

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Generational Accounts: A New Approach to Fiscal Policy Evaluation

by Alan Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff

Despite recent attempts to impose discipline on the federal budget-making process, federal budget deficits have continued to escalate over the past several years. The prospect of still larger deficits over the next few years has stimulated discussion about how to bring them under control. Some have suggested reforms that would enable the federal government to achieve balanced budgets, not necessarily in every year in the future, but at least on average over a number of years.¹

On the face of it, such recommendations seem to be sensible. On January 30, however, the government released 1991 projections for not one, but as many as four different types of deficits, each based on a different definition of items included in the calculation.² The question then arises: Which of these deficits should be targeted for elimination? This paradoxical set of events suggests a need to reexamine the concerns prompted by large budget shortfalls.

Two components underlie the generally accepted wisdom about why budget deficits are important. First, as a matter of intergenerational equity, it is important to know how much of the burden of paying for government expenditure is being shifted onto future generations. Many people mistakenly think that the reported annual budget deficit measures the extent of such a redistribution resulting from current policy. Second, a shifting of the payments burden onto future generations is likely to adversely affect these generations' incentives to work, save, and

invest. Thus, large redistributions of wealth away from future generations are likely to be detrimental to future economic growth.

Correct measurement of the intergenerational redistributive impact of any fiscal policy is, quite obviously, a precondition for evaluating the policy's implications for future economic growth. This *Economic Commentary* surveys the reasons for doubting that deficits, as conventionally defined, are adequate measures of the effect of fiscal policy on intergenerational redistribution. It also suggests that evaluation on this score would be improved by looking at *generational accounts* — a system designed to reflect consistently the intergenerational redistribution implications of current fiscal policy and of future policy changes.

■ The Deficit — an Inadequate Measure of Fiscal Policy

Dissatisfaction with reported deficits has led to suggestions for making various corrections to the deficit and to public debt numbers. These include adjustments for inflation, for market values of government assets, for economic growth, and for state and local budget surpluses.³ However, the problem with using the deficit as an indicator of policy runs deeper than any of these modifications can fathom. It can be shown that deficit numbers, no matter how they are measured, reflect nothing more than the rules of accounting used in their computation.

The federal government often adopts fiscal policies whose long-term implications for intergenerational wealth redistribution are not correctly reflected in published budget-deficit numbers. Correct measurement of such policy-induced redistribution is important in order to gauge the likely impact of policy changes on future economic growth. Generational accounting provides a new method for investigating this issue. An application of this method for the United States reveals that today's fiscal policies involve a substantial imbalance in the treatment of current and future generations.

and that such numbers are devoid of economic content.

The starkest example of the dependence of the size of the deficit on accounting conventions is provided by the Social Security system. At its inception, the system was unfunded: The elderly generations then alive received old-age benefits that were financed from Social Security contributions of the then-working-age generations. Implicit in this scheme was a promise of future benefits for the current contributors. The contributions, however, were called "taxes," and the old-age benefits to be paid in the future were labeled "transfers." If the words describing these transactions had, instead, been "borrowing" and "repayment of principal and interest," respectively, the sizes of the recorded government deficits as far back as the 1960s and 1970s would have been many times larger than the \$200 billion deficits reported during the late 1980s.⁴

The installation of an unfunded Social Security system is just one example of how the government can engage in redistributive fiscal policies whose long-term implications are not correctly reflected in the reported deficit. An equal revenue shift from sales/excise taxation to income taxation, for example, would redistribute wealth from younger and future generations to older generations. This is because the young pay relatively more through income taxes, while the old pay relatively more in sales/excise (consumption) taxes. A revenue-neutral elimination of investment incentives would also redistribute wealth from younger and future generations to older generations.⁵

Hence, by combining policies that are reflected in the deficit with others that are not, by arbitrarily labeling government receipts and payments, and by changing accounting conventions and inclusion rules, the government can essentially report any number as the current deficit while following the same underlying fiscal policy. Deficit numbers can mislead the public into thinking that government fiscal policy is profligate when it may

really be prudent, and vice versa. Because conventionally reported deficits are arbitrary, we need to seek better measures of fiscal policy.

■ The Need for an Alternative Measure of Fiscal Policy

The annually reported deficit is a number reflecting the current net cash flow of the government. The government, however, often engages in fiscal policies that have long-term consequences. Several of its policies, such as the introduction and modification of an unfunded Social Security system, changes in the relative importance of consumption and income taxation, and the introduction and subsequent elimination of investment incentives, have significant long-term effects on the resources of private individuals.

