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7 Generational Accounts for Belgium

Jean-Philippe Stijns

7.1 Introduction

In most governmental and academic discussions about budgetary discipline, the budget deficit—or the net financial balance—is often cited as the key variable to control. Belgium is not different in that respect. Hence, in section 7.2, I present a brief review of Belgian fiscal policy from a debt-deficit point of view. This partial vision suggests that Belgian public finances are, overall, under control.

My aim in this paper is to go beyond this and present generational accounts for Belgium. Auerbach, Gokhale, and Kotlikoff (1991) have introduced generational accounting as an alternative or at least a complement to the traditional measure of budget deficit. The data and conventions that are the basis for the generational accounts for Belgium are set up in the last part of section 7.2.

The generational accounts themselves are presented in section 7.3. Next, the estimate of the burden on future generations is computed. This estimate is compared to the "birth bill" that typical members of future generations will have to face given the intertemporal budget constraint of the government. Finally, the conclusions of generational accounting about the burden imposed by old-age pensions will be compared to the results of other kinds of studies.

In section 7.4, I examine the generational accounts for Belgium in terms of potential fiscal policy. Alternative policy measures are simulated and conclusions are drawn about the relative efficacy and political feasibility of the corresponding fiscal instruments. I analyze in section 7.5 the influence of the

treatment of education on generational accounts. Finally, in section 7.6, I summarize my findings and present some paths for further research.

7.2 The Belgian Setting

With a debt-to-GDP ratio around 128 percent in 1995, the issue of the need for budget discipline is obviously compelling in Belgium. Table 7.1 summarizes the evolution of the Belgian government budget from the mid-1980s up to 1995. Some substantial efforts have in fact already been accomplished. Indeed, during the 1980s, the Belgian government net financial balance fell by more than half as a share of GDP, decreasing from 13 percent in the early 1980s to roughly 5.7 percent in 1990. From 1991 until 1993, however, the net financial balance deteriorated and went back up to 7.5 percent of GDP. Since 1994, the net financial balance has been decreasing again.[1]

The first objective of Belgian budgetary policy is currently to meet the Maastricht Treaty criteria. Accordingly, in 1992, the government set targets for the gradual mitigation of the government deficit to 3 percent of GDP in 1996 (compared to 7 percent in 1992). In fact, this pace of deficit reduction is comparable to that observed in the 1980s. The second objective is to eliminate the risk of a "snowball effect," that is, a self-sustaining increase in the debt-to-GDP ratio as a result of interest payments. The third is to create in the long run a sufficient degree of freedom for public finances to confront the problems of population aging.

In practice, the plan introduces three guidelines: the welfare system is to be in equilibrium, fiscal receipts must have "unit elasticity" (increase in line with GDP), and primary expenditure must not increase in real terms. A supplementary rule consists in keeping the primary surplus above 6 percent of GDP beyond 1996, with a view to bringing up a "countersnowball" effect.

Since 1992, in order to compensate for the negative incidence of unforeseen macroeconomic shocks, the government has implemented a series of structural corrective measures. According to the National Bank of Belgium (1995), these additional measures implied budget reductions of 1 percent in 1992, 2.5 percent in 1993, and 1.75 percent in 1994. Also, approximately 60 percent of these are due to new direct and indirect taxes and to a lesser extent to increased payroll taxes, 30 percent result from cutbacks in expenditures, and 10 percent stem from other sources, including asset auctions. Indeed, the Belgian primary surplus in percent of GDP is clearly high (5 percent vs. −0.7 percent for the European Union). This reflects the high level of taxes: compared to the EU average, direct and payroll taxes are 5.5 percent higher whereas primary expenditures, at 42.7 percent, are only slightly higher.

In 1994, the snowball effect seems to have practically stopped: the debt-to-GDP ratio has slightly decreased below 128 percent. Nevertheless, with a debt-to-GDP ratio twice the EU average, interest payments relative to GDP were

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1. See also Organization for Economic Cooperation and Development (OECD 1995).

