

FISCAL REFORM IN SWEDEN: WHAT GENERATIONAL ACCOUNTING TELLS US

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Generational accounts answer the simple question of how much future generations will have to pay in net taxes as compared to today's generations. This paper briefly reviews the concept of generational accounting and provides estimates for Sweden, where public finances deteriorated significantly after 1990. The results suggest that the measures adopted since 1994 should improve dramatically the relative position of future generations, who may nevertheless be expected to face large net tax bills. (JEL H62)

I. INTRODUCTION

In recent years, the concept of generational accounting has emerged as yet another approach to assessing fiscal policy. Generational accounts have stirred considerable debate among analysts as to their usefulness in fiscal policymaking and budgetary analysis. At one extreme, Kotlikoff (1992) recommends discarding alternative measures of the deficit and replacing them with generational accounts. At the other, some analysts contend that generational accounting provides little useful information because it depends on uncertain projections of the economy and population, on assumptions about key economic variables well into the future, and, to some extent, on a particular model of consumer behavior.

Generational accounts have been computed for a growing, albeit still small, number of countries. In light of significant deterioration

of public finances after 1990, Lindbeck et al. (1994) strongly recommend that such accounts be computed for Sweden. The purpose of this paper is to present an assessment of the fiscal stance in Sweden using generational accounting.

II. PUBLIC FINANCES IN SWEDEN

A. Deterioration in the Public Finances

Public finances in Sweden began to deteriorate rapidly around the beginning of the decade (table 1). In 1989, the general government—central government, local governments, and the social security system—recorded a sizable surplus of about 5.4% of GDP. By 1993, the general government budget balance was in deficit by over 13% of GDP, improving slightly in 1994 when a deficit of 11.7% of GDP was recorded. Correspondingly, public net wealth weakened considerably. In 1989, the general government's financial assets exceeded its financial liabilities by some 4.8% of GDP. By December 1994, liabilities exceeded assets by 30.5% of GDP.

The deterioration of the general government's budget reflected both a decline in a still high aggregate revenue ratio of close to 60% of GDP and, especially, a surge in spending to 70% of GDP in 1994. The weakening of economic activity could not fully explain either trend. (Estimates of the share of the cyclical component of the deterioration of the general government budget balance range from under 50% to over 60%. In either case, a substantial portion is attributable to struc-

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TABLE 1
Sweden: General Government Accounts*

	1989	1990	1991	1992	1993	1994**
	<i>(in billions of Swedish kronor)</i>					
Taxes	510.7	552.0	544.8	528.3	531.6	525.3
Social security contributions	182.3	205.9	218.2	206.8	197.3	212.5
Other	56.8	63.1	60.7	91.6	68.5	72.1
Total revenue	809.4	887.1	896.2	907.6	873.4	883.6
Interest payments	66.2	68.0	74.4	82.3	87.8	112.3
Transfers to households	250.1	277.0	315.2	348.7	374.1	385.4
Other transfers	73.9	80.2	95.8	144.2	161.5	108.8
Consumption	322.6	372.1	394.4	400.3	401.7	409.3
Investment	30.3	32.8	32.7	39.1	41.5	44.5
Total expenditure	743.1	830.2	912.5	1,014.6	1,066.6	1,060.4
Financial savings	66.3	57.0	-16.3	-107.0	-193.3	-176.8
Central Government	38.5	18.9	-57.9	-140.6	-249.7	-215.2
Local authorities	-4.8	-8.3	-1.8	15.9	24.7	9.3
Social security sector	32.6	46.4	43.3	17.7	31.7	29.0
	<i>(in percent of GDP)</i>					
Total revenues	65.7	65.2	61.9	63.0	60.3	58.4
Of which: taxes	56.2	55.7	52.7	51.1	50.3	48.8
Total expenditure	60.3	61.0	63.0	70.5	73.6	70.1
Public sector financial saving	5.4	4.2	-1.1	-7.4	-13.3	-11.7

Sources: National Institute of Economic Research; Ministry of Finance.

*National accounts basis. Excluding nonfinancial public enterprises.

**Official projection as of September 1994.

tural imbalances in Swedish public finances. See OECD, 1995.) Most of the growth in the share of public spending was due to increases in transfer payments, which tend to account for a sizable portion of household income in Sweden. Transfers to households increased by 5 percentage points of GDP between 1990–1994, reaching 25.5% of GDP in 1994. Approximately half of the increase in household transfers was attributable to higher aggregate unemployment benefits and spending on labor market programs, with higher pension outlays accounting for an equivalent share of the increase in the spending ratio.