Consider, for example, the 1983 Social Security Amendment. This amendment mandated higher payroll taxes now and lower benefits in the future in order to reduce the burden on future working generations of supporting the baby boomers who will begin to retire early in the next century. The Social Security system is currently generating large surpluses which, when added to the rest of the government's budget, reduce the magnitude of the reported federal budget deficit today. In 1983, however, when the policy was changed, the reported deficit was unaffected.

The long-term implications of a given policy will typically vary for individuals belonging to different generations. In general, fiscal policies redefine how much each generation will pay for government spending now and in the future. In short, these policies are really generational policies, and they need to be recognized as such. Thus, in order to evaluate current fiscal policy, one must examine its generational stance — how it redistributes the burden of paying for government spending among different currently living and future generations. This, in fact, is the concern underlying the word *deficit*.

■ What Are Generational Accounts?

Fiscal policies result in an appropriation of resources for the government's oper-

ation. The burden of financing government spending will not, in general, fall equally on all generations. Under a given fiscal policy, members of each generation make payments to and receive payments from the government at different points during their lifetimes. A change in any component of fiscal policy implies a change in the amounts and timing of these payments. Generational accounts (GAs) track the distribution of the net-payments burden among different existing and future generations that is implied by the current set of fiscal policies.

The GA for any given generation measures the present value of the net payments that each member of that generation is projected to make, on average, under current policy over his or her remaining lifetime. Thus, a policy-induced change in GAs will indicate which generations lose, and which gain, as a result of the change in policy. The changes in the GAs will reflect current as well as projected future losses and gains arising from the policy change. In evaluations of how any such modification affects the intergenerational distribution of paying for government consumption, it is these policy-induced changes in the GAs of different current and future generations, rather than the reported deficit, that should be the focus of attention.

■ How Are Generational Accounts Computed?

The entire current and future consumption spending by the government must be paid for by at least one of three sources: 1) the government's current net wealth, 2) resources taken from generations currently alive, and 3) resources taken from generations as yet unborn.⁶ Computing GAs, then, involves the following steps: First, obtain the present value of the government's current and future projected spending levels that are implicit under current spending policies. Second, estimate the government's current net wealth. Third, compute the present value of the projected net payments that each existing generation is expected to make under current policy over its remaining lifetime.

**TABLE 1 THE COMPOSITION OF MALE AND FEMALE GENERATIONAL ACCOUNTS—
PRESENT VALUES OF RECEIPTS AND PAYMENTS
(THOUSANDS OF DOLLARS)**

Generation's Age in 1989	Net Payment	Payments						Receipts					
		Labor Income Taxes	Social Security Taxes	Excise Taxes	Capital Income Taxes	Sei- gno- rage	Prop- erty Taxes	Medicare		Welfare		Unem- ployment Insurance	Food Stamps
								OASDI ^a	HI ^b	AFDC ^c	General		
Males:													
0	73.7	24.8	26.5	22.9	9.5	0.0	1.6	4.5	1.1	0.3	4.4	1.0	0.3
10	116.8	40.8	43.6	29.8	15.6	0.1	2.6	6.7	1.9	0.5	4.6	1.6	0.5
20	169.1	61.9	66.2	33.9	24.8	0.1	4.1	9.5	2.9	0.7	5.3	2.4	0.8
30	194.5	69.6	74.4	34.2	38.4	0.1	6.1	14.3	4.6	0.8	5.4	2.3	0.9
40	176.2	60.9	65.1	30.5	49.8	0.0	7.6	21.9	7.4	0.5	5.3	1.8	0.7
50	114.1	42.1	45.0	24.4	52.1	0.0	7.1	37.1	12.4	0.3	5.4	1.1	0.5
60	18.9	20.2	21.5	17.9	44.1	0.0	6.1	62.6	22.0	0.1	5.6	0.3	0.3
70	-42.7	4.0	4.3	11.9	29.3	0.0	4.5	61.9	29.6	0.0	4.9	0.0	0.2
80	-35.6	0.6	0.6	7.5	17.2	0.0	3.0	36.9	24.4	0.0	3.0	0.0	0.1
Future generations	89.5												
Females:													
0	36.4	14.0	14.9	20.2	3.5	0.0	2.1	5.0	1.5	2.3	7.8	0.4	1.3
10	60.4	23.3	24.9	27.2	5.9	0.1	3.5	7.5	2.5	3.8	7.8	0.7	2.2
20	85.5	34.8	37.2	32.2	9.3	0.0	5.4	10.9	3.9	5.2	9.2	1.1	3.3
30	90.9	35.1	37.5	33.1	14.9	0.0	7.4	15.7	6.1	3.5	8.5	1.0	2.4
40	78.2	29.7	31.7	30.1	21.4	0.0	8.6	21.9	9.8	1.7	7.8	0.7	1.4
50	41.0	20.4	21.8	24.2	25.0	0.0	8.9	34.0	16.3	0.6	7.3	0.4	0.7
60	-22.5	9.3	9.9	17.4	23.4	0.0	8.2	55.1	27.8	0.0	7.2	0.2	0.4
70	-60.2	2.0	2.2	11.5	17.3	0.0	6.9	56.5	36.8	0.0	6.5	0.0	0.3
80	-50.8	0.0	0.0	7.2	8.8	0.0	5.1	37.4	29.9	0.0	4.5	0.0	0.2
Future generations	44.2												

