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Why Is U.S. National Saving So Low?

THE LOW American national saving rate has long been a serious concern to economic policymakers. Increasing national saving and investment was a principal objective of the Economic Recovery Tax Act of 1981 and of the supply-side economic policies that accompanied it. Yet the national saving rate, at least as measured in the National Income and Product Accounts, has declined sharply during the 1980s. Over the past five years, national saving has averaged only 2.3 percent of full-employment GNP, compared with 7.4 percent during 1960–80. In 1986, American net national saving was below 2 percent of GNP, less than half the rate in Britain, less than 30 percent of the rate in France and Germany, and only 10 percent of the rate in Japan.

The unprecedented U.S. government budget deficits of recent years are often singled out for blame. Government dissaving as a share of full-employment GNP indeed increased by 2.5 percentage points between 1960–81 and 1982–86. Still, rising deficits can account for only about half of the decline in the national saving rate between the two periods. The remainder is attributable to a roughly equal decline in the private saving rate. Much of that decline is in turn traceable to a fall in the personal saving rate. Low personal and private saving rates are especially striking given the widespread hope that the tax incentives enacted in 1981 would increase personal and private saving.

The economic effects of the low U.S. saving rate depend on the ability of the United States to sustain large capital inflows from abroad. Over the past several years, more than half of net domestic investment has

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been financed by international capital flows. If national saving remains low, either these capital flows, with the attendant dislocations in the economy's traded goods sector, will continue, or investment will drop off precipitously. What finally happens will depend in large part on the response of foreign investors and governments to chronic capital outflows. Neither outcome would improve American international competitiveness.

This report examines several issues raised by the currently low American national saving rate. Are the declines in national saving real, or are they instead the result of faulty measurement that ignores the huge capital gains generated in the stock market from 1982 to the fall of 1987? Does recent experience contradict the Ricardian equivalence idea that government deficits call forth increased private saving or the supply-side idea that tax incentives can spur private saving? What forces lie behind the apparent secular downtrend in private saving? To what extent can capital flows from abroad substitute for domestic saving?

We conclude that the low national saving rate during the 1980s cannot be attributed to measurement problems. It is traceable to a combination of federal deficits and a continuation of a long-term downward trend in private and personal saving. Private saving would probably have been still lower during the 1980s if the federal government had not encouraged saving with new tax incentives. However, the most reliable way for the federal government to increase national saving is to reduce its own borrowing. Without an increase in national saving, and given the increasing reluctance of foreign investors to hold American assets, it is unlikely that even current levels of investment can be maintained.

Trends in Saving

Table 1 presents saving data from the National Income and Product Accounts, measured on both a standard and an inflation-adjusted basis. The inflation adjustment is necessary because in an inflationary environment interest received (or paid) reflects in part compensation for the erosion in the value of nominal assets and so is not properly treated as income.[1] The table also presents measures of the ratio of private

1. For a careful discussion of inflation adjustment and a number of other possible adjustments to standard measures of saving, see Derek W. Blades and Peter H. Sturm,

consumption to "private GNP," defined as GNP less government outlays. If depreciation is mistakenly overstated in the national income accounts, measured net saving will be understated. However, this error would not affect the ratio of consumption to GNP, so the consumption ratio provides a useful check on the robustness of conclusions reached using the saving rate data.

The table shows the dramatic decline in the national saving rate in the 1980s, to less than 2 percent of full-employment GNP in 1986 and less than 3 percent during 1981–86—less than half the rate during any preceding five-year interval. Abnormally low national saving is also evidenced by the high ratio of consumption to private GNP in recent years. The share of total consumption outlays in private GNP reached a postwar high in 1986 after increasing sharply following the 1981 tax cut.

As a further check on the robustness of our conclusions, figure 1 plots the NIPA saving rate along with two further variants—the national saving rate inferred from flow-of-funds data and the national saving rate measured inclusive of net additions to the stock of consumer durables.[2] The flow-of-funds data provide an independent measure of saving by tallying increases in asset stocks rather than estimating a residual between income and spending. The consumer-durables adjustment recognizes that purchases of consumer durables provide for future consumption services and so are a form of saving. Both adjustments confirm that national saving has declined dramatically in the 1980s.

The 5 percentage point decline in the NIPA saving rate from 1960–81 to 1982–86 may be apportioned evenly, as table 1 shows, between a 2.5 point increase in government dissaving and a 2.5 point decline in private saving. On an inflation-adjusted basis, the results are similar, with 2.9 percentage points attributable to the public sector and 1.9 points, to the private sector. For 1986, a somewhat larger share of the decline in national saving may be traced to the private sector. By contrast, extending the interval back to the 1950s suggests a somewhat greater

"The Concept and Measurement of Savings: The United States and Other Industrialized Countries," in Federal Reserve Bank of Boston, *Saving and Government Policy* (Boston: FRBB, 1982), pp. 1–30; or Patric H. Hendershott and Joe Peek, "Private Saving in the United States, 1950–85," Working Paper 2294 (National Bureau of Economic Research, June 1987).