After reaching 65% of GDP in 1990, the share of general government revenue declined during most of the period to 1994. A large portion of the decline resulted from an unanticipated loss of revenue due to the 1990–1991 tax reform. The reform was intended to be revenue-neutral, with reduced direct tax re-

ceipts to be offset by broadened VAT and business tax bases. However, the reforms were underfinanced. Further reductions in the aggregate revenue ratio resulted from lowering the payroll tax rate by 4 percentage points, which nevertheless remained high at over 33% of wages in 1994.

B. The Outlook: A Financial Approach

Under the leadership of the former Bildt Government, which came to power in October 1991, Parliament adopted bold and far-reaching reforms during the early part of the decade. Despite consolidation measures totaling 6% of GDP between 1992–1994, along with additional measures expected to have longer-term effects, the medium-term outlook for public finances remained tenuous at best in the Autumn of 1994. In order to stabilize the debt ratio by 1998, substantial further measures were re-

TABLE 2
Sweden: November Supplementary Budget Measures

	Full Effect* (Billions of kronor)**
I. Tax Measures	
Social Security fees to be raised 3 percentage points to 6.95%. The tax will apply only to wages up to 7.5 basic amounts (currently SKr 240,000). It will be deductible against the income tax.	14.4
Full taxation of dividends and capital gains for household and small firms at 30%. This represents a return to double taxation and a reversal of the 1990 tax reform in this area.	7.5
Partial indexing of the state tax bracket and the standard deduction. (Savings are calculated assuming 3% inflation.)	4.4
The top marginal tax rate raised from 50% to 55% effective 1995–1998.	4.2
Other measures	
Total tax measures	36.3
(As a percent of GDP)	2.4
II. Spending Measures	
Partial indexation of pension benefits	5.7
Reduced family support	2.3
Reduced support to large families	0.5
Reduced support to single parents	0.8
Reduced agricultural support	0.3
Church tax administration	0.8
Other specified items	0.6
Total specified (November 1994)	11.0
Total spending measures (yet to be specified)	14.5
Total spending measures	25.5
(As a percent of GDP)	1.7

Source: Ministry of Finance.

*Indicates the annual savings expected in 1998 relative to unchanged policies. Spending totals are on a gross basis and exclude an estimated SKr 4 billion in lost revenue.

**1994/1995 prices.

quired of the new Social-Democratic Government. In November 1994, it therefore proposed a budget savings package intended to reduce the financial deficit by an additional SKr 57 billion, consisting of SKr 36.3 billion of tax increases, SKr 11 billion of specified spending cuts, and another SKr 14.4 billion of spending reductions that were to be specified in the Fiscal Year 1995/96 budget proposal to be submitted to Parliament in January 1995 (table 2). The latter also would include an additional SKr 20 billion in further budget consolidation measures. All of the measures were to be phased in over the period to 1998.

The impacts of the fiscal consolidation package on the public finances and the debt-to-GDP ratio have been simulated by the Ministry of Finance of Sweden (table 3). On the

assumption of 3% growth and an annual increase of wages and consumer prices of less than 3%, and assuming full implementation, the debt ratio would peak in 1996 and would fall to 91% of GDP in 1998.

Two important questions can be posed regarding the assessment of public finances implied by this type of analysis. First, is the time horizon over which the assessment is made sufficiently long to account for latent pressures, such as those linked to the aging of the Swedish population? The old-age dependency rate (the ratio of the number of persons aged 65 years and over to the number of persons aged 15–64) is projected to rise from 17% in 1994 to 24% in 2050. Second, does the financial flow approach on which the traditional debt dynamic analysis is based yield an indi-

TABLE 3
Sweden: Official Fiscal Adjustment Scenario
(Percent)

	1994	1995	1996	1997	1998
Selected economic indicators					
GDP growth	2.2	2.5	2.9	2.7	2.3
Total unemployment rate*	13.0	11.6	10.8	10.0	0.5
Effective interest on public debt	9.1	10.6	10.0	9.0	8.5
Public sector (percent of GDP)					
Financial balance	-10.4	-9.0	-5.2	-3.5	-0.9
Of which:					
Primary balance	-4.1	-1.3	2.7	4.7	7.1
Revenue	60.1	60.6	61.2	61.4	62.0
Expenditure	70.5	69.6	66.4	65.0	62.9
Gross debt	91.9	95.1	95.3	93.7	90.5
Assumed cumulative budget saving measures (in billions of SKr)	-	35	55	75	95

Source: Ministry of Finance; Lachman et al. (1995).