a. Old Age Survivors and Disability Insurance.

b. Health Insurance.

c. Aid to Families with Dependent Children.

SOURCE: Alan Auerbach, Jagadeesh Gokhale, and Laurence Kotlikoff. "Generational Accounts: A Meaningful Alternative to Deficit Accounting." in David Bradford, ed., *Tax Policy and the Economy*, National Bureau of Economic Research and MIT Press, No. 5, 1991.

Once the present value of government spending and the present value of two of the sources for financing it are known, the present value of the third component — the amount that needs to be taken from future generations—can be obtained as a residual. We do not know how this payments burden will actually be distributed among future generations. For the purpose of illustration, however, it can be assumed to be distributed equally except for an adjustment for economic growth. Future generation-specific population projections can then be used to obtain the per capita net-payment burden on future generations.⁷

■ Generational Accounts as of 1989

A breakdown of the net payments of current generations according to types of receipts and payments is given in table 1. Several features are notable: First, the GAs show a significant life-cycle profile of the distribution of remaining lifetime net-payment burdens on current generations. Young and middle-aged generations make positive net payments to the government in present value, while older generations receive, on net, in present value, mainly because of large Social Security and Medicare benefits.

Second, middle-aged generations pay more in present value than do the very young, because the former are closer to their high-earning and high-taxpaying years. Third, older female generations

begin receiving, on net, earlier than males because of Social Security survivor benefits and the higher mortality of their generally older spouses. These generations also receive, on net, more than males because of their relatively lower income and payroll tax liabilities over their remaining life spans.

Particularly striking is the comparison between the GA for current (1989) male newborns (\$73,700) and that for future generations (\$89,500). The growth-adjusted differential between these two numbers is 20.5 percent.^{8,9} In other words, if the treatment of current generations is maintained as under current policy, and if future projected per capita government spending remains the same, each member of every future generation

TABLE 2 ADDITIONAL PRESENT VALUE OF NET PAYMENTS NEEDED TO EQUALIZE GENERATIONAL BURDENS (THOUSANDS OF DOLLARS)

Males Aged:	Income Tax	Payroll Tax	Sales/Excise Tax	Capital Income Tax
0	1.8	2.1	2.3	1.4
10	3.0	3.4	3.0	2.3
20	4.5	5.0	3.3	3.5
30	5.4	5.5	3.3	5.1
40	5.2	4.7	2.9	6.1
50	4.2	3.2	2.3	5.9
60	2.6	1.4	1.7	4.6
70	1.2	0.3	1.1	2.7
80	0.5	0.0	0.6	1.4
Future generations	-13.5	-13.1	-12.9	-13.9
Females Aged:				
0	1.0	1.2	2.1	0.5
10	1.6	2.0	2.7	0.9
20	2.2	2.8	3.1	1.3
30	2.5	2.7	3.2	2.0
40	2.5	2.3	2.9	2.8
50	2.1	1.5	2.3	3.0
60	1.3	0.6	1.6	2.5
70	0.7	0.2	1.1	1.7
80	0.2	0.0	0.6	0.6
Future generations	-6.6	-6.3	-5.5	-7.0

SOURCE: Alan Auerbach, Jagadeesh Gokhale, and Laurence Kotlikoff, "Generational Accounts: A New Approach for Understanding the Effects of Fiscal Policy on Saving," *Scandinavian Economic Review*, forthcoming 1992.

will bear a 20.5 percent larger burden than that imposed on current newborns. This indicates that current fiscal policy involves a substantial generational imbalance.