2. For a discussion of the flow-of-funds saving data, see Frank de Leeuw, "Conflicting Measures of Private Savings," *Survey of Current Business,* vol. 64 (November 1984), pp. 17–23.

Table 1. National Income and Product Accounts (NIPA) Saving and Consumption Measures, 1950–86

Percent of full-employment GNP unless otherwise indicated

Year	NIPA national saving	Private saving		Federal plus state and local government saving		Consumption (percent of full-employment private GNP)[b]	
		Reported	Inflation-adjusted[a]	Reported	Inflation adjusted[a]	All goods	Except durables
1950	10.4	7.5	. . .	2.9	. . .	77.0	64.7
1951	10.1	8.2	. . .	2.0	. . .	76.2	65.3
1952	7.0	8.1	6.5	−1.1	0.3	79.4	68.8
1953	5.7	7.7	7.2	−2.0	−1.6	80.5	69.2
1954	5.1	7.0	6.8	−1.9	−1.7	80.9	70.1
1955	8.6	7.8	6.8	0.8	1.7	78.0	66.2
1956	9.3	8.1	6.4	1.2	2.8	77.6	66.7
1957	8.0	7.8	6.4	0.2	1.5	78.4	67.5
1958	4.6	7.3	6.6	−2.7	−2.0	81.5	71.2
1959	7.2	7.5	6.2	−0.3	1.0	79.5	68.7
1960	7.2	6.6	5.7	0.6	1.5	79.7	69.2
1961	6.3	7.1	6.5	−0.8	−0.2	80.2	70.3
1962	7.3	7.9	7.0	−0.6	0.2	79.3	69.0
1963	7.8	7.6	6.8	0.1	0.9	79.0	68.3
1964	8.5	8.9	8.3	−0.4	0.1	78.7	67.8
1965	9.7	9.7	8.6	0.1	1.0	77.8	66.6
1966	9.3	9.5	7.9	−0.2	1.2	77.8	66.6
1967	7.9	9.7	8.7	−1.8	−0.9	79.1	68.0
1968	7.7	8.4	6.5	−0.7	1.0	79.5	67.8
1969	8.3	7.3	5.6	1.1	2.6	79.0	67.6
1970	6.5	7.4	5.8	−1.0	0.5	80.3	69.5
1971	6.7	8.4	6.7	−1.7	−0.1	79.5	68.2
1972	7.7	8.0	6.8	−0.3	0.9	78.7	67.1
1973	10.1	9.5	7.2	0.6	2.9	76.6	65.2
1974	7.4	7.9	5.0	−0.3	2.7	78.1	67.5

role for government deficits in accounting for the low level of national saving. It seems fair to conclude that in an arithmetic sense the low national saving rate in the 1980s is a reflection of declines in both public and private saving.

National Saving and the Ricardian Equivalence Proposition

The premise that national saving can be analyzed fruitfully as the sum of independent private and public components has been challenged by

Table 1. ***(continued)***

Percent of full-employment GNP unless otherwise indicated

Year	*NIPA national saving*	*Private saving*		*Federal plus state and local government saving*		*Consumption (percent of full-employment private GNP)*[b]	
		Reported	*Inflation-adjusted*[a]	*Reported*	*Inflation adjusted*[a]	*All goods*	*Except durables*
1975	4.6	8.4	6.2	−3.9	−1.6	80.2	69.4
1976	5.6	7.7	6.1	−2.1	−0.5	79.2	67.9
1977	6.6	7.6	5.6	−0.9	1.1	78.4	66.9
1978	7.9	7.9	5.8	0.0	2.2	76.9	65.7
1979	7.7	7.2	4.6	0.5	3.1	76.8	66.1
1980	5.0	6.2	3.5	−1.2	1.7	78.7	68.7
1981	5.5	6.4	4.4	−0.9	1.2	77.7	68.0
1982	1.8	5.0	3.7	−3.2	−1.7	81.2	71.2
1983	1.8	5.3	4.2	−3.5	−2.2	81.8	71.2
1984	3.9	6.6	5.6	−2.6	−1.3	80.1	69.2
1985	2.3	5.5	4.4	−3.3	−1.9	81.7	70.4
1986	1.7	5.1	4.6	−3.2	−2.6	82.7	71.1
Averages							
1951–55[c]	7.3	7.8	6.8	−0.4	−0.3	79.0	67.9
1956–60	7.3	7.5	6.2	−0.2	1.0	79.3	68.7
1961–65	7.9	8.2	7.5	−0.3	0.4	79.0	68.4
1966–70	7.9	8.5	6.9	−0.5	0.9	79.1	67.9
1971–75	7.3	8.4	6.4	−1.1	1.0	78.6	67.5
1976–80	6.6	7.3	5.1	−0.8	1.5	78.0	67.1
1981–86	2.8	5.6	4.5	−2.8	−1.4	81.0	70.2
1950–86	6.7	7.6	6.1	−0.8	0.4	79.1	68.2

Source: Actual saving, consumption, and price data are from the National Income and Product Accounts. Stocks of assets used to compute the adjusted series are from Board of Governors of the Federal Reserve System, "Balance Sheets for the U.S. Economy, 1946–85" (Federal Reserve Board Release C.9, 1986), and "Flow of Funds Accounts," various issues. Full-employment GNP is from Robert J. Gordon, *Macroeconomics* (Little, Brown, and Company, 1984), and calculations by the Congressional Budget Office.

a. Inflation-adjusted saving is computed by subtracting from measured saving the product of the inflation rate (GNP deflator) and net interest-bearing assets held by each sector.

b. Full-employment GNP less total government outlays.

