35	1567.7	396.0	1053.6	1841.3	2356.9	647.0	119.6	105.5	267.6	16.9	643.6
40	1643.0	392.1	998.8	1502.6	2662.7	691.8	112.7	98.2	193.8	9.4	596.6
45	1644.1	387.0	877.6	1151.4	3017.3	746.1	96.6	101.3	114.9	5.4	546.1
50	1633.6	373.4	734.6	781.5	3416.4	763.4	69.3	92.6	62.2	3.5	491.8
55	1373.8	353.5	577.0	382.1	3862.9	726.0	38.0	44.0	37.0	2.3	434.2
60	914.5	269.4	411.0	57.2	4085.3	695.9	0.0	30.0	23.6	1.3	375.4
65	650.0	148.4	281.6	9.3	3614.6	681.7	0.0	19.8	7.0	0.8	317.1
70	414.0	109.6	202.6	2.3	3012.8	653.7	0.0	17.1	1.6	0.4	259.7
75	297.7	81.8	130.6	0.3	2421.0	590.7	0.0	8.9	0.0	0.2	204.4
80	226.6	59.1	94.9	0.0	1858.6	510.1	0.0	7.0	0.0	0.1	155.6
85	171.1	40.7	71.7	0.0	1409.5	433.2	0.0	3.4	0.0	0.0	117.4
90	128.5	27.2	53.8	0.0	1063.3	362.8	0.0	0.2	0.0	0.0	88.2
95	92.7	17.4	38.8	0.0	770.6	289.4	0.0	0.0	0.0	0.0	63.7
100	36.3	5.9	15.2	0.0	302.1	123.1	0.0	0.0	0.0	0.0	24.9

Notes: ^a Baseline ($r=0.045$, $g=0.02$); ^b thousands ATS (1995 present values)

Table IV. The Composition of Female Generational Accounts, Austria^{ab}

Generation's Age in 1995	Tax Payments					Transfer Receipts					
	Labor Income Taxes	Capital Income Taxes	VAT/ Excise Taxes	Social Ins.	Pensions/ Old Age	Health	Unempl. Ins.	Social Assis- tance	Family- Related Benefits	Educ.	Gov. Cons.
0	350.7	196.4	966.9	954.3	678.5	430.0	64.7	161.7	280.1	725.5	889.1
5	396.8	222.3	1028.2	1079.8	767.7	466.6	73.2	165.5	317.0	821.0	871.9
10	448.1	250.9	1095.2	1219.2	866.8	506.8	82.7	169.5	357.9	653.0	850.4
15	505.9	280.8	1166.3	1376.5	978.6	552.2	93.3	167.0	403.8	362.8	826.0
20	560.5	289.2	1208.4	1465.7	1097.8	591.4	100.6	147.1	441.6	180.5	799.4
25	574.8	287.5	1184.4	1347.8	1225.0	625.4	94.8	121.0	411.8	95.4	769.3
30	560.0	275.0	1146.6	1162.5	1368.6	663.9	77.2	112.6	304.8	36.8	735.3
35	566.3	264.0	1107.8	986.7	1528.8	707.6	69.9	110.1	191.8	17.1	697.2
40	582.4	253.9	1056.3	790.6	1705.2	734.9	64.4	103.1	102.8	9.6	654.9
45	555.7	254.3	937.0	570.3	1901.1	767.7	52.9	106.2	52.1	5.6	608.7
50	515.3	242.0	794.0	332.8	2118.2	787.2	36.8	97.1	23.0	3.7	558.2
55	378.2	193.1	634.3	104.1	2296.2	763.7	7.0	48.1	9.4	2.4	502.9
60	245.4	131.1	462.3	16.0	2283.2	741.1	0.9	33.6	3.8	1.4	442.7
65	169.7	94.7	324.2	3.6	2113.6	722.4	0.0	22.8	3.0	0.9	378.0
70	101.3	73.7	235.5	1.0	1843.7	681.9	0.0	19.3	1.0	0.4	310.7
75	71.0	54.4	154.6	0.1	1564.3	604.7	0.0	10.3	0.0	0.2	243.7
80	53.0	37.1	110.9	0.0	1250.2	505.0	0.0	7.8	0.0	0.1	181.8
85	38.4	23.3	80.3	0.0	945.5	407.3	0.0	3.6	0.0	0.0	131.6
90	27.9	14.9	58.5	0.0	706.3	329.0	0.0	0.2	0.0	0.0	95.9
95	19.6	8.2	41.1	0.0	505.4	254.3	0.0	0.0	0.0	0.0	67.4
100	7.3	2.1	15.2	0.0	188.8	101.8	0.0	0.0	0.0	0.0	24.9

Notes: a Baseline ($r=0.045$, $g=0.02$); b thousands ATS (1995 present values).