A generationally balanced fiscal policy, if kept in place, will result in the balance being preserved through time. Under such a policy, every new generation will pay an amount that leaves the same growth-adjusted, net-payment burden on subsequent generations. On the other hand, a generationally unbalanced policy that requires current generations to pay too little would require future generations to pay more. If kept in place, each new generation would pay too little, and the relative payment burden between current newborns and future generations would worsen over time.

What if the government did nothing about correcting the generational imbalance implied by current policy — say, for 10 or 20 years? A recomputation of GAs by extending current policy treatment to generations projected to be born between 1990 and 1999 indicates that the growth-adjusted differential in the GAs of newborns in 1999 and 2000 will increase to 35 percent. If generations born before 2009 are treated as they would be under current policy, the differential between the GAs of those born in 2009 and 2010 will rise to 57 percent. A postponement of policy directed at equalizing burdens on current and future generations will gradually exacerbate the generational imbalance in fiscal policy.

■ Correcting the Generational Imbalance

What can be done to bring the generational accounts of newborns in 1989 and

1990 into balance? Obviously, either more revenue will have to be extracted from generations currently living, or government spending will have to be reduced. Several avenues are available for achieving this kind of fiscal balance. Current generations' net payments can be raised through higher income, consumption, or payroll taxation or through a combination of these with reductions in government spending.

Table 2 shows the effects on the net-payment burdens of different generations when various tax rates are increased. In each case, average tax rates are raised so that the growth-adjusted GA for future generations is equalized to that of 1989 newborns. The average income tax rate, for example, would have to be increased from 14.5 to 15.3 percent. As a result, the present value of a 30-year-old's net payment would rise by \$5,400 for a male and by \$2,500 for a female. However, the present-value gains to future male and female generations would be \$13,500 and \$6,600, respectively.

Reducing government consumption alone, on the other hand, would leave the net-payment burden on current generations unchanged, but would nevertheless reduce the amount that future generations would be required to pay. Calculations indicate that the generational imbalance would be eliminated if government spending were permanently reduced by 3.3 percent, or by \$37 billion annually.

It should be noted that each method of correcting the generational imbalance would result in a different profile of annual revenue increases through time. For example, calculations show that the 1990 increase in revenue from raising payroll taxes in order to eliminate the imbalance would have been \$37 billion, while that from raising capital income taxation would have been \$33 billion. Hence, although all the policies equalize net-payment burdens on current and future newborns, each will generate a different stream of recorded deficits through time.

■ Conclusion

The government's fiscal policies can have significant long-term effects on the resources available to members of different generations. Such policies do not affect all generations equally, and their implications for cross-generational redistribution are not reflected in the current deficit numbers. Policy evaluation would be better served by looking at generational accounts, a system that reveals the differential impact of policy changes on the resources of members of different current and future generations.

Computations for the United States indicate that current policy (as of 1989) involves a substantial generational imbalance. If the treatment of all currently living generations continues unchanged, future generations will have to bear, on average, a 20.5 percent larger lifetime net-payment burden as compared to the burden on current newborns. Undertaking corrective policy changes soon is imperative if this large generational imbalance is to be prevented from becoming worse.

■ Footnotes

1. See, for example, V.V. Chari and Preston Miller, "Playing by the Rules," Federal Reserve Bank of Minneapolis, *Annual Report*, 1990.
2. See Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 1992-1996*, January 1991. A related article is by Howard Gleckman, "How Do We Measure the Deficit? Let Us Count the Ways," *Business Week*, February 18, 1991, p. 32.
3. See Robert Eisner and Paul J. Pieper, "A New View of the Federal Debt and Budget Deficits," *American Economic Review*, vol. 74, no. 1 (March 1984), pp. 11-29.
4. For a more detailed exposition of this argument, see Laurence Kotlikoff, "Deficit Delusion," *The Public Interest*, Summer 1986, pp. 53-65.
5. See Martin Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," *Journal of Political Economy*, vol. 82, no. 5 (September/October 1974), pp. 905-26; Alan J. Auerbach and Laurence J. Kotlikoff, *Dynamic Fiscal Policy*, New York: Cambridge University Press; and Laurence H. Summers, "Capital Taxation and Accumulation in a Life Cycle Growth Model," *American Economic Review*, vol. 71, no. 4 (September 1981), pp. 533-44.
6. This section is a very brief summary of the computational methodology described in Alan Auerbach, Jagadeesh Gokhale, and Laurence Kotlikoff, "Generational Accounts: A Meaningful Alternative to Deficit Accounting," in David Bradford, ed., *Tax Policy and the Economy*, National Bureau of Economic Research and MIT Press, No. 5, 1991.
7. In the computations reported below, the projected future spending and payment amounts were adjusted for economic growth at 0.75 percent, and the present-value calculations were based on a 6 percent interest rate.
8. The absolute magnitudes of the GAs are sensitive to alternative labeling of government receipts and payments. One should therefore look only at the policy-induced changes in the GAs for current and future generations and at the percentage differential between the GAs for current newborns and future generations. These are invariant to changes in the way payments and receipts are labeled.
9. The ratio between male and female net payments for future generations is assumed to be the same as that for current newborns.