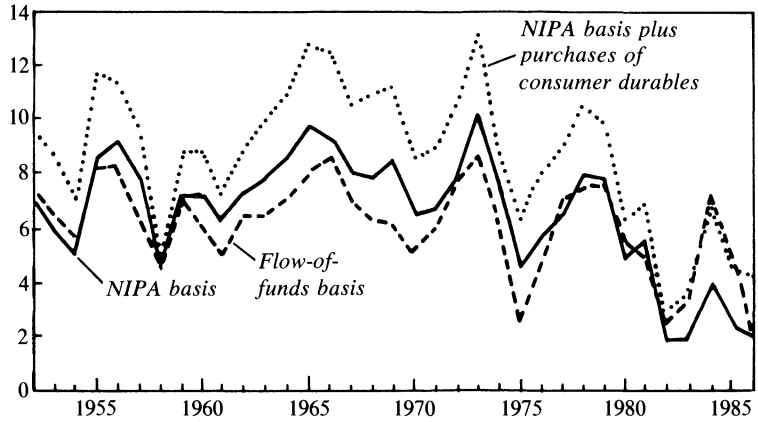
c. For inflation-adjusted series, 1952–55.

proponents of the increasingly popular Ricardian equivalence proposition, which holds that the timing of government tax payments has no impact on an economy's level of national saving.[3] If the government runs a budget deficit, consumers will anticipate the subsequent increase

3. The classic modern statement of the Ricardian equivalence proposition is Robert J. Barro, "Are Government Bonds Net Wealth?" *Journal of Political Economy*, vol. 82 (November–December 1974), pp. 1095–1117. A skeptical survey of the large literature on Ricardian equivalence may be found in B. Douglas Bernheim, "Ricardian Equivalence: An Evaluation of Theory and Evidence," in Stanley Fischer, ed., *NBER Macroeconomics*

Figure 1. National Saving as a Fraction of Full-Employment GNP, 1952–86

Percent



Source: Full-employment GNP from Robert J. Gordon, *Macroeconomics* (Little, Brown, and Company, 1984), and calculations by the Congressional Budget Office. NIPA basis national saving is net national saving from National Income and Product Accounts, table 5.1. Flow-of-funds saving measures the change in the value of the total asset stock from Board of Governors of the Federal Reserve System, "Balance Sheets for the U.S. Economy, 1946–85" (Federal Reserve Board Release C.9, 1986), and "Flow of Funds Accounts," various issues.

in taxes that will be necessary to repay the debt, and so will raise their saving. Private saving will rise to offset the decline in government saving, leaving national saving unaffected.

The Ricardian view may be put in a different way: government bonds are not a form of wealth. While government bonds represent an asset to those who hold them, they represent an exactly offsetting liability to the taxpayers who will ultimately redeem them. Hence deficit policies that increase the outstanding stock of government debt do not increase total spending, a conclusion that contrasts sharply with Keynesian conceptions of the effects of fiscal policies. Traditionally, Keynesians have debated the extent to which increases in demand caused by government tax cuts are crowded out. The Ricardian position is that crowding out takes place before the fact. There is no initial increase in demand when the government cuts taxes.

The Ricardian equivalence proposition depends on two assumptions:

Annual, 1987 (MIT Press, 1987), pp. 263–304. Our discussion draws heavily on James M. Poterba and Lawrence H. Summers, "Finite Lifetimes and the Effects of Budget Deficits on National Savings," *Journal of Monetary Economics*, vol. 20 (September 1987), pp. 369–91.

that consumers smooth consumption over long periods of time and that they foresee the long-term implications of the government's budget constraint. The validity of both assumptions is open to question. There is substantial evidence that many families' consumption tracks their income extremely closely, and casual observation suggests that consumers rarely think about the tax increases that will be necessary to pay off a rising national debt when they make their consumption decisions.[4] Ultimately, however, a judgment about Ricardian equivalence must rest on empirical grounds.

Empirical evaluation of Ricardian equivalence has been difficult because until recently there has been relatively little variation in federal deficits independent of wars, cyclical fluctuations, and inflation, each of which might be expected to have a systematic impact on national saving independent of the effect of the budget deficit. Recent federal deficits, though, are far larger than would be predicted on the basis of historical relationships between deficits and macroeconomic conditions, so they provide a natural testing ground for Ricardian equivalence.