Table 7.1   **General Government Budget (percent of GDP)**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total receipts	48.7	49.0	47.3	45.8	46.2	46.3	46.2	46.9	48.2	47.6
Direct taxes	19.3	19.0	18.2	16.9	17.1	16.7	16.6	16.6	17.9	18.3
Indirect taxes	11.9	12.4	12.1	12.2	12.3	12.2	12.2	12.5	12.9	12.4
Social security contributions	15.1	15.4	15.0	14.7	14.8	15.3	15.5	15.7	15.3	15.1
Primary expenditure	47.0	46.0	44.2	41.9	41.2	42.5	42.6	43.5	43.2	42.7
Transfers to households	25.4	25.4	24.5	24.0	23.8	24.7	25.0	25.4	25.1	25.1
Pensions[a]	9.2	9.1	8.8	8.5	8.5	8.7	8.8	9.1	9.0	9.1
Health care	4.6	4.9	4.7	4.7	4.8	5.2	5.4	5.4	5.3	5.4
Unemployment benefits[b]	3.4	3.3	3.1	2.8	2.8	3.0	3.0	3.1	3.0	2.9
Other primary expenditure	21.6	20.6	19.7	17.8	17.4	17.8	17.6	18.1	18.1	17.6
Primary surplus	1.7	3.0	3.1	4.0	5.0	3.7	3.7	3.4	5.0	5.0
Interest payments	11.3	10.7	10.2	10.4	10.7	10.3	10.9	10.9	10.1	9.1
Net financial balance	−9.5	−7.7	−7.1	−6.5	−5.7	−6.6	−7.2	−7.5	−5.2	−4.1
Debt-GDP ratio[c]	117.5	121.7	122.1	119.4	119.3	120.2	122.0	128.2	127.6	127.9

Source: National Bank of Belgium; author's computations. I am grateful to Mr. Modart of the Department of General Statistics of the National Bank of Belgium for these data.

[a]Including pensions of public sector employees.

[b]Including early retirement and career interruptions.

[c]The value for 1995 is based on an estimate of the National Bank of Belgium (1996).

Table 7.2   **Transfer and Tax Taxonomy**

Transfers	Taxes
Birth allowances	Direct taxes
Family allowances	Social security contributions
Unemployment benefits	Wealth taxes
Old-age pensions	Indirect taxes
Child care[a]	
Education[b]	
Health care	

[a]"Child care" corresponds to public spending relative to child care institutions.
[b]Educational spending has been attributed to students. This does not exactly reflect the private benefits of education, but it surely is a better assumption than including it in nonspecific government consumption. See Ablett (1996); see also section 7.5.

still twice as high as the EU average (10.1 percent vs. 5.3 percent in 1994). In 1995, lower interest rates induced lower interest payments. This resulted in an improvement of the net financial balance (−4.1 percent of GDP in 1995 vs. −5.2 percent in 1994).

In terms of trend, whereas the primary surplus and the global deficit of the European Union have both been relatively stable for a decade, these two budget indicators have improved in Belgium, and the global deficit has tended to get closer to the European average. This reading of the situation suggests that simple commitment to the current fiscal policy could be enough to return to a reasonable debt-to-GDP ratio. Indeed, according to the National Bank of Belgium (1996), even under a relatively conservative macroeconomic scenario,[2] the budget would be in surplus by the beginning of the next century. By 2020, the debt-to-GDP ratio would fall below 60 percent.

This paper will contrast these conjectures with the results of generational accounting. Table 7.2 provides the taxonomy of transfers and taxes used in this paper. I distinguish between seven kinds of transfers, which I derive from Lambrecht, Fasquelle, and Weemaes (1994). Note that a part of public expenditure is treated as pseudotransfers. Taxes are estimated using aggregate results of the Belgian Households Budget Survey (Institut National de Statistique 1994). Income data comes from the Caisse Générale d'Epargne et des Retraite (1988). Belgian national accounts are used for 1995. For purposes of comparability across countries, all results are expressed in equivalent U.S. 1995 dollars.[3]

7.3 The Generational Accounts

Let me select reasonable, though arbitrary, values for the interest and growth rates. I assume a 6 percent real interest rate and a 0.75 percent real growth rate.

2. A 2 percent real growth rate, a little less than 5 percent in nominal terms, and an effective interest rate of 7.5 percent, i.e., the mean rate over the past decade.
3. I use indicative exchange rates (daily means) of the National Bank of Belgium for this purpose. In 1995 the daily mean exchange rate was 29.51 Belgian francs per U.S. dollar.