What is the true size of Austria's public debt in 1995? Clearly, the officially recorded net financial liabilities equal to 49.8 percent of GDP are part of it, see equation (2). But total public debt may be much higher. Economically, there is no difference between the claims of those who have acquired government bonds, and the pension claims that today's pensioners have acquired in the past during their years of contributions. After all, the PAYG system is built on a "contract between generations" where workers pay contributions today in exchange for the promise that they will receive a pension when retired. Consequently, pension rights accumulated under the PAYG system are as much a government liability as previously issued government bonds. Turning to table II, a 65 year old Austrian receives pensions and other transfers over the rest of life equal to a net present value of ATS 3068.6 thousand. Clearly, these are previously accumulated government liabilities which must be serviced by future generations. By way of contrast, a person 20 years old in 1995 pays taxes net of transfers received equal to a present value of ATS 933.3 thousand. This asset offsets today's government liability and, therefore, reduces the burden on future generations. Multiplying the per capita numbers in table II by the size of the age group and adding up over all cohorts, we obtain an implicit public debt imposed by currently living generations on future generations amounting to 236.1 percent of GDP. Adding the officially recorded public debt equal to 49.8 percent, Austria's total public debt in 1995 amounts to 285.9 percent of GDP.⁵

Clearly, this is a huge burden imposed by currently living generations on future ones under the current law. In order to service these liabilities, future generations will have to pay higher taxes or to forego social benefits. The burden on each future generation (the cohorts born in 1996 or later) is uniquely measured by the present value of net taxes at the beginning of their life. Assuming that all future cohorts, born in 1996 or later, start their life with the same net present value of taxes, we ask the following hypothetical question: By how much do we have to deteriorate the tax benefit position of future generations in order to enable the government to service its true debt and to fulfill its intertemporal budget constraint? Table II reports a required net payment equal to ATS 1712.1 thousand which is higher by 1974.3 thousand than the net (negative) liability of the 1995 cohort! The higher net payment could be brought about, for example, by increasing the life-time tax burden of future generations by 64.8 percent. The two genders share quite unequally in this burden. Future born males would face net payments of ATS 2544.3 thousand as compared to only 212.4 thousand for 1995 born males. By way of contrast, future females would face net payments of ATS 838.4 thousand at the beginning of their life as compared to the 761.3 thousand net benefit position

⁵ The latest international cross-country comparison, based on an interest rate of 5 percent and a growth rate of 1.5 percent, can be found in Gokhale and Raffelhüschen (2000). According to their parameterization, Austria has a total public indebtedness of 193 percent of GDP. Only Sweden and Finland display even higher debt-to-GDP ratios of 237 and 253 percent, respectively. For the UK (185), Spain (152), Germany (136), and Italy (107), the numbers range below Austrias but amount to still more than 100 percent of GDP. Debt-to-GDP ratios below the 100 percent figure can be found in the US (87), France (81), the Netherlands (76), Denmark (71), Belgium (19), and Norway (10). Only in Ireland, the intertemporal redistribution is to the advantage of future cohorts, indicated by a negative debt-to-GDP ratio of -4 percent.

of a current newborn female. Again, this highlights the stark tendency of current Austrian policy to redistribute in both the inter- and intra-generational dimension.

The current state of affairs implies a beneficial position of present generations at the expense of a huge burden on future ones. For an alternative way to characterize the intergenerational imbalance, we ask: in order to eliminate total debt and to restore sustainability of public finances, by how much must we increase taxes once and for all such that the life-time tax burden of a current newborn and a future newborn are exactly the same? Relative to the baseline scenario, this method of satisfying the intertemporal budget constraint relieves future generations and puts a higher burden on current generations. In this case, a permanent increase of all taxes by 18.8 percent (see table II) would be necessary to equalize the accounts of the current and future newborns who would then face a net life-time tax payment of ATS 309.2 thousand each. As a result, taxes would increase from 38.4 percent⁶ to 45.6 percent of GDP. Alternatively, the fiscal imbalance could be removed by permanently cutting transfers by 16.2 percent, thus equalizing life-time net payments faced both by current and future newborns at ATS 275.1 thousand. Consequently, transfer payments would decline from currently 39 percent of GDP to 32.7 percent.