The raw data in table 1 appear to refute decisively the Ricardian equivalence proposition. Increases in government deficits have been associated with decreases, not increases, in private saving. There is, however, always the possibility that the apparent refutation of Ricardian equivalence is spurious. Some independent development may have caused measured national saving to decline in recent years, creating a spurious correlation with the rise in budget deficits. Alternatively, the national income accounts may mismeasure national saving.

Perhaps the most plausible argument is that NIPA saving is an inappropriate measure because it ignores capital gains and losses on existing assets, which represent increases or decreases in wealth and so should be treated as positive or negative saving. The increase in the stock market between 1982 and the fall of 1987, for example, substantially increased measured household wealth but was not reflected in official statistics on saving. To examine the importance of such capital revaluations we used data from the Federal Reserve Board's National Balance Sheets to construct time series measures of the net worth of the household

4. For a survey of the relevant literature on liquidity constraints, see R. Glenn Hubbard and Kenneth L. Judd, "Liquidity Constraints, Fiscal Policy, and Consumption," *BPEA, 1:1986*, pp. 1–50, and Robert E. Hall, "Real Interest and Consumption," Working Paper 1694 (National Bureau of Economic Research, August 1985).

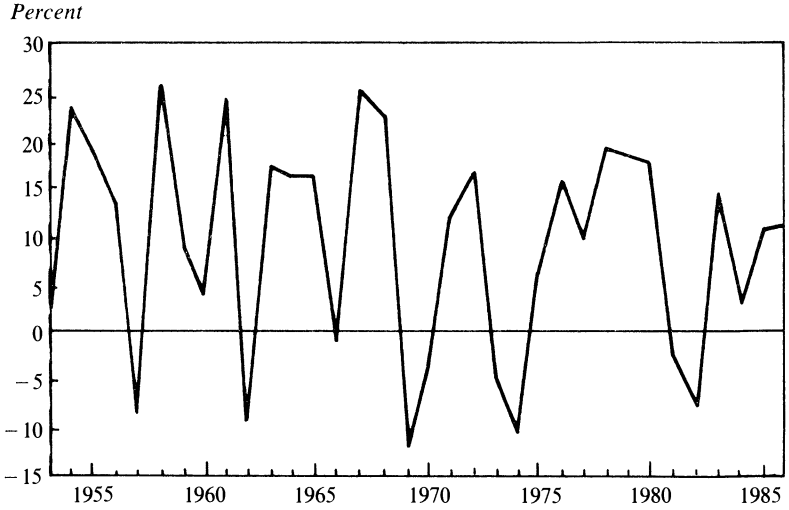
sector. Figure 2 plots the change in households' real net worth measured as a fraction of potential GNP. Because the series is extremely volatile, it is difficult to judge whether this measure of national saving is abnormally low in recent years. Robert Barro and other defenders of the Ricardian equivalence proposition have cited this difficulty as evidence that the data do not yet permit a firm judgment about the impact of deficits on national saving.[5]

However, simply looking at the average value of wealth saving in recent years does not provide a satisfactory test of whether wealth saving has been reduced by budget deficits. Logically, if the concept of saving is expanded to include the capital gains and losses associated with asset revaluations, any income measure should be expanded in the same way. This adjustment has important effects. By their nature, the capital gains and losses associated with asset revaluations are likely to be transitory since, in well-functioning markets, speculation would arbitrage away any large expected capital gains or losses. One would therefore expect that in periods when the stock market rose sharply, making transitory income positive, wealth saving would be large. The fact that wealth saving has not been abnormally high during the 1980s might then be evidence that budget deficits are depressing national saving.

To examine this possibility and the related possibility that the low rate of national saving reported in the national income accounts was caused by macroeconomic conditions rather than budget deficits, we estimated regressions relating both the NIPA and wealth saving measures to various macroeconomic variables during 1950–81 (table 2a). The macroeconomic variables included the GNP gap expressed as a percentage of GNP, inflation rates, and the value of real capital gains and losses on the stock market and on the housing stock expressed as a fraction of GNP. A time trend was also included in the equations. We then used the results to forecast the national saving rate during 1982–86 (table 2b). If the Ricardian equivalence proposition is correct and national saving in the 1980s has not been sharply reduced by budget deficits, it

5. See, for example, Robert J. Barro, "Ricardian Equivalence" (Harvard University, 1987). It is worth noting that the bulk of the volatility of the wealth series comes from extremely variable stock market wealth, and that the 1982–87 increases in such wealth are the chief explanation why the rate of wealth saving has not been notably low over this period.

Figure 2. Annual Change in Real Household Net Worth as a Fraction of Real Full-Employment GNP, 1953–86



Source: Change in real household net worth from Federal Reserve Board, "Balance Sheets for the U.S. Economy," and "Flow of Funds Accounts." Full-employment GNP from Gordon, *Macroeconomics*, and calculations by the Congressional Budget Office.

should be possible to find equations that do not consistently overpredict saving.