Table 7.3   **Generational Accounts (thousands of 1995 U.S. dollars)**

Generation's Age in Base Year	1988			1995		
	Net Payments (1)	Tax Payments (2)	Transfer Receipts (3)	Net Payments (4)	Tax Payments (5)	Transfer Receipts (6)
0	32.02	127.08	95.05	43.26	183.77	140.50
5	55.21	153.19	97.98	76.18	221.32	145.13
10	83.22	183.71	100.49	115.97	265.14	149.17
15	122.75	216.65	93.90	172.32	312.31	139.99
20	165.30	248.42	83.13	232.85	357.59	124.73
25	192.20	273.96	81.76	270.80	393.78	122.98
30	198.26	288.12	89.86	278.56	413.60	135.03
35	185.54	288.19	102.65	259.34	413.22	153.88
40	155.74	274.67	118.93	215.54	393.41	177.87
45	110.21	249.30	139.08	149.26	356.69	207.43
50	51.97	213.11	161.14	65.07	304.62	239.56
55	−17.17	166.27	183.44	−34.58	237.51	272.08
60	−84.03	115.70	199.73	−130.56	165.19	295.75
65	−108.55	89.79	198.35	−165.69	127.71	293.41
70	−113.00	75.35	188.35	−172.37	106.59	278.96
75	−107.01	62.40	169.41	−163.74	87.93	251.67
80	−99.80	50.51	150.31	−153.08	70.97	224.05
85	−89.98	39.73	129.71	−138.64	55.80	194.44
90	−76.79	30.21	106.99	−118.96	42.47	161.43

In table 7.3, the Belgian generational accounts are presented for 1988 and 1995 according to this baseline scenario. This scenario corresponds to a lower bound for intergenerational inequity in 1988. Results under alternative assumptions will also be presented.

Columns (2) and (3) show the current values of taxes and transfers, respectively, that the representative member of each age group faces in 1988.[4] Column (1) subtracts columns (3) from column (2) and thus displays the current value of the net taxes each member of every age group faces over her or his remaining lifetime (negative numbers indicate net transfer receipts).[5] In other words, column (1) shows the generational account of the representative member of each generation in 1988. Columns (4), (5), and (6) provide the same information for 1995.

As expected, most active people in the year of reference are facing the heaviest burden. Indeed, in the year of reference, they face the highest taxes of their lifetimes, whereas they have already received young-age transfers (education, etc.). Young individuals will have to face the same net taxes later. Hence, their present value is less than the discounted value of those paid by the active. On

4. In this paper, women and men are not distinguished.
5. Note that I am not considering taxes that have already been paid and transfers that have already been received prior to 1988 and 1995, respectively.

the other hand, people over age 53 (54) in 1988 (1995) can expect more transfers than taxes. Further, an 85-year-old awaits lower net transfers than does a 70-year-old. Indeed, the former will receive less since he or she has already received most of his or her old-age pension transfers.

Imbalance among generational accounts cannot be used as an indicator of intergenerational inequity among existing generations. This does not mean, however, that some degree of intergenerational inequity may not prevail. Indeed, Clokeur and Perelman (1994) find that the transfer-tax ratio has fallen from 99 percent for a citizen born in 1920 to 59 percent for a citizen born in 1980.[6] Hence, an interesting question is whether this imbalance among current living generations has worsened in recent years. Figure 7.1 plots in parallel Belgian generational accounts for 1988 and 1995. Generational accounts for 1988 have been adjusted to take account of GDP growth between the two years of reference.

Once GDP growth has been accounted for, both younger and older living generations appear to have been favored by policy changes between the two years of reference. People under age 53 are facing lower net taxes, and citizens above this age can expect higher net transfers. Despite the fact that the primary surplus has increased over the 1988–95 period, this result should not be surprising. Indeed, transfers to households as a share of GDP have been growing faster than total tax receipts (see table 7.1). From 1988 to 1995, transfers to households grew by 0.6 percent of GDP, whereas tax receipts increased only by 0.3 percent of GDP.

Finally, the higher the discount rate, the lower the absolute value of generational accounts. Younger generations receive most transfers in the short run, whereas the bulk of their taxes is located in the future and thus discounted proportionally to the interest rate. For older generations who will mainly benefit from transfers, the higher the interest rate, the lower the present value of future transfers. The lower the growth rate, the higher the absolute value of generational accounts. The influence of the growth rate is straightforward: transfers and taxes are assumed to grow at this rate.