A major source of intergenerational imbalance is that current fiscal policy fails to respond to population aging. To see this, we run a hypothetical experiment that prevents aging by keeping the base-year population structure constant. Under this scenario, total government debt amounts to only 78.4 percent of GDP which means that the implicit debt reduces to 28.6 percent. Consequently, a comparatively moderate increase in life-time taxes for future generations equal to 12.9 percent (instead of 64.8 percent in the baseline) would be enough to restore sustainability, i.e. to satisfy the government's intertemporal budget constraint. A tax increase of only 4.9 percent (as compared to 18.8 percent in the baseline) would suffice if it were extended to all generations. Similarly, the instantaneous and permanent cut in transfers that would be required to restore intergenerational balance, is no more than 4.8 percent (as compared to 16.2 percent in the baseline). To conclude, the unfavorable demographic developments are a major source of fiscal imbalance.

III.4 Sensitivity Analysis

Like any estimate that derives from present value computations, our results are sensitive with respect to variations in the interest and productivity growth rates as well as population projections. Table V shows how low discount rates and high growth rates tend to inflate the figures for total public debt. Within a reasonable range of parameter values, our estimate for

⁶ These figures for revenues and expenditures as percent of GDP do not correspond to those found elsewhere in the paper, because contributions of public sector employees have been netted out. See the discussion of table I.

total debt varies between 195.5 and 701.7 percent of GDP.⁷ All figures, however, are vastly higher than the explicit public debt of 49.8 percent of GDP. Consequently, within the range of parameter values tested, future generations would always face a much higher tax load to service the debt. As with debt figures, the additional tax burden of future generations implied by current fiscal policy increases with lower interest and higher productivity growth, and remains within the range of ATS 1835.4 and 2196.4 thousand.

Table V. Sensitivity Analysis, Austria^a

Productivity Growth (percent)			1.5	
Discount Rate (percent)	3.5	4	4.5	5
True Debt (percent of GDP)	360.5	284.4	232.5	195.5
Difference in the Accounts of Future and Current Newborns	2055.4	1972.4	1898.0	1835.4
Productivity Growth (percent)			2	
Discount Rate (percent)	3.5	4	4.5	5
True Debt (percent of GDP)	482.7	362.3	285.9	233.8
Difference in the Accounts of Future and Current Newborns	2139.4	2057.1	1974.3	1900.1
Productivity Growth (percent)			2.5	
Discount Rate (percent)	3.5	4	4.5	5
True Debt (percent of GDP)	701.7	484.9	364.2	287.5
Difference in the Accounts of Future and Current Newborns	2196.4	2140.5	2058.8	1976.3

Notes: ^a Thousands ATS (1995 present values)

⁷ For purposes of country comparisons, a previous version of this paper [see Keuschnigg et al. (1999)] assumed European wide averages of interest and growth rates of 5 and 1.5 percent, respectively. Consequently, the estimate for total debt was only 192.5 percent of GDP.

IV Restoring Fiscal Balance

IV.1 Recent Policy Initiatives

IV.1.1 The 1996 Fiscal Consolidation Package

The net public deficit in 1995 was 5.1 percent of GDP. At that time, the net deficit of the entire public sector was forecast to be a full 8 percent of GDP in 1997 [cf. Lehner (1996)]. In the absence of any drastic action, this perspective threatened Austria's participation in EMU. To reverse the trend, the government finally pushed through a consolidation package in 1996 and presented a two year budget. The objective was to reduce the net deficit to 3 percent in 1997 to meet the Maastricht deficit criterion. A quota of 2.7 percent was set for the central government and 0.3 percent for the state and local governments. The original budget projections indicated the need for a huge savings volume.⁸

Table VI summarizes the main components of the consolidation package for the entire public sector. Reducing the number of public sector employees and effectively freezing wage increases restrained spending on personnel. Savings in general administration were to be achieved by raising efficiency, stabilizing federal transfers to railways and cutting housing subsidies. Some of these savings were actually revenue raising such as higher license income from telecommunications and increased prepayments of corporate tax. Important savings came from measures addressed to the pension system, mainly by discouraging early retirement which was made financially less attractive. Required contribution periods were extended from 35 to 37.5 years, and full pensions were made available only after the 60th year. Freezing benefits and restricting eligibility squeezed costs for nursing care. Family allowances including maternity leave, payments for newborns, free transport to schools and subsidies on school books were restricted or cut altogether. Savings in unemployment insurance stemmed from stricter eligibility rules, lower benefits and tighter controls against abuse. The government froze labor market funds at 1995 levels and cut subsidies to business and earmarked transfers to off-budget funds. Over the 1996-1997 period, expenditure savings amounted to almost 105 billion ATS. For 1998-1999, additional expenditure cuts of 15.5 and 17 billion were budgeted.

⁸ The original projections were too pessimistic since later statistics showed a much smaller deficit for 1995.