Results that are typical of the many equations that we estimated are reported in table 2a. All of the equations significantly overpredict national saving in the 1980s. The prediction errors are substantively significant in most cases and are frequently statistically significant when the official saving measure is examined. The errors are frequently on the order of several percentage points of GNP. In the case of the equations using the wealth saving concept, the errors are often much larger, reflecting the fact that previous stock market rallies, unlike the 1982–87 one, have been associated with high rates of national saving.[6]

The table also shows that, as theory would predict, saving responds differently to capital gains and losses than to other forms of income. In

6. An alternative way of demonstrating that deficits have reduced national saving would have been to show that deficit measures receive negative coefficients when entered as independent variables in the equations shown in table 2a. While deficit variables are consistently statistically significant when entered into equations explaining national saving, the size of their coefficient is quite sensitive to details of specification.

Table 2a. Equations Explaining National Saving Measures, 1950–81[a]

Dependent variable	Constant	GNP gap			Inflation		Time trend	Time trend squared	Capital gains		Summary statistic	
		Current	1 Lag	2 Lags	Current	Lagged			Corporate equities	Housing stock	$\bar{R}^2$	Durbin-Watson
1. National saving	0.080	0.619	−0.101	−0.197	0.122	0.121	−0.093	. . .	. . .	. . .	0.878	1.510
	(26.786)	(8.692)	(−1.723)	(−4.059)	(1.581)	(1.056)	(−2.631)					
2. National saving	0.074	0.613	−0.125	−0.195	0.171	0.161	−0.004	−0.345	. . .	. . .	0.886	1.720
	(14.425)	(8.888)	(−2.124)	(−4.140)	(2.116)	(1.423)	(−0.065)	(−1.568)				
3. National saving	0.073	0.621	−0.108	−0.216	0.181	0.142	−0.008	−0.288	0.005	−0.091	0.878	1.765
	(11.848)	(8.390)	(−1.551)	(−3.842)	(2.072)	(1.182)	(−0.101)	(−1.112)	(0.317)	(−0.768)		
4. National saving	0.078	0.634	−0.096	−0.221	0.144	0.104	−0.078	. . .	0.001	−0.138	0.876	1.679
	(19.027)	(8.646)	(−1.396)	(−3.940)	(1.770)	(0.894)	(−2.030)		(0.050)	(−1.242)		
5. Change in wealth	−0.016	−2.294	2.418	−0.093	−2.097	−1.289	1.424	. . .	1.285	. . .	0.573	2.003
	(−0.303)	(−2.052)	(2.319)	(−0.119)	(−1.739)	(−0.729)	(2.567)		(5.184)			
6. Change in wealth	0.070	−2.621	1.958	0.749	−2.833	−0.757	0.935	. . .	1.104	4.027	0.676	2.672
	(1.276)	(−2.673)	(2.121)	(0.998)	(−2.613)	(−0.488)	(1.815)		(4.889)	(2.720)		
7. Change in wealth	0.099	−2.541	2.024	0.715	−3.050	−0.983	0.521	1.684	1.077	3.751	0.662	2.657
	(1.183)	(−2.502)	(2.124)	(0.929)	(−2.546)	(−0.594)	(0.511)	(0.474)	(4.533)	(3.751)		

Source: Authors' calculations with saving and income data from NIPA; household net worth data from Federal Reserve, "Balance Sheets for the U.S. Economy"; and full-employment GNP from Gordon, *Macroeconomics*, and the Congressional Budget Office.

a. The dependent variable in equations 1–4 is NIPA national saving defined as gross national saving minus the capital consumption allowance, divided by full-employment GNP. The dependent variable in equations 5–7 is defined as the change in real household net worth divided by real full-employment GNP. Independent variables are defined as follows. GNP gap is expressed as a ratio to actual GNP; inflation is the percentage change in the GNP deflator; capital gains on corporate equities and on the value of the real housing stock are computed by taking the percentage change in the price index for each asset category over the year, multiplied by the real stock of the asset at the beginning of the year, all expressed as a ratio to full-employment GNP. Numbers in parentheses are *t*-statistics.

Table 2b. Prediction Errors Generated by Equations Explaining Private and Personal Saving Measures, 1982–86

Percent

Equation	*Prediction error*[a]				
	1982	*1983*	*1984*	*1985*	*1986*
1. National saving	−0.70	−1.02	−1.66	−2.92	−2.22
	(−0.921)	(−1.164)	(−1.999)	(−3.231)	(−2.255)
2. National saving	−0.05	−0.16	−0.56	−1.57	−0.62
	(−0.061)	(−0.159)	(−0.525)	(−1.285)	(−0.446)
3. National saving	−0.45	−0.55	−0.95	−2.17	−1.09
	(−0.435)	(−0.469)	(−0.735)	(−1.428)	(−0.682)
4. National saving	−1.15	−1.36	−2.00	−3.42	−2.43
	(−1.364)	(−1.456)	(−2.273)	(−3.338)	(−2.344)
5. Change in wealth	−31.15	−24.98	−18.22	−26.40	−34.82
	(−2.562)	(−1.768)	(−1.356)	(−1.791)	(−2.156)
6. Change in wealth	−17.09	−13.47	−8.55	−9.27	−26.32
	(−1.468)	(−1.046)	(−0.706)	(−0.656)	(−1.844)
7. Change in wealth	−17.53	−13.99	−9.22	−10.06	−27.18
	(−1.172)	(−0.831)	(−0.501)	(−0.464)	(−1.197)