*Percent of labor force.

cator of the sustainability of fiscal policy sufficiently well-grounded in economic principles?

Generational accounting provides a useful means of answering these questions. The analysis here thus turns to a presentation of the fiscal policy stance in Sweden using generational accounting as a complementary tool for budgetary analysis.

III. GENERATIONAL ACCOUNTING IN BRIEF

A. Basic Framework

Some analysts argue that, rather than focusing on the traditional budget, what should matter in principle is whether the lifetime budget constraints of households currently alive are augmented or reduced by the government's current fiscal policies. The traditional cash deficit provides little information regarding this question. In contrast, generational accounting, by allowing for the variability of transfers and taxes across age and sex groups in the population, helps to assess the potential impact of fiscal policies on households' lifetime budgets.

The starting point of generational accounting is that all individuals, both those alive today and members of future generations, face, under current policy, future streams of taxes

and transfers that can be more or less anticipated. A generational account simply reflects the present value of the expected net tax payments of a representative individual, where "net taxes" refers to taxes paid less transfers received. Generational accounting incorporates explicitly the intertemporal budget constraint of the government, which requires that the present value of current and future government consumption be covered by government's current net wealth and the sum of net tax payments of all current and future generations. Given reasonable estimates of the former three elements, it is possible to derive net tax payments of future generations as a residual (see Hagemann and John, 1995). For example, a tax reform that lowers the overall tax burden for all living generations will, holding real government consumption constant, ultimately increase the tax burden on future generations. Conversely, a large enough initial stock of net government wealth can potentially finance a stream of future government consumption without increasing the net tax burden of future generations.

Despite the apparent simplicity of generational accounts, their interpretation has been seen as problematic. The next section focuses briefly on several controversial aspects of generational accounting.

B. *Interpreting Generational Accounts*

There is no consensus about replacing the traditional budget deficit with generational accounting. Although analysts recognize the usefulness of generational accounting as a complement to the traditional budget deficit, debate continues over the interpretation of generational accounts. While it is beyond the scope of this paper to delve fully into all aspects of the debate, reviewing the principal aspects of generational accounting is useful (see Haveman, 1994).

(i) Generational accounting is essentially a matter of arithmetic. Although demanding with respect to data requirements, generational accounting is not in and of itself complex. Giving economic content to estimated generational accounts requires strong assumptions about consumer behavior, just as other indicators of the impact of fiscal policy do. In particular, generational accounts that have economic meaning must assume that consumers are rational, forward-looking with perfect foresight, and not subject to liquidity constraints. More succinctly, a view about how the estimated net tax affects an individual's lifetime budget constraint is needed before one can begin to interpret the estimates in an economically meaningful way. Ultimately, according to some observers (see Haveman, 1994; Buiters, 1995), households must behave according to the life-cycle model of consumption if an aggregate demand impact is to be inferred from a computed generational account. The degree to which positive private intergenerational transfers may offset negative public intergenerational transfers also would have an important bearing on the interpretation of generational accounts (see Barro, 1974). Although evidence suggests that private intergenerational transfers tend to be small (Altonji et al., 1992; Abel and Kotlikoff, 1994), knowing the approximate size of the negative public intergenerational transfer provides a useful indication of the scale of the offsetting private transfers that would be needed.

(ii) As typically constructed, generational accounts assume that future generations bear the full cost of current and future government consumption to the extent that it cannot be covered by the net tax payments of living generations. This construction mostly has reflected difficulties of empirical implementa-

tion. First, as opposed to transfer payments and taxes, for which there tends to be more information on per capita levels by age and sex, distributing the benefits of government consumption across different generations is problematic. It is worth noting, however, that the recipient of a transfer payment is not unambiguously the "beneficiary." The children of a recipient of a social security pension also will "benefit" from the pension. An improved approach to generational accounting, nevertheless, would allow for an allocation of the value of non-transfer outlays across age and sex groups.