Table VI. Fiscal Consolidation Package in Austria^a

	<u>1996/1997</u>	<u>1998</u>	<u>1999</u>
Personnel	16.0	1.5	3.8
Family/ Health Care	8.2	0.4	0.4
Unemployment/ Labor Market	4.2	0.3	0.3
Pensions	18.4	5.5	6.2
Subsidies	2.8	1.0	1.0
Bausparförderung	-	1.8	0.3
Administration/ Earmarked Provisions	17.0	5.0	5.0
Expenditures	66.6	15.5	17.0
Wage and Income Tax	22.9	1.3	1.3
Corporate Income Tax	8.1	1.3	1.3
Interest Tax	3.0	-	-
Energy Tax	7.0		
Other Indirect Taxes	5.8	6.5	6.5
Charges/ Miscellaneous		1.2	1.2
Social Security Provisions		2.0	2.5
Revenues	46.8	12.3	12.8
Total	113.4	27.8	29.8
Total in % of GDP	4.5	1.0	1.1

Notes: ^a Billions ATS; for 1997, against 1995 baseline; for 1998 and 1999, against 1997 baseline.

Source: OECD (1997, 1998), IAS (1998).

Taxes on income accounted for almost three quarters of the additional revenues. The tax rate on interest and dividend income, a final withholding tax, was raised from 22 to 25 percent and a new energy tax on gas and electricity consumption was introduced. The other revenue increases came from cutting tax allowances and deductions, thus widening the tax base. Some of the measures were transitory, e.g. raising prepayments of corporate taxes, also by temporarily suspending the carrying forward of previous losses.

The federal budgets of 1998/99 aimed to stabilize the net deficit in nominal terms at about 69.3 billion ATS, thus allowing a further reduction relative to GDP. Since a number of the measures contained in the 1996/97 consolidation package were short-term in nature, and due to new spending pressure (transfers to social security and pension funds increased by almost 15 percent), additional budget relieve equivalent to 1 percent of GDP had to be enacted.

IV.1.2 The 1997 Pension Reform

The 1997 Pension Reform came on top of the consolidation package and meant additional fiscal tightening. The government estimated for year 2030, when the reform will have full effect, a reduction in overall pension expenditures by 10.5 percent as compared to the base

case of no reform being implemented which roughly amounts to a savings of 1.5 percent of GDP by 2030. A series of measures addressed strengthening of the link between benefits and contributions paid, made early retirement less attractive, and harmonized the eligibility criteria and benefit rules for different occupational pension schemes. The pension base for assessing early retirement benefits is now calculated over an extended period of the best 15 to 18 years, which puts downward pressure on pension levels (to be phased in between 2003 and 2020). Pension rights are accumulated by 2 percentage points for each year of contribution. To discourage early retirement, the accumulated percentage points are reduced by 2 for each year of early retirement prior to the statutory retirement age, up to a maximum deduction of 10 percentage points or 15 percent (starting with 2000).

Eligibility for early retirement on account of reduced capability to work was tightened. To qualify for the pension, a claimant must have contributed at least 5 years (instead of 3 years up to now) within the previous 15 years and must have been disabled for at least 20 weeks (valid from 1998). Contribution rates of certain groups of the self-employed will be increased from 15 percent to 20.25 percent until 2009. Another important element of the 1997 reform was that pensions of civil servants are harmonized with the general system. Starting with year 2003, their early retirement benefits are also assessed on the basis of the best 15 to 18 years instead of the last salary. Starting with year 2000, the adjustment factor of the general pension system is applied to the pensions of civil servants as well. Finally, the reform also incurred some new expenditure by raising pension claims from child rearing from year 2000 on. The reform additionally included some other, less important elements, see BMAGS (1997).

IV.1.3 Tax Reform 2000

The fiscal consolidation program adopted in 1996 was fully implemented, and the 1997 pension reform further helped to restore fiscal stability. These measures brought an important “breathing space” before further reforms are attacked and the deficit is brought close to balance. The primary surplus is approaching 1 percent of GDP, and public debt finally started to decline in 1997 to 66.1 percent of GDP, down from 69.5 percent in 1996. Recently, the discussion focused on restructuring taxes. The increased burden from social security contributions added to the relative price of labor with adverse effects on employment creation [OECD (1999)]. As a major further step in fiscal reform, the Austrian Parliament adopted in June 1999 the tax reform 2000 package to be enacted at the beginning of year 2000. By addressing the wage and income tax as well as enterprise taxation, it will reduce the tax burden by ATS 32.5 billion in total, corresponding to about 1 percent of GDP. Obviously, the new tax reform will act against budget consolidation.