Let me turn to the level of net public wealth to be considered. This is not a trivial issue. Auerbach et al. (1994) have considered federal net wealth to be roughly equal to minus the sum of the national income account deficits from 1900 through 1991. On the other hand, Ablett (1996) considers two extreme hypotheses regarding Australian net public wealth in order to analyze sensitivity of results to net wealth estimation. First, as a lower bound, net wealth is defined as minus government (net) debt; second, an upper bound is computed as the value of government capital from the Australian national accounts minus government (net) debt. Auerbach et al. (1994) argue that it is not important to measure existing public capital since its value is offset by imputed rents in

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6. The transfer-tax ratio is defined as the ratio of the life cycle sum of transfers to the life cycle sum of taxes. Both sums are discounted to age 40.
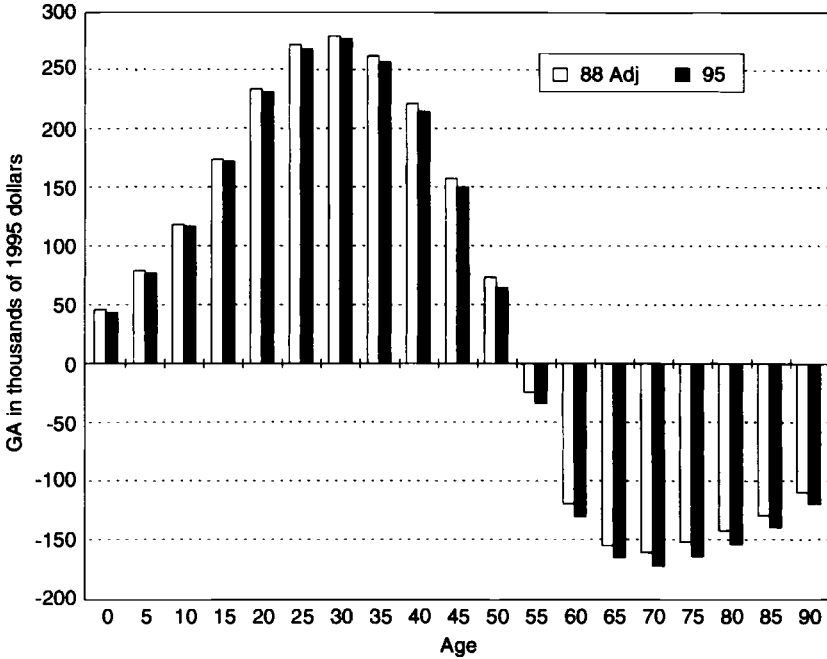
Fig. 7.1   "Adjusted" generational accounts, 1988 versus 1995

public consumption. In fact, Belgium is one of the rare countries where a comprehensive inventory of public assets and liabilities has been undertaken (see Commission pour l'Inventaire 1990, 1995). I follow Auerbach et al.'s approach insofar as I take into account public liabilities net of only financial assets yielding returns.

From 1988 to 1995, gross public liabilities have increased from 136 percent of GDP to 141 percent of GDP. Gross financial assets yielding returns went down from 46 percent of GDP to 25 percent of GDP. Hence, net public liabilities increased from 89 percent of GDP in 1988 to 116 percent of GDP in 1995. Net public liabilities are, of course, the mirror image of net public wealth. I tend to use the former term in the rest of this paper, as net public wealth turns out, as usual, to be negative. Non-(age)-specific government consumption is estimated to be approximately equal to 16 percent of GDP in 1988 versus 15 percent of GDP in 1995, based on Belgian current accounts.[7]

Table 7.3 provides per capita figures. The present value of net contributions of living generations is in fact needed. In table 7.4, each transfer and tax per capita has been multiplied by the corresponding generation size over time. The

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7. Non-(age)-specific government consumption is government consumption less the amount corresponding to transfers and pseudotransfers (education, etc.) that are taken into account in generational accounts.

Table 7.4   **Present Value of Net Taxes of Current Living Generations (billions of 1995 U.S. dollars)**

| | 1988 | | 1995 | |
	Total	Percent of GDP	Total	Percent of GDP
Transfer or Tax				
Health care	320.40	170	522.89	195
Birth allowances	0.34	0	0.48	0
Family allowances	37.78	20	54.10	20
Child care	0.20	0	0.28	0
Education	81.74	43	117.40	44
Unemployment benefits	108.98	58	159.17	59
Old-age pensions	694.14	368	1,069.91	399
Sum of transfers	1,243.58	660	1,924.22	717
Indirect taxes	468.82	249	724.59	270
Social security contributions	804.81	427	1,151.84	429
Wealth taxes	53.44	28	75.05	28
Direct taxes	628.53	333	909.40	339
Sum of taxes	1,955.57	1,037	2,860.88	1,066
Sum of net taxes	711.96	378	936.66	349

first rows give estimates of transfers; following rows concern taxes. The last row shows that in present value the sum of net taxes of current living generations has risen; however, as a share of GDP, the present value of net taxes of current living generations has declined by 29 percentage points.