Source: Equations in table 2a (estimated over the period 1950–81) used to forecast saving, 1982–86.

a. Errors are expressed as realized minus predicted saving rates. Numbers in parentheses are *t*-statistics computed using the standard error of the corresponding equation in table 2a.

the equations that treat capital gains as a component of saving and income, the marginal propensity to save out of stock market gains is close to unity. This correlation suggests that there is little to be gained from including capital gains and losses in measuring saving. Finally, even before 1981, there is evidence of a long-term downward trend in national saving.

Whatever the theoretical merits of the Ricardian equivalence doctrine, these results refute it as an empirical proposition about U.S. budget deficits. It is therefore legitimate to ascribe a substantial part of the decline in national saving during the 1980s to budget deficits. But the increase in government deficits from 0.8 percent of GNP during 1976–80 to 2.8 percent of GNP during 1981–86 cannot possibly explain all of the simultaneous 3.8 percent drop in the national saving rate.

Private Saving in the 1980s

Because private saving does not appear to be tied to changes in government borrowing patterns, it is probably best measured relative to private income, which we define as the sum of disposable income and

Table 3. Composition of Private Saving, 1950–86
Percent of disposable private income[a]

Year	Total private saving		Personal			Corporate		
	NIPA reported	Inflation-adjusted[b]	NIPA reported	Pension-adjusted[c]	Inflation- and pension-adjusted	NIPA reported	Pension-adjusted[c]	Inflation- and pension-adjusted
1950	9.7	. . .	5.8	. . .	. . .	3.8	. . .	. . .
1951	10.7	. . .	7.0	. . .	. . .	3.7	. . .	. . .
1952	10.8	8.6	7.0	. . .	. . .	3.8	. . .	. . .
1953	10.3	9.7	7.0	6.2	5.6	3.3	4.1	4.1
1954	9.7	9.4	6.1	5.3	5.0	3.7	4.4	4.4
1955	10.5	9.1	5.4	4.6	3.2	5.0	5.8	6.0
1956	11.0	8.7	6.9	6.0	3.4	4.1	5.0	5.2
1957	10.7	8.8	7.0	6.0	3.9	3.8	4.7	4.9
1958	10.2	9.3	7.3	6.3	5.3	3.0	3.9	4.0
1959	10.4	8.6	6.1	5.1	3.0	4.4	5.3	5.6
1960	9.3	8.0	5.6	4.6	3.1	3.7	4.7	4.9
1961	10.1	9.2	6.4	5.4	4.4	3.6	4.6	4.7
1962	11.0	9.8	6.2	5.2	3.8	4.8	5.8	6.0
1963	10.6	9.5	5.6	4.6	3.2	5.0	6.0	6.2
1964	11.9	11.2	6.6	5.6	4.7	5.3	6.4	6.5
1965	12.7	11.3	6.6	5.5	3.8	6.0	7.1	7.5
1966	12.4	10.4	6.4	5.3	2.7	6.0	7.1	7.7
1967	12.9	11.5	7.6	6.5	4.6	5.3	6.4	6.9
1968	11.2	8.7	6.7	5.5	1.9	4.6	5.8	6.8
1969	9.9	7.6	6.2	5.0	1.7	3.7	4.9	5.9
1970	10.3	8.1	7.9	6.7	3.3	2.5	3.6	4.8
1971	11.6	9.3	8.3	7.0	3.5	3.3	4.6	5.8
1972	10.9	9.4	7.0	5.7	3.2	3.9	5.2	6.2
1973	12.8	9.6	9.0	7.7	2.1	3.7	5.1	7.5
1974	11.0	7.0	9.1	7.6	0.0	1.9	3.4	7.0

corporate retained earnings. Table 3 presents estimates of the private saving rate thus measured, along with its personal and corporate components. In addition to the standard measures of personal and corporate saving, the data are reported with two adjustments. The rationale for the inflation adjustment, already noted, is that neutral changes in the inflation rate that do not affect real interest rates would otherwise have an impact on measured saving rates.