Table VII. Tax reform 2000

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>Long run</u>
Income tax (incl. wage tax)	15.1	16.9	17.1	17.0	17.0
Corporate income tax	0.0	0.4	1.0	1.0	1.0
Inheritance and gift tax	0.0	0.3	0.3	0.3	0.3
Value-added	1.0	1.2	1.2	1.2	1.2
Capital transfer tax	0.2	0.8	0.8	0.8	0.8
Miscellaneous	0.1	0.1	0.1	0.1	0.1
Total	16.4	19.6	20.4	20.3	20.3

¹ Billion ATS. Source: Regierungsvorlage zum Steuerreformgesetz 2000.

Table VIII. Family-tax reform

	<u>1999</u>	<u>2000</u>	<u>Long-run</u>
Family subsidies	3.10	6.0	6.0
Child tax credits	3.05	6.0	6.0
Total	6.15	12.0	12.0

Billion ATS. Source: Regierungsvorlage zum Budgetbegleitgesetz 1998.

Table VII lists quantitative revenue estimates of the tax reform 2000. The most important component is the proposed reduction in wage and income taxes by about ATS 17 billion per year.⁹ Marginal tax rates are reduced and the standard tax credit is increased. About ATS 3.5 billion are savings in enterprise taxation to promote employment and to strengthen Austria's attractiveness for industrial location. In particular, the reform cuts inheritance taxes in the case of enterprise transfers, allows for a more favorable treatment of imputed interest on equity capital, and eases VAT taxation of farmers. In addition, tax allowances for research and training of apprentices are increased and capital transfer taxes from sale of securities are eased. Finally, a ruling of the Constitutional Court required to increase family support. It is divided equally between higher tax credits for children and higher family subsidies. The family support package should boost disposable income by about ATS 6 billion already in 1999 and, beginning with 2000, by ATS 12 billion annually (see table VIII). While half of it will be financed from a special family support fund, the other half will have to come from the federal budget.

⁹ Part of the income tax reduction is motivated to take back the creeping tax progression that occurs due to trend growth in incomes. One may therefore argue that some part of the income tax savings are not permanent.

IV.2 Results

IV.2.1 Consolidation Package

The premature national elections in 1995 were largely due to the political difficulties in arranging for the budget choices. To satisfy the Maastricht debt and deficit criteria and to qualify for EMU required to consolidate public sector budgets faster and deeper than would probably have been politically acceptable otherwise. The latest consolidation package testifies to this necessity and is an impressive achievement on the way to fiscal sustainability. The consolidation volume amounted to 4.5 percent of GDP but was stretched over the two year period of 1996/97. As summarized in table VI, further consolidation in 1998 and 1999 worth 1 percent of GDP in each period helped to sustain the budgetary improvements. The consolidation package had immediate effects that can already be read from the statistics. The government debt ratio in 1997 fell by 3.4 percentage points against 1996.

Having discussed details in section IV.1.1, we turn now to the numerical evaluation of this scenario in table IX. It should be emphasized that our scenario does not treat *all* budget cuts as permanently affecting expenditures and revenues, but takes account of the fact that part of the measures had only a one-off effect (for example, administration and earmarked provisions on the expenditure side; wage and income tax, and corporate income tax on the revenue side). However, the bulk of the consolidation measures are supposed to have long-term effects.

Table IX. Generational Accounts for Policy Experiments, Austria^{ab}

Generation's Age in 1995	Baseline Accounts	Consol. Package	Pension Reform	Tax Reform
0	-262.3	119.4	196.4	102.8
5	-186.3	221.8	308.9	203.4
10	171.2	608.0	706.3	587.9
15	684.9	1151.8	1263.1	1133.4
20	933.3	1416.3	1541.4	1407.8
25	829.4	1314.5	1456.5	1328.8
30	546.6	1024.3	1185.7	1066.8
35	168.9	640.7	823.6	715.1
40	-253.2	209.3	404.0	308.6
45	-867.4	-422.1	-229.7	-315.1
50	-1559.1	-1136.5	-962.6	-1029.4
55	-2388.0	-2016.0	-1878.3	-1921.7
60	-3085.4	-2783.9	-2684.9	-2713.4
65	-3068.6	-2826.8	-2758.0	-2775.3
70	-2732.0	-2546.9	-2504.7	-2515.2
75	-2339.8	-2195.6	-2172.6	-2179.3
80	-1871.8	-1767.8	-1757.1	-1760.8
85	-1439.0	-1369.6	-1365.4	-1367.2
90	-1097.0	-1053.0	-1051.7	-1052.5
95	-794.6	-770.9	-770.8	-770.9
100	-305.2	-305.2	-305.2	-305.2
Instantaneous Tax Increase (percent)	18.8	5.5	2.0	4.9
Future GA	1712.1	738.4	425.5	640.3
Absolute Diff.	1974.3	618.9	229.1	537.5
Total Gov. Debt	285.9	89.1	32.6	77.2

Notes: ^a Thousands ATS (1995 present values); ^b $r=0.045$, $g=0.02$.