Second, interpreting the treatment of government consumption—by implicit assumption—as pure waste (see Muellbauer, 1992) is, for all practical purposes, a naive use of generational accounts as indicators of the fiscal stance. Any indicator—including generational accounts—requires cautious interpretation and a recognition of its strengths and weaknesses. Generational accounting treats government consumption as a cost without a corresponding benefit. As a result, the accounts are upwardly biased. However, the assessment of intergenerational equity is unaffected by this treatment of government consumption. To the extent that their lifetime tax payments exceed their transfers, living generations contribute to the payment of present and future government consumption. In this case, generational accounting provides guidance as to whether or not the share of government consumption paid by living generations is "fair" or not.

Haveman (1994) suggests that generational accounting will overstate the burden on future generations to the extent that it does not take fully into account government asset purchases financed by tax increases. An increase in taxes paid by living generations to finance the purchase of physical assets should, in principle, be a wash for the utility-maximizing rational consumer, but would appear as an increase in the burden on living generations. While this assumption is empirically unavoidable in most cases due to data limitations (i.e., the frequent inability to properly separate capital from current transactions in government spending), it is not conceptually correct. Properly accounted for, the asset purchase should increase the government's net wealth by the same amount as the stream of higher taxes.

(iii) Generational accounting presupposes that, during their remaining lifetime, living generations pay taxes and receive transfers as implied by the projections that underpin the calculations, while all future generations pay the residual that is necessary to satisfy the government's intertemporal budget constraint. The implication is that individuals with otherwise identical economic characteristics may be treated differently, since they belong to different generations. As in the case of the treatment of government consumption, the assumption that future generations bear the burden of repayment of the accumulated debt is clearly extreme. Other distributions of the repayment are equally feasible and likely. However, the construction of the accounts does not affect the basic message of generational accounting. Larger generational accounts for future generations (as compared to those of newborns) imply a need to increase net taxes—either for a subsection of future populations or, to a smaller extent, for future populations as a whole.

(iv) As is true of other fiscal indicators, generational accounts do not provide a clear normative prescription for budgetary policy. In the case of the United States, where there is a strong imbalance in the treatment of different generations, Auerbach et al. (1994, p. 93) suggest:

“Generational accounting describes not only the burdens that fiscal policy places on different generations, but also the changes in policy needed to alter the distribution of such burdens. In the case of U.S. fiscal policy, achieving the goal of stabilizing lifetime tax rates of future generations of Americans will require a much more significant sacrifice by current generations than politicians seem to realize.”

But “stabilization” could be achieved at any level of net tax. Indeed, a situation in which all future generations face the same net taxes could be considered as a sort of stabilization. Alternatively, should a “zero” net tax burden on all future generations dominate all other policies?

(v) Kotlikoff (1986) argues that, in contrast to traditional measures of the deficit based on “arbitrary” definitions of “expenditures,” “taxes,” and “financing,” generational accounts provide unambiguous indications of the true economic deficit implicit in the government's policies. Notwithstanding the

potential theoretical merits of such critiques, the fact remains that cash deficits must be financed. Different options for financing a deficit—by selling bonds domestically, borrowing abroad, or monetizing the deficit—will have different macroeconomic effects. The estimated net taxes that emerge from generational accounting do not necessarily provide an accurate indication of these effects.

It is also worth noting that generational accounting does not take into account general equilibrium effects of fiscal policies or other factors that will have profound effects on relative prices in the future. As Auerbach and Kotlikoff (1987) demonstrate, taking into account the dynamic effects of tax and spending policies on labor supply and saving can lead to very different macroeconomic scenarios. For instance, the aging of the population, other things equal, could be associated with significant capital deepening as the proportion of workers in the population falls. In turn, the wage/rent ratio could increase, and after-tax incomes could be higher than they otherwise would be (see Solow, 1956; Auerbach et al., 1989). Therefore, to the extent that real incomes typically are rising over time, generational accounting will not provide any indication of whether or not the tax burden, as reflected in the ratio of the lifetime taxes to the lifetime incomes of each generation, will rise or fall in the future.

This brief discussion of some of the principal contentious issues surrounding generational accounting emphasizes the fact that such accounts need to be interpreted with care. Notwithstanding such a constraint, generational accounting can be very illuminating regarding the age and sex distribution of tax and transfer policies. Moreover, as is true of other measures of fiscal stance, changes in generational accounts, as opposed to their actual levels, may be less controversial.

IV. GENERATIONAL ACCOUNTS FOR SWEDEN

This section reports estimates of generational accounts for Sweden. Generational accounts have been computed on the basis of three scenarios. In the base case, accounts reflect tax and spending policies that were in place prior to the elections in September 1994. In the “policy” scenarios, the estimated accounts include the impacts of some recent fis-

cal measures on future taxes and transfers, including—in the case of the final policy scenario—the potential effects of the pension reform on retirement outlays.