To compute the burden on future generations, net public liabilities, nonspecific government consumption, and the sum of net transfers to current living generations have to be combined. Table 7.5 shows that in 1988, future generations would have to have to have paid back a bill equivalent to 48 percent of GDP in order to meet the intertemporal budget constraint of the government. In 1995, this figure had risen to 74 percent of GDP.

The sum of net transfers is strongly negative and outweighs nonspecific consumption. This indicates that a heavy net fiscal burden has already been placed on current living generations (and particularly on younger ones). On the other hand, the change in the burden on future generations is quite striking. As a share of GDP, it has risen by 26 percent. This is due to the decrease in net taxes and the growth in net public liabilities as a share of GDP. Belgian budgetary efforts are reflected in the decrease of nonspecific government consumption as a share of GDP. This observation illustrates that budget equilibrium may be a necessary condition for budgetary soundness but cannot be considered a sufficient condition.

Finally, I turn to the equivalent of this burden in terms of the "birth bill" to be paid by each member of future generations, assuming that members of future generations pay a constant net tax adjusted for growth. Table 7.6 compares

Table 7.5   **Present Value of the Burden on Future Generations (billions of 1995 U.S. dollars)**

	1988		1995	
	Total	Percent of GDP	Total	Percent of GDP
Sum of net transfers	−711.96	−378	−936.66	−349
Net public liabilities	168.72	89	377.38	116
Nonspecific consumption	633.68	336	823.82	307
Burden on future generations	90.41	48	264.54	74

Table 7.6   **Newborn versus Future Generations (thousands of 1995 U.S. dollars)**

	1988	1995
Total future burden	90,410,000	198,480,000
Equivalent "birth bill"	40.72	89.49
Newborn generational account	32.02	43.26
Percentage difference	27	107

Table 7.7   **Percentage Difference for 1988 under Alternative Assumptions**

Real Interest Rate (%)	Real Growth (%)						
	0.50	0.75	1.00	1.25	1.50	1.75	2.00
3	41	43	45	47	50	127	131
4	35	37	38	40	41	43	45
5	30	31	33	34	36	37	39
6	27	**27**	28	29	30	32	33
7	34	30	28	27	27	27	28

newborns' generational account with future generations' birth bill in the baseline scenario. The percentage difference is 27 percent in 1988 and reaches 107 percent in 1995.

As table 7.7 shows, the baseline assumptions correspond to a lower bound for the 1988 percentage difference.[8] Results range in fact from 27 to 131 percent. The latter figure is reached with a 3 percent discount rate and a 2.0 percent growth rate.

In table 7.8, I present results for 1995 under alternative assumptions. Results now range from 61 percent (vs. 27 percent in 1988) to 235 percent (vs. 131 percent in 1988). Failure to face the intertemporal government budget constraint between 1988 and 1995 has the consequence that future generations

8. Baseline assumptions are a 6 percent real interest rate and a 0.75 percent real growth rate.

Table 7.8   **Percentage Difference for 1995 under Alternative Assumptions**

Real Interest Rate (%)	Real Growth (%)						
	0.50	0.75	1.00	1.25	1.50	1.75	2.00
3	61	61	61	62	64	67	71
4	66	64	63	61	61	61	61
5	82	77	72	69	66	64	62
6	121	**107**	96	88	81	76	72
7	235	190	158	135	118	105	94

Table 7.9   **Present Value of Gross Burdens (billions of 1995 U.S. dollars)**

Transfer	1988		1995	
	Total	Percent of GDP	Total	Percent of GDP
Health care	320.40	170	522.89	195
Birth allowances	0.34	0	0.48	0
Family allowances	37.78	20	54.10	20
Child care	0.20	0	0.28	0
Education	81.74	43	117.40	44
Unemployment benefits	108.98	58	159.17	59
Old-age pensions	694.14	368	1,069.91	399
Sum of transfers	1,243.58	660	1,924.22	717
Gross public liabilities	256.18	136	378.41	141
Nonspecific consumption	633.68	336	823.82	307
Total of gross burdens	2,133.45	1,132	3,126.45	1,165

now face a *minimum* 61 percent increase in their lifetime net taxes as compared to 1995 newborns.[9] A 61 percent change in net tax rates is in fact already an unsustainable figure. As future generations will probably keep receiving some form of transfers, their gross tax rates will have to be raised by much more than 61 percent.