The second and third columns of table IX show that the package raises the net life-time tax burden across the board for all current generations. Prior to reform, newborns in 1995 received more transfers than they paid taxes over their life-time. Budget consolidation changed their net benefit into a net tax position. For a 20 year old at the beginning of the working career, the present value of net tax payments over the rest of life increases by 52 percent. A 40 year old who previously received net transfers worth some ATS 253.2 thousand in present value, will now pay net taxes of about the same amount. Finally, at the statutory pension age of 65 for men, the net present value of pension rights and other entitlements is reduced by 8 percent.

By collecting more taxes from virtually all currently living generations, the huge fiscal imbalance in the baseline scenario must be affected quite favorably. According to our

estimates, total government debt is now reduced to 89.1 percent of GDP, down from more than triple the amount prior to the reform. If the permanent nature of the budget cuts is sustained indeed, this constitutes a huge step towards fiscal balance.¹⁰

Still, further action is required to restore long-term solvency. The remaining total debt imposes an additional tax burden of ATS 618.9 thousand on future generations to restore complete fiscal balance. That is equivalent to increasing taxes on future generations by 19.1 percent. At the start of their life, they would face a present value of taxes net of transfers equal to ATS 738.4 thousand. An instantaneous, 5.5 percent increase in all taxes would suffice if it would include present generations as well. Compared to the base case, these figures are much smaller. We may conclude that the 1996/97 consolidation package largely, but by no means completely, corrected a major intergenerational imbalance existing in 1995.

IV.2.2 Pension Reform

The 1997 Pension Reform comes on top of the consolidation package. Details are given in section IV.1.2. According to estimates of the Ministry for Labor, Health, and Social Affairs the reform would eventually reduce pension outlays of the employee and self-employed schemes by 1.5 percent of GDP by 2030. Two thirds of the expected savings stem from the assumed gradual reduction of the replacement rate by one half of the increase in life expectancy. Such a reduction is in principle agreed upon but must still be implemented. Without the inclusion of the demographic factor, however, the total reduction in expenditures would not exceed 0.5 percent of GDP by 2030.

With respect to our simulation methodology, we proceed as follows. The pension reform contains a number of measures which can not all be modeled in every detail. As a starting point, we consider the effect on the projected aggregate expenses of the pension system in 2030 when the reform is fully effective. Then we adjust the life cycle pension profiles in order to generate exactly the aggregate pension expenditure in 2030. Starting with year 2000, the adjustment is phased in over twenty years implying that a person retiring in 2020 is the first to experience a fully decreased pension over her retirement.

Our simulations use the projections by the Austrian government. When the 1997 pension reform will have full effect in 2030, overall pension outlays are estimated to be 10.5 percent lower than in the base case of no reform being implemented. A reduction of 2.5 percent would be the result of changes in the benefit assessment rules, while a further reduction of 8 percent would be caused by the modification of the annual adjustment formula to reflect increased life expectancy. In the base case, pension benefits (excluding civil servants) are

¹⁰ The induced general equilibrium effects of fiscal policy will also affect to some extent the intergenerational incidence of fiscal policy and the required increase in net taxes to satisfy the government budget constraint, see Keuschnigg (1992, 1994). As with most generational accounting studies, we keep the interest and growth rates constant and do not take into account potential feedback effects on the government budget.

projected to rise from 10.4 percent in 2000 to 14.2 percent of GDP in 2030. Under the reform scenario, this figure is changed to 13.8 percent and 12.7 percent in 2030, in response to changes in the benefit assessment rules and modification of the annual adjustment formula, respectively.

The results are shown in table IX under the heading Pension Reform. Since it comes on top of the fiscal consolidation package, we now compare with the third column to obtain the differential effects of the pension reform. All currently living generations see their net benefit position declining. Consider a newborn in 1995. Because she/he will receive a less generous pension when old, the present value of taxes net of transfers rises by ATS 77 thousands. This is an increase by 64 percent relative to the position after the consolidation package. In absolute terms, a 40 year old in 1995 will face the highest increase in net taxes among current generations equal to ATS 194.7 thousand. Because of the long phasing in, the reform then rapidly loses its importance among current generations with still higher age. A 65 year old, for example, who retires at the statutory age in 2015, will see her pension only moderately reduced because her retirement still falls into the phasing in period. Finally, current pensioners are spared part of the burden because about a third of the measures apply only to *new* pensioners.