A. Definitions and Assumptions

The construction of generational accounts requires estimation of three basic items: (i) The present value of net tax payments (i.e., generational accounts) of living generations, (ii) government net wealth in the base year, and (iii) the present value of future government consumption.

The most important ingredients in the calculation of generational accounts of living generations are net tax payments (taxes paid minus transfers received). Following Auerbach et al. (1994), the analysis here uses average levels of benefit payments and taxation by age and sex group. Data from the 1991 Income Distribution Survey were used to determine per capita transfers and taxes by age and sex in 1991, while the 1992 survey was used for all subsequent years. In each year, 1991 to 1994, per capita taxes and transfers were calibrated to yield actual aggregate spending and revenues, thus incorporating policies implemented during the interim period. For 1995–1999, medium-term projections of transfers and taxes were provided by the Ministry of Finance and were distributed across the population by age and sex in each year according to the age and sex pattern observed in the 1992 Income Distribution Survey. These projections reflect policies contained in the April 1994 Economic Policy Statement of the Government. Finally, as regards population projections, the analysis uses the Central Swedish Statistical Office's most recent projections to 2050. For subsequent years, the study relies on World Bank projections to the year 2190.

Several different taxes have been distinguished: (i) taxes on personal income paid to the central and local governments, (ii) property taxes, (iii) wealth and capital income taxes, (iv) taxes on income from self-employment, and (v) social security contributions. The Income Distribution Survey provides average payments by age and sex for each of the first four of these. Age- and sex-specific social security contributions were obtained by distributing aggregate payroll tax receipts across age and sex groups according to the same rel-

ative levels of payments as local income taxes. Aggregate value-added and excise taxes also were distributed, using age-consumption patterns from the United States since no such information is available for Sweden. To the extent that there may be differences between the age-consumption profiles in Sweden and the United States, however, the estimated generational accounts will be biased.

Per capita transfer payments were available for five items: (i) pensions, (ii) sick pay, (iii) labor-market assistance, (iv) parental allowances, and (v) educational grants. Data on child allowances, the accommodation allowance, and social assistance were available only by household and had to be distributed across single age and sex groups. Only transfers paid on a cash basis have been included; benefits in kind (education, childcare, etc.) are included in government consumption. For the years beyond 1999, the analysis assumes that taxes and transfers increase at the same rate as productivity growth.

Government net wealth consists of the difference between government financial assets and the gross debt of the general government. In 1991 (the base year of the analysis), the public sector net wealth is estimated to have reached about SKr 68 billion, or about 5% of GDP. This figure comprises the consolidated net wealth of the central and local governments and the social security sector. However, reflecting intervening deficits, the government's net worth deteriorated substantially by 1993.

Estimates of the present value of government consumption are based on actual spending in the years 1991–1993, on estimates for 1994, and on the medium-term projections of the Ministry of Finance for the period 1995–1999. For purposes of the present analysis, consumption of the general government includes subsidies that are not paid to households, as well as public investment. Beyond 1999, the analysis assumes that total expenditure on these items increases in line with productivity growth.

Sweden, like many other industrialized countries, experienced a pronounced drop in the growth rate of labor productivity. On average, labor productivity grew by 1.1% annually between 1970 and 1993, as compared with 4% between 1950 and 1970 (see Lindbeck et al., 1994). For present purposes, the average

TABLE 4
 Sweden: Generational Accounts Under the Base Case Scenario
 (in thousands of U.S. dollars)*

Generation's Age in 1991	Present Value of Net Tax Payments	
	Male	Female
0	153.4	91.2
5	174.1	101.7
10	196.8	112.2
15	218.8	120.8
20	244.3	128.7
25	248.8	132.1
30	253.0	134.4
35	237.0	128.0
40	218.9	122.0
45	177.4	92.9
50	127.8	57.5
55	69.9	19.1
60	1.9	-25.3
65	-18.4	-34.0
70	-43.4	-44.7
75	-34.5	-35.6
80	-22.1	-25.3
85	-11.3	-13.6
Future Generations	209.7	124.7
Percentage difference from account of age zero generation	37.0	37.0

Source: Authors' calculations.