The pension adjustment is necessary because the national income accounts treat all contributions to pension plans and income earned by pension plans as personal income. Benefits paid out by pension plans are not treated as a component of income, since doing so would be double counting in the same way as it would be double counting to treat

Table 3. ***(continued)***

Percent of disposable private income[a]

Year	Total private saving		Personal			Corporate		
	NIPA reported	*Inflation-adjusted*[b]	*NIPA reported*	*Pension-adjusted*[c]	*Inflation- and pension-adjusted*	*NIPA reported*	*Pension-adjusted*[c]	*Inflation- and pension-adjusted*
1975	12.0	8.9	8.9	7.2	1.9	3.2	4.8	6.9
1976	10.9	8.7	7.4	5.6	1.9	3.6	5.4	6.8
1977	10.6	7.9	6.3	4.5	−0.3	4.3	6.1	8.2
1978	11.1	8.1	6.8	4.9	−0.4	4.3	6.2	8.6
1979	10.0	6.5	6.6	4.5	−2.1	3.5	5.5	8.6
1980	8.9	5.0	7.0	4.6	−2.6	1.9	4.3	7.7
1981	9.3	6.4	7.3	5.2	−0.4	2.0	4.2	6.8
1982	7.6	5.6	6.7	4.7	0.9	0.9	2.9	4.7
1983	7.8	6.2	5.2	3.3	0.3	2.6	4.6	5.9
1984	9.3	7.9	5.9	4.2	1.3	3.4	5.2	6.6
1985	7.7	6.3	4.3	2.8	0.0	3.4	4.9	6.3
1986	7.2	6.5	4.2	3.0	1.7	3.0	4.2	4.8
Averages								
1951–55[d]	10.4	9.2	6.5	5.4	4.6	3.9	4.8	4.8
1956–60	10.3	8.7	6.5	5.6	3.7	3.8	4.7	4.9
1961–65	11.3	10.2	6.3	5.3	4.0	5.0	6.0	6.2
1966–70	11.4	9.3	6.9	5.8	2.8	4.4	5.6	6.4
1971–75	11.7	8.8	8.5	7.0	2.1	3.2	4.6	6.7
1976–80	10.3	7.2	6.8	4.8	−0.7	3.5	5.5	8.0
1981–86	8.2	6.5	5.6	3.9	0.6	2.5	4.3	5.9
1950–86	10.4	8.5	6.7	5.3	2.3	3.7	5.1	6.2

Sources: Actual saving, income, consumption, and price data from NIPA. Adjusted personal and private series computed by the author; adjusted corporate series based on calculations by James Poterba, "Tax Policy and Corporate Saving," *BPEA, 2:1987*. Financial asset stock data used in computing the adjustments are from Federal Reserve Board, "Balance Sheets for the U.S. Economy," and "Flow of Funds Accounts."

a. Personal disposable income plus retained earnings.

b. Calculated as described in table 1.

c. Adjustment for defined-benefit pension plans. The method of adjustment is defined in detail in the text.

d. Averages begin with earliest printed number in the column and go through 1955.

withdrawals from bank accounts or proceeds from stock sales as a form of personal income. Such treatment is natural for defined-contribution plans, in which a worker directly owns a pension account that is invested at his discretion so that his pension contributions or reinvestments of pension income are just another form of saving.

Most private pension plans, however, are of the defined-benefit, rather than defined-contribution, variety, in which employers commit to provide workers with a pension based primarily on final salary and years of service. The employers then fund the implied contractual liability as they see fit, and retired workers receive a stream of income that bears

no necessary relationship to the past saving that the employer has undertaken to fund that liability. It therefore seems most appropriate to treat benefit payments from defined-benefit plans as disposable income and to regard pension contributions and investment income as the saving of employers rather than of pension beneficiaries.[7] This treatment precisely parallels the NIPA treatment of state and local pensions and social security.[8]

The available data do not permit a precise adjustment for pension saving. Since 72 percent of pensions are of the defined-benefit type, we added 72 percent of pension benefits paid by private pensions to household saving and subtracted the same figure from corporate saving, and also switched 72 percent of contributions to pension funds and imputed interest earned on pension assets from personal saving to corporate saving.[9]

No matter how the measurement issues are resolved, private saving has trended downward over the past fifteen or twenty years after rising during the 1950s and early 1960s, although the downward trend is considerably more pronounced in the inflation-adjusted series than in the unadjusted series. On an inflation-adjusted basis, the private saving rate has fallen by more than one-third from its high in the early 1960s. When adjustments are made for inflation and pensions, the average personal saving rate over the past decade has actually been negative. Further, it appears that most of the decline in inflation-adjusted private saving can be traced to declining personal saving.

Table 4a presents regression equations directed at the question of whether the recent course of private saving is aberrant or instead simply reflects the continuation of secular trends and the effects of recent macroeconomic conditions. We relate both inflation-adjusted and un-

7. B. Douglas Bernheim and John B. Shoven, "Pension Funding and Saving," in Zvi Bodie, John B. Shoven, and David A. Wise, eds., *Pensions in the U.S. Economy* (University of Chicago Press, forthcoming), emphasize the importance of pension issues in evaluating movements in personal saving. For further discussion of the need to adjust for pensions in assessing personal and corporate saving, see James M. Poterba, "Tax Policy and Corporate Saving," *BPEA, 2:1987*.

8. This treatment has the well-known defect that the official measure of government saving does not reflect pension liabilities that the government incurs. In the same way, the treatment of defined-benefit plans contemplated here does not treat the pension liabilities incurred by corporations as an offset to their saving.