The pension reform is expected to reduce total public debt to 32.6 percent of GDP, down from 89.1 percent. While the effect on fiscal sustainability is important, the pension reform is rather less impressive if compared with the consolidation package. Unfortunately, our results for the consolidated public sector hide the fact that the pension system quite probably is responsible for a major part, if not most of total public debt in 1995, equal to 285.9 percent of GDP. We thus conclude that the rest of the public sector may possibly be in surplus by now while the pension system, if viewed in isolation, is still left with a major fiscal imbalance.

IV.2.3 Tax Reform 2000

Column five in table IX shows the results of the tax reform 2000 on top of budget consolidation and pension reform. As tables VII and VIII witness, the tax reform implies a decrease in wage and income taxes as well as an increase in family and child allowances. Our scenario, however, does not include any of the latest policy proposals such as an across the board reduction of discretionary spending by about 20 percent, amounting to approximately ATS 20 billion in year 2000. Since a new government has not yet been formed after the elections in fall 1999, the final outcome regarding the type of budgetary savings is still highly uncertain. Taking the tax cuts as permanent, the tax reform 2000 again worsens fiscal imbalance in Austria. Comparing with the fourth column of table IX (pension reform on top of consolidation package), this policy scenario cuts the net life-time tax burden for all presently living generations. Given that the tax cuts are targeted mainly on wage incomes and families with children, the reduction in life-time tax burden is much larger for younger

generations than for, say, pensioners. A twenty year old average citizen will see his life-time tax burden reduced by ATS 133.6 thousand which is almost 9 percent of his life-time liability prior to reform.

While the previous consolidation measures including the pension reform succeeded to squeeze total debt to 32.6 percent, the tax reform 2000 increases it again to 77.2 percent of GDP. To eliminate this fiscal imbalance and to restore long-run solvency, the government would have to increase taxes on future generations by 16.8 percent (while an instantaneous tax increase of 4.9 percent would suffice if it included all current generations as well). The tax reform, thus, significantly sharpens intergenerational inequity. The absolute difference in the accounts of the 1995 new born and future generations increases to 537.5 thousand ATS (from 229.1 in the pension reform experiment).

V Conclusions

Based on a generational accounting exercise, this paper computed the intergenerational incidence of Austrian fiscal policy as of 1995. For this purpose, we calculated the present value of life-time tax payments net of transfers both for currently living as well as future generations. According to our results, Austrian fiscal stance in 1995 was characterized by a tremendous intergenerational inequity in favor of currently living generations. Clearly, public finances were unsustainable in the long-run. We found that overall public debt was more than five times higher than officially recorded *net* debt. To eliminate this debt and restore sustainability in public finances, an instantaneous increase in all taxes on both current and future generations by 18.8 percent would be required. If the burden of consolidating public finances were imposed only on future generations, they would face a life-time tax burden that exceeds life-time taxes of a current new born by a full 65 percent.

Motivated in large part by the requirements of the Maastricht criteria and the need to qualify for EMU, the government enacted a consolidation package in 1996 and a pension reform in 1997. We found that full implementation of the consolidation package alone should eliminate more than two thirds of total government debt in 1995 equal to 286 percent, leaving a debt of 90 percent of GDP for further consolidation. If it were fully implemented, the 1997 pension reform would further contribute to sustainability and reduce total debt. The combined reforms, however, would still leave a consolidation requirement of about 33 percent of GDP. Without any accompanying measures to pay for expected revenue losses, the recent tax reform 2000 including the family support package, however, again raises total public debt and is a step backwards in achieving long-run fiscal sustainability and generational balance in Austria.