*Based on 1.5% per annum rate of productivity growth and discount rate of 4.65%.

annual growth of productivity is assumed to remain constant at 1.5% per year over the long run. (In order to assess the sensitivity of results, estimates were also made based on productivity growth of 1.0% and 3.0%. See Hagemann and John, 1995.)

The analysis here assumes that a rate midway between the average yield on government bonds and the real rate of return on industrial bonds between 1980 and 1993 provides a reasonable indicator of society's trade-off between present and future consumption. On this basis, it assumes a real discount rate of 4.65%.

B. Base Case

The base case scenario reflects the policies in place as of September 1994. Table 4 presents the results from this scenario. A positive figure implies that the generation will pay more in taxes than it will receive in transfers during the remainder of its life, and vice versa.

Under the base case scenario, males over age 60 and females over age 57 (not shown) benefit from the current tax/transfer system in Sweden, as reflected in a negative present value of future net taxes. On the other hand, the accounts of newborns are substantially positive; newborn males could be expected to pay \$153.4 thousand in lifetime net taxes on the basis of policies in place in September 1994, while their female counterparts could expect to face a lower but still significant net lifetime tax of \$91.2 thousand. The net tax liabilities rise steadily thereafter, reaching a maximum of \$253 thousand for males and \$134.4 thousand for females at around the 30-year-old cohort. In general, accounts for women are lower than for men. This is due largely to the fact that, although high by international standards, the labor force participation rates of women are lower than those of men (so that lifetime gross taxes are lower), while their pensions are roughly comparable

TABLE 5
 Sweden: Generational Accounts Under the Policy Scenario, Excluding Impact of Pension Reform (in thousands of U.S. dollars)*

Generation's Age in 1991	Present Value of Net Tax Payments	
	Male	Female
0	177.7	110.7
5	201.9	123.8
10	228.0	136.8
15	253.8	148.0
20	279.9	155.6
25	285.6	159.5
30	289.5	161.4
35	272.9	154.5
40	253.5	147.8
45	209.9	117.0
50	158.0	79.5
55	97.3	38.8
60	23.0	-9.5
65	-1.9	-21.3
70	-32.8	-35.5
75	-29.4	-29.8
80	-20.3	-22.0
85	-14.4	-13.8
Future Generations	159.4	99.2
Percentage difference from account of age zero generation	-10.0	-10.0

Source: Authors' calculations.

*Based on 1.5% per annum rate of productivity growth and discount rate of 4.65%.

to those of men. Finally, generations yet to be born would have faced substantial lifetime net tax bills, estimated at \$209.7 thousand for males and \$124.7 thousand for females, notwithstanding the budget consolidation measures already adopted by the previous government. These estimated net tax bills are 37% higher than those of the youngest living generations. This general result is reasonably robust to changes in the key assumptions, although the magnitudes of the estimated net tax bills of course vary. The estimates vary between 19% and 60% depending on the assumptions regarding the discount rate and the rate of productivity growth (see Hagemann and John, 1995).

C. Policy Scenarios

The analysis considers two policy scenarios. The first takes account of all the measures noted in section II and, thus, that had been an-

nounced as of November 1994. The second scenario also takes into account the projected levels of old-age pensions implied by the recent pension reform.

A policy scenario excluding pension reforms takes into account all the measures reported in table 2. All per capita levels of transfers and taxes are scaled to accord with the aggregate levels projected to 1998 by the authorities in Sweden. Government consumption also is adjusted in each year to reflect official projections. Finally, as in the base case, the analysis assumes that all variables increase subsequently at the same rate as the rate of productivity growth.

Table 5 shows the results. As is evident, the consolidation measures put in place by the Government would, if sustained, have a substantial impact on the intergenerational burden implied by Sweden's tax-transfer system. The consolidation program itself is fairly ambitious. When implemented fully as proposed,

the tax increases and expenditure cuts amount to approximately 4% of GDP. Raising the net taxes to be paid by living generations substantially lowers the net tax burden that would be transferred to future generations. Future male and female generations would face net tax bills of \$159.4 thousand and \$99.2 thousand, respectively, which would be lower than the accounts of newborns.