Alan Auerbach is a professor of economics at the University of Pennsylvania and an associate of the National Bureau of Economic Research. Jagadeesh Gokhale is an economist at the Federal Reserve Bank of Cleveland, and Laurence J. Kotlikoff is a professor of economics at Boston University and an associate of the National Bureau of Economic Research. The authors wish to thank William Gavin and Mark Sniderman for helpful comments. Most of the results reported here appear in two previous articles by the authors (see the source lines in table 1 and table 2). Another resource is Kotlikoff, *Generational Accounts: Knowing Who Pays, and When, For What We Spend*, New York: The Free Press, forthcoming 1992.

The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

Economic Commentary is a semimonthly periodical published by the Federal Reserve Bank of Cleveland. Copies of the titles listed below are available through the Public Affairs and Bank Relations Department, 1-800-543-3489.

**Forecast Accuracy and
Monetary Policy**

Michael F. Bryan and William T. Gavin
January 1, 1991

**The Sectoral and Regional Effects of
Oil Shocks: Who's over a Barrel?**

Paul W. Bauer and Susan M. Byrne
January 15, 1991

**1991 Outlook: Mild Recession,
Mild Recovery**

John J. Erceg
February 1, 1991

The Effect of War

Expenditures on U.S. Output
Charles Carlstrom, Jagadeesh Gokhale,
and Sharon Parrott
February 15, 1991

**Deregulation, Money,
and the Economy**

John B. Carlson
March 1, 1991

**Is This Really a "White-Collar
Recession"?**

Randall W. Eberts
and Erica L. Groshen
March 15, 1991

Defending Zero Inflation:

All For Naught
W. Lee Hoskins
April 1, 1991

Public Subsidies for Private Purposes

William P. Osterberg
April 15, 1991

Price Stability and Regional Diversity

W. Lee Hoskins
May 1, 1991

**The RTC and the Escalating Costs
of the Thrift Insurance Mess**

Christopher J. Pike
and James B. Thomson
May 15, 1991

**Realignment in the
U.S. Motor Vehicle Industry**

Michael F. Bryan and John B. Martin
June 1, 1991

**Understanding the Recent
Behavior of M2**

John B. Carlson and Sharon E. Parrott
June 15, 1991

**Price Stability and
World Economic Recovery**

W. Lee Hoskins
July 1, 1991

**Do Excess Reserves
Reveal Credit Crunches?**

Joseph G. Haubrich
July 15, 1991

An Anemic Recovery?

John J. Erceg and Lydia K. Leovic
August 1, 1991

Federal Funds Rate Volatility

Diana Dumitru and E.J. Stevens
August 15, 1991

**Increasing National Saving:
Are IRAs the Answer?**

David Altig and Katherine A. Samolyk
September 1, 1991

**Financial Fragility and
Regional Economic Growth**

Katherine A. Samolyk
and Rebecca A. Wetmore
September 15, 1991

**Exchange-Market Intervention
and U.S. Monetary Policy**

Owen F. Humpage
October 1, 1991

**Some Observations on
Central Bank Accountability**

W. Lee Hoskins
October 15, 1991

**Why U.S. Managers Might Be
More Short-run Oriented Than
the Japanese**

Gerald H. Anderson
November 1, 1991

**Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101**

Address Correction Requested:
Please send corrected mailing label to
the above address.

**BULK RATE
U.S. Postage Paid
Cleveland, OH
Permit No. 385**

Material may be reprinted provided that
the source is credited. Please send copies
of reprinted materials to the editor.