In a nutshell, a considerable effort has to be made as soon as possible. Indeed, under the baseline scenario, an 80 percent increase has been observed in the ratio of the net fiscal burden of future versus present generations over a period of only seven years. At this pace, Belgium will reach the twenty-first century with an unsustainable net fiscal burden to impose to its citizens.

Table 7.9 weighs gross burdens in 1988 and 1995 (i.e., public transfers, gross public liabilities, and nonspecific consumption) against GDP. First, old-age pensions come up quite expectably with the highest relative weight: 368

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9. The reader should keep in mind that the consumer/worker is not expected to react in any way to tax increases in this model. If that were the case, the net tax rate would have to be raised further.

percent of GDP in 1988 and 399 percent of GDP in 1995. Health care programs correspond to 170 percent of GDP in 1988 and 195 percent in 1995. Other transfers are more reasonable. It is noteworthy that in the two years, both old-age pensions and health care transfers to existing generations outweigh not only net but also gross public liabilities.

Nonspecific consumption also represents a very important burden, with 336 percent of GDP in 1988 and 307 percent in 1995. It should be noticed that though nonspecific consumption is projected ad infinitum, it is still outbalanced in current value by old-age pension transfers to current living generations.

The OECD (1994) has found gross pension liabilities to amount to 571 percent of GDP in 1990. The difference between my estimates for both years and that of the OECD comes most likely from the fact that I have assumed old-age pensions follow the economic growth rate. However, were the current rules for pension computation to be respected, this transfer would grow faster than the rest of the Belgian economy.[10] My observations and those of the OECD (1994) lead to the common conclusion that pension rights definitely outweigh all other kinds of liabilities the government will have to face.[11]

Second, old-age pensions and health care transfers have grown to higher shares of GDP between 1988 and 1995, whereas the rest of the transfers have been rather stable as shares of GDP. Third, the heavier the weight on future generations a transfer imposes, the faster it grows as a share of GDP.

I conclude that strict discipline over the net financial balance will guarantee neither the sustainability nor the generational equity of the current fiscal system.[12] The only way to reach another conclusion is to arbitrarily impose the condition that social security (taken broadly) be in equilibrium over time.

7.4   Economic Policy Implications

What change in one of the transfer and tax flows would be required to obtain a 1:1 ratio of future to newborn generational accounts? Table 7.10 summarizes my findings for 1988 and 1995. For each of the instrument variables, that is, taxes and transfers, columns (1) and (2) give the rates of change in the tax or

10. This is the case mostly because female workers will increasingly obtain complete career pensions instead of receiving household pensions together with their husbands. Another reason behind this is that the pension system is increasingly coming to maturity: social security receipts are computed with an increasing number of working years accounted for proportionally rather than as a lump sum.

11. Two other different kinds of studies are also worth mentioning. Callataÿ and Turtelboom (1996) have also reviewed the financial implications of aging for the pension system in Belgium. They estimate that if all net liabilities (except those of the self-employed) were financed through debt from 1995 to 2050, the stock of new pension debt would be around 260 percent of GDP in 2050. Bouillot and Perelman (1994) found that under their reference scenario, pension rights accumulated proportionally to a worker's career would grow from 292.5 percent of GDP to 388.8 percent from 1987 to 2040.

12. See Kotlikoff (1988, 1992) for a systematic illustration of this.

Table 7.10   Solving Values for "Generational Equity" (thousands of 1995
                    U.S. dollars)

Transfer or Tax	Percentage Change		Birth Bill	
	1988 (1)	1995 (2)	1988 (3)	1995 (4)
Old-age pensions	−3	−9	32.26	44.42
Health care	−5	−17	33.07	48.60
Unemployment benefits	−16	−57	33.05	48.63
Education	−12	−45	36.26	65.77
Indirect taxes	+4	+12	33.38	50.31
Social security contributions	+2	+8	33.05	48.60
Wealth taxes	+31	+119	33.21	49.35
Direct taxes	+3	+10	33.02	48.46

transfer value, per member of each age group, with 1988 and 1995 as years of reference. Hence, this policy simulation assumes that members of each age group see the value of this particular tax (transfer) increased (decreased), per capita, by the reported percentage.

Columns (3) and (4) give the new values of the newborn generational account, with 1988 and 1995 as years of reference. This value is by definition equal to the birth bill of future generations. Though all the fiscal instruments are able to solve for generational equity, they do not leave newborn and future generations equally well off. Consequently, one natural way of evaluating the relative advantages of each instrument is to rank them according to the size of the generational account with which they leave the newborn and future generations. This is appropriate since it is known from section 7.3 that young generations are already facing important generational accounts.