The reform of the old-age pension system—if implemented—would affect significantly the level of pension outlays during the next half century. The existing pension system, consisting of the basic pension (*folkpension*), the earnings-related ATP pension (Allmántilläggs-pension) and various pension supplements, would be replaced by a single, albeit multi-tiered, pension. The contribution rate would be set at 18.5% of all income that carries pension rights. Of this contribution rate, 16.5 percentage points would be used to pay current pensions on an ongoing basis (i.e., on a pay-as-you-go), while the remaining 2 percentage points would be invested in individual capitalization accounts, the so-called *premium reserve account*. The latter component would thus constitute the “funded” element. In addition, the reformed system would provide a *guarantee pension*—equal to 2.1 base amounts—to those persons who will have accrued too few pension credits to assure an acceptable standard of living.

Pensions, which would be based on lifetime contributions, would be paid up to 7.5 base amounts. The aim is to make the system more—albeit not wholly—actuarially fair. Pensions would rise annually by the rate of inflation plus the amount of change in a so-called “Economic Adjustment Index,” which is defined as the deviation of real wage growth from a predetermined norm. Although the norm has not been set, the Swedish authorities have projected pension outlays on the assumption that the index would be set at 1.5%. Thus, full inflation protection would be assured if real wage growth equals the norm. When real wage growth exceeds or falls short of the norm, the real value of pensions would be raised or lowered, respectively.

The new system would be implemented gradually over the next two decades. Persons born in 1934 or earlier are to receive their old-age pensions from the old system, while the pensions of persons born in 1954 or later

would come entirely from the reformed scheme; persons born between 1935 and 1953 would be phased into the new scheme during the transitional period. In general, the reformed system would be expected to result in a considerable reduction in aggregate pension outlays in the years ahead, especially after 2010. This policy scenario incorporates projections for total pension outlays to 2050 provided by the Ministry of Health and Social Affairs. As in the base case, the projections assume annual real wage growth of 1.5%. For the years beyond 2050, it is assumed that average pensions will increase with productivity growth.

Table 6 presents the results obtained from incorporating the pension reform. The substantial reduction in pensions implied by the reform would reduce even further the generational accounts of future generations. The reduction in the generational accounts of unborn cohorts comes at the expense of reduced net lifetime transfers to living generations. The size of the impact varies both by sex and age, given the composition of the measures that have been taken, and the length of time remaining in the lifetime of each cohort.

V. CONCLUSION

For a number of years, analysts have considered the long-run implications of various government programs, especially public pensions and health care. Armed with such simulations, analysts are able to alert policymakers of structural imbalances that may not necessarily be evident in the current period or in the near term. This type of empirical analysis, when utilized diligently, can help shape early adjustments to future spending and tax policies to ensure that fiscal policy remains on a sustainable path.

Generational accounting represents an innovative approach to forward-looking analysis of fiscal policy. To be sure, interpretation of the accounts for purposes of macroeconomic policy formulation obliges the user to gauge carefully the reasonableness of the assumptions and the underpinning projections, and, importantly, to opt for one or another model of consumption. Moreover, where the benefits of government consumption have been assumed implicitly to be zero—as in the analysis here—the policymaker must perforce reflect

TABLE 6
Sweden: Generational Accounts Under the Policy Scenario, including Impact of Pension Reform (in thousands of U.S. dollars)*

Generation's Age in 1991	Present Value of Net Tax Payments	
	Male	Female
0	184.8	116.4
5	210.3	130.5
10	237.8	144.4
15	264.8	156.4
20	292.0	164.8
25	298.5	169.1
30	302.8	171.1
35	286.0	164.0
40	266.0	157.0
45	222.0	125.7
50	169.6	87.8
55	107.0	45.7
60	31.1	-3.9
65	3.9	-17.2
70	-29.1	-32.9
75	-27.4	-28.3
80	-20.4	-21.8
85	-14.8	-13.7
Future Generations	141.5	89.2
Percentage difference from account of age zero generation	-23.0	-23.0

Source: Authors' calculations.

*Based on 1.5% per annum rate of productivity growth and discount rate of 4.65%.

on the implications of such an assumption for interpretation of estimated positive net lifetime taxes on future generations as a "burden." In the meantime, a wealth of information nevertheless will have been conveyed by these estimated tax burdens, which, however roughly, reflect the age and sex pattern of the government's tax and spending policies. In the end, the user is more informed than in the absence of such estimates.

The empirical results presented in this paper suggest that sustained implementation of budgetary consolidation measures adopted in recent years in Sweden could have sizeable effects on intergenerational burdens of fiscal policies, effects that are not captured fully by the traditional cash deficit. The substantial shift in the relative burdens of newborns and future generations raises a challenging normative question—is the estimated shift of a large portion of the tax burden from future generations to newborns fully equitable?

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