References

- Auerbach, A. (1997), Quantifying the Current U.S. Fiscal Imbalance, *National Tax Journal* 50, 387–398.
- Auerbach, A., J. Gokhale and L. Kotlikoff (1994), Generational Accounts: A Meaningful Way to Evaluate Fiscal Policy, *Journal of Economic Perspectives* 8, 73–94.
- Auerbach, A., J. Gokhale and L. Kotlikoff (1991), Generational Accounts: A Meaningful Alternative to Deficit Accounting, in: D. Bradford (ed.), *Tax Policy and the Economy*, Vol. 5, Cambridge, Mass., 55–110.
- BMAGS (1997), *Pensionskonzept 2000 – Nationalratsbeschluß*, Bundesministerium für Arbeit, Gesundheit und Soziales, Wien.
- CBO - Congressional Budget Office (1995), *Who Pays and When? An Assessment of Generational Accounting*, Washington D.C.
- Diamond, P. (1996), Generational Accounts and Generational Balance: An Assessment, *National Tax Journal* 49, 597–607.
- European Commission (1998), *The Economic and Financial Situation in Austria*, Brussels: Directorate General II, Economic and Financial Affairs, II/271/97–EN (FINAL).
- Eurostat (1995), *European Community Household Panel, Wave 2*.
- Genser, B and R. Holzmann (1995), Die Österreichische Finanzpolitik vor dem EU-Beitritt, *Finanzarchiv* 52, 71–110.
- Gokhale, J. und B. Raffelhüschen (2000), Population Aging and Fiscal Policy in Europe and the United States, *Economic Review*, Vol. 36 No. 1, Federal Reserve Bank of Cleveland, forth.
- Haveman, R. (1994), Should Generational Accounts Replace Public Budgets and Deficits? *Journal of Economic Perspectives* 8, 95–111.
- IAS (1998), *Prognose der Österreichischen Wirtschaft 1998/99*, Vienna: Institute for Advanced Studies.

- 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.
- Keuschnigg, C. (1994), Dynamic Tax Incidence and Intergenerationally Neutral Reform, *European Economic Review* 38, 343–366.
- Keuschnigg, C. (1992), Intergenerationally Neutral Taxation, *Public Finance / Finances Publiques* 47, 446–461.
- Koch, M. and C. Thimann (1999), From Generosity to Sustainability: The Austrian Pension System and Options for its Reform, *Empirica* 26, 21–38.
- Kramer, H. and G. Lehner (1996), Die wirtschaftspolitischen Maßnahmen der neuen Bundesregierung, WIFO Monatsberichte 3/1996, 163–169.
- Lehner, G. (1998), Bund setzt Konsolidierung fort, WIFO Monatsberichte 5/1998, 349–363.
- Lehner, G. (1997), Bundeshaushalt 1996 spiegelt Konsolidierungsmaßnahmen wider, WIFO Monatsberichte 5/1997, 287–299.
- Lehner, G. (1996), Budgetkonsolidierung prägt Bundesvoranschlag 1996 und 1997, WIFO Monatsberichte 5/1996, 373–386.
- OECD (1999), OECD Economic Surveys. Austria, OECD: Paris.
- OECD (1998), OECD Economic Surveys. Austria, OECD: Paris.
- OECD (1997), OECD Economic Surveys. Austria, OECD: Paris.
- OECD (1994), OECD Economic Surveys. Austria, OECD: Paris.
- ÖSTAT (1997), Statistical Yearbook, Vienna: Austrian Statistical Office.
- ÖSTAT (1996/97a), Das Schulwesen in Österreich, Schuljahr 1996/97, Vienna: Austrian Statistical Office, Beiträge zur Österreichischen Statistik, Heft 1262.
- ÖSTAT (1996/97b), Österreichische Hochschulstatistik – Studienjahr 1996/1997, Vienna: Austrian Statistical Office, Beiträge zur Österreichischen Statistik, Heft 1249.
- ÖSTAT (1996), Demographic Yearbook, Vienna: Austrian Statistical Office.

ÖSTAT (1995/96), Gesundheitsstatistisches Jahrbuch, Vienna: Austrian Statistical Office, Beiträge zur Österreichischen Statistik, Heft 1254.

ÖSTAT (1995), Lohnsteuerstatistik 1995, Vienna: Austrian Statistical Office, Beiträge zur Österreichischen Statistik, Heft 1232.

ÖSTAT (1994), Lohnsteuerstatistik 1994, Vienna: Austrian Statistical Office, Beiträge zur Österreichischen Statistik, Heft 1203.

ÖSTAT (1984), Konsumerhebung 1984, Vienna: Austrian Statistical Office, ISIS Database.

Raffelhüschen, B. (1999a), Generational Accounting in Europe, *American Economic Review* 89, 167–170.

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. (1998), *Generational Accounting in Europe*, Study undertaken for the European Commission, DG XXI, mimeo, Brussels.

Rürup, B. and I. Schröter (1997), Perspektiven der Pensionsversicherung in Österreich, Gutachten im Auftrag des BM für Arbeit, Gesundheit und Soziales, Darmstadt.

Stefanits, H. (1998), Aktuelle Entwicklungen in der gesetzlichen Pensionsversicherung, BM für Arbeit, Gesundheit und Soziales, Vortragsmanuskript.

Institut für Höhere Studien
Institute for Advanced Studies

Stumpergasse 56

A-1060 Vienna

Austria

Phone: +43-1-599 91-145

Fax: +43-1-599 91-163