Old-age pensions score first according to this criterion. Then follow direct taxes. In 1995, solving for the Auerbach et al. (1991) criterion for generational equity with old-age pensions (direct taxes) would leave newborn and future generations with a $44,420 ($48,460) generational account. In comparison, recall that in case of no change in fiscal policy the generational accounts amount to $43,260 for the newborns and $89,490 for future generations. I conclude that both instruments are able to solve for generational equity; that is, they can keep future generations' situation no worse than the newborns' while putting a limited additional strain on young generations. The case for direct taxes can be questioned since generational accounting does not take into account the potential reaction of economic agents to tax changes.

These two potential policy proposals would seem to be easier than others to implement politically. Indeed, they require a relatively reasonable 9 to 10 percent reduction (increase) in old-age pension transfers (direct taxes). However, to be effective, this change would have to be adopted immediately and completely from 1995 onward. One could of course choose a balanced combination

Table 7.11   **Solving Values for "Generational Equity" with a Ten-Year Burden Rollover until 2005 (thousands of 1995 U.S. dollars)**

Transfer or Tax	Percentage Change	Birth Bill
Old-age pensions	−13	44.86
Health care	−25	50.87
Unemployment benefits	−81	50.92
Education	−75	81.01
Indirect taxes	+17	53.46
Social security contributions	+11	50.87
Wealth taxes	+170	51.99
Direct taxes	+14	50.67

of these two instruments. Health care reductions would also leave young generations with reasonable generational accounts. However, health care cuts would have to be of considerable magnitude, that is, 17 percent. In any case, this instrument could perhaps represent a useful complement to pensions and direct taxes. All other programs leave the newborn and future generations with high generational accounts or would represent very high proportional increases (decreases) in taxes (transfers) per member of each age group.

It is worth noting that the ranking of the instruments on either criterion has hardly changed over time. Yet the increase in magnitude of required fiscal policy changes is considerable. For pension receipt cuts, the required change has increased from 3 to 9 percent. The change is from 3 to 10 percent for income tax changes. Thus "wait and see" policies are not conceivable. The data in table 7.11 help to support this claim.

Table 7.11 assumes that the burden on future generations from table 7.5 is rolled on until 2005. In other words, from 1996 until 2005 (inclusive), the annual budget constraint is met, after which, needed policy changes are implemented in order to face the government intertemporal budget constraint. As for old-age pension receipt cuts, the required change has increased from 9 to 13 percent. The change is from 10 to 14 percent for income tax changes.

The reader should bear in mind that these increases are solely due to a failure to cope with the government intertemporal constraint and not to a failure to present a balanced budget. Put differently, this simulation assumes a zero net financial balance. Furthermore, the above-mentioned policy changes have been derived under the baseline assumptions, which are far from the most pessimistic.

7.5   The Treatment of Education

Finally, I deal with the assumption of educational spending as a transfer to students. Ablett (1996) suggests that this is a better rule than assuming that education is a pure public good. Table 7.12 illustrates the influence of this

Table 7.12   Generational Accounts in 1995 under Different Treatments of Education (thousands of 1995 U.S. dollars)

Generation's Age in 1995	Education as a Transfer	Education Included in Nonspecific Consumption
0	43.26	93.52
5	76.18	132.35
10	115.97	170.13
15	172.32	210.45
20	232.85	242.33
25	270.80	272.50
30	278.56	278.56
35	259.34	259.34
40	215.54	215.54
45	149.26	149.26
50	65.07	65.07
55	−34.58	−34.58
60	−130.56	−130.56
65	−165.69	−165.69
70	−172.37	−172.37
75	−163.74	−163.74
80	−153.08	−153.08
85	−138.64	−138.64
90	−118.96	−118.96

choice on Belgian generational accounts in 1995 under the baseline assumptions.

First, young generations end up with lower generational accounts when educational spending is attributed to students as a pseudotransfer. Second, the baseline percentage change between future generations' "birth bills" and newborns' generational account decreases from 107 to 58 percent when failing to attribute education to specific age groups. In my view, the treatment of education as part of non-age-specific government consumption tends to seriously understate intergenerational inequities.

7.6   Conclusions

The analysis in section 7.2 suggests that since 1992 Belgium has been taking steps in the right direction. However, the results of section 7.3 dampen any optimism. Indeed, future generations will have to face a *minimum* 61 percent increase in their *net* taxes as compared to the newborn generation in 1995. This indicator ranges up to 235 percent if growth and interest rate assumptions vary from the baseline. Under the baseline scenario, an 80 percent increase in the ratio of the net fiscal burden of future versus present generations has been observed over only seven years. At this pace, Belgium will reach the twenty-first century with an unsustainable net fiscal burden to impose on its citizens.

Old-age pensions and health care transfers come in first place as determinants. Strict discipline over the net financial balance will guarantee neither the sustainability nor the generational equity of the current fiscal system. In terms of economic policy, reforming old-age pensions and direct taxes would allow equilibrium to be restored between future and newborn generations while leaving them with the lowest generational accounts to cope with. Again, required tax increases and transfer cuts have been increasing substantially from 1988 to 1995. The same conclusion holds if needed policy changes are to be implemented with some delay. Quick fiscal policy change is therefore absolutely necessary.

Finally, three complementary paths for further research could be followed. First, it would be interesting to distinguish between lifetime income categories in order to simultaneously analyze *intra-* versus *inter*generational issues. Second, it would be worthwhile to link Belgian generational accounts with a general equilibrium model for Belgium.[13] This would endogenize some parameters used here and would allow an assessment of generational equity issues in terms of utility. Third, alternative scenarios as regards the evolution of transfer receipts per age group could be contrasted with the assumptions of generational accounting. I conjecture that such a modeling of consumer behavior and of transfer receipts may well call for even larger transfer cuts and tax increases.

References

Ablett, J. 1996. Generational accounting—An Australian perspective. *Review of Income and Wealth* 45 (1): 91–105.

Auerbach, A. J., J. Gokhale, and L. J. Kotlikoff. 1991. Generational accounts: A meaningful alternative to deficit accounting. NBER Working Paper no. 3589. Cambridge, Mass.: National Bureau of Economic Research.

————. 1994. Generational accounting: A meaningful way to evaluate fiscal policy. *Journal of Economic Perspectives* 8 (1): 95–111.

Bouillot, M., and S. Perelman. 1995. Evaluation patrimoniale des droits a la pension. *Revue Belge de Sécurité Sociale* 4 (3): 803–31.

Caisse Générale d'Epargne et des Retraite. 1988. *Statistique du salaire moyen journalier.* Brussels: Service du Compte Individuel de Pension des Travailleurs Salaries.

Callataÿ, E. de, and B. Turtelboom. 1996. Pension reform in Belgium. IMF Working Paper no. 96.74. Washington, D.C.: International Monetary Fund.

Clokeur, R., and S. Perelman. 1994. Transferts et arbitrage entre les générations. In *Héritage et transferts entre générations,* ed. Pierre Pestieau, 111–27. Brussels: De Boek.

Commission pour l'Inventaire du Patrimoine de l'Etat. 1990. *Rapport sur les activités de la commission pour l'inventaire du patrimoine de l'etat au cours des années 1988 et 1989.* Brussels: Ministère des Finances.

————. 1995. *Le bilan consolidé de l'etat à fin 1992.* Brussels: Ministère des Finances.

13. See Fehr and Kotlikoff (chap. 3 in this volume) for such an analysis for the United States.

Institut National de Statistique. Several years. *Annuaire statistique de la Belgique.* Brussels: Ministère des Affaires Economiques.

————. 1994. *Enquête sur les budgets des ménages 1987–1988,* tome 1. Brussels: Ministère des Affaires Economiques.

Kotlikoff, L. J. 1988. The deficit is not a well-defined measure of fiscal policy. *Science* 241:791–95.

————. 1992. *Generational accounting.* New York: Free Press.

Lambrecht, M., N. Fasquelle, and S. Weemaes. 1994. L'évolution démographique de long terme et son incidence isolée sur quelques grandeurs socio-économiques (1992–2050). Planning Paper no. 68. Brussels: Bureau du Plan.

National Bank of Belgium. 1995. *Rapport 1994.* Brussels: Banque Nationale de Belgique.

————. 1996. *Rapport 1995.* Brussels: Banque Nationale de Belgique.

Organization for Economic Cooperation and Development (OECD). 1994. *Etudes économiques: Belgique—1994.* Paris: Organisation de Cooperation et de Developpement Economique.

————. 1995. *Etudes économiques: Belgique—1995.* Paris: Organisation de Cooperation et de Developpement Economique.