9. This figure comes from Bernheim and Shoven, "Pension Funding," p. 6, table 1.

adjusted measures of private and personal saving to trend variables, disposable income, inflation, and measures of capital gains on the stock market and owner-occupied housing. The equations are estimated for 1954–81 and are used to predict private saving rates over the succeeding five years (table 4b).

Our finding is that when historical trends and current macroeconomic conditions are taken into account, private and personal saving have not been unusually low, and may even have been abnormally high, over the past five years. The coefficients in the equations generally confirm the standard presumption that temporary increases in disposable income increase the private saving rate, but neither revaluations of corporate equity nor revaluations of the housing stock appear to have a significant impact on the private or personal saving rate, though usually the coefficients have the expected negative sign. The weakness of the effect of the stock market on private saving makes it all the more striking that forecasts of saving based on the equations in table 4a underpredict the observed saving rate.[10]

One possible factor working to reduce private saving during the 1980s has been the cash payouts to shareowners associated with corporate restructurings.[11] In 1985, the last year for which data are available, corporate share repurchases totaled $27.3 billion, and cash payments to shareholders in companies that were taken over totaled $94.8 billion. Share repurchases and takeovers resulted in a flow of income equal to 4 percent of disposable income from the corporate to the household sector, compared with only 0.1 percent of disposable income in 1975 and 1.3 percent in 1980.

John Shoven has demonstrated that these payments from the corporate sector to the household sector have not supplanted but instead have supplemented dividend payments.[12] What households have done with

10. The equations in table 4a include quadratic trend terms to capture what appears to be a hump shape to the raw time series data on saving. While the extrapolation of a quadratic trend is somewhat perilous, similar results are obtained when equations with a linear trend are estimated starting in 1965.

11. See John B. Shoven, "The Tax Consequences of Share Repurchases and Other Non-Dividend Cash Payments to Equity Owners," in Lawrence H. Summers, ed., *Tax Policy and the Economy* (MIT Press, 1987), pp. 29–54, for a discussion of share repurchases and takeovers as devices for passing cash in a tax-advantaged way from the household to the corporate sector. The estimates cited below come from Poterba, "Tax Policy and Corporate Saving."

12. Shoven, "The Tax Consequences of Share Repurchases."

Table 4a. Equations Explaining Private and Personal Saving Measures, 1954–81[a]

Dependent variable	Constant	Change in log of real disposable private income		Inflation		Time trend	Time trend squared	Capital gains		Summary statistic	
		Current	Lagged	Current	Lagged			Corporate equities	Housing stock	$\bar{R}^2$	Durbin-Watson
1. Private saving	0.063	0.396	0.182	0.189	0.337	0.249	−1.077	0.001	−0.022	0.788	1.573
	(6.913)	(4.372)	(2.019)	(1.731)	(2.237)	(2.268)	(−3.377)	(0.078)	(−0.20)		
2. Inflation-adjusted private saving	0.060	0.348	0.176	−0.224	0.277	0.238	−0.883	0.002	−0.011	0.773	1.589
	(5.769)	(3.472)	(1.750)	(−2.301)	(1.695)	(2.274)	(−2.543)	(0.125)	(−0.058)		
3. Personal saving	0.038	0.140	0.041	0.027	0.030	0.167	−0.755	−0.006	−0.133	0.575	1.918
	(3.747)	(1.390)	(0.406)	(2.235)	(1.816)	(1.615)	(−2.135)	(−0.379)	(−1.101)		
4. Inflation-adjusted personal saving	0.028	0.139	0.035	−0.436	0.266	0.185	−0.878	−0.008	−0.110	0.841	1.878
	(2.522)	(1.283)	(0.324)	(−3.350)	(1.484)	(1.664)	(−2.311)	(−0.461)	(−0.849)		

Source: Authors' calculations with data from table 3.

a. Dependent variables are selected saving rates expressed as a percent of real private disposable income (personal disposable income and retained earnings by corporations). Inflation-adjusted private saving is net private saving minus the product of inflation and net private interest-bearing financial assets. Inflation-adjusted personal saving is adjusted to correct for treatment of pension income and for the effect of inflation on nominal financial assets. Inflation is the percent change in the GNP deflator; the time trend is equal to 0.01 in 1950; capital gains on corporate equities and on the housing stock are as defined in table 2a, note a, expressed as a percent of private disposable income. Numbers in parentheses are *t*-statistics.

Table 4b. Prediction Errors Generated by Equations Explaining Private and Personal Saving Measures, 1982–86

Percent

Equation	*Prediction error*[a]				
	1982	*1983*	*1984*	*1985*	*1986*
1. Private saving	0.58	0.75	1.57	1.60	2.39
	(0.435)	(0.511)	(0.954)	(0.828)	(1.189)
2. Inflation-adjusted	−0.15	−0.16	0.68	0.40	−1.02
private saving	(−0.096)	(−0.095)	(0.362)	(0.182)	(−0.446)
3. Personal saving	1.11	0.85	2.01	1.12	2.26
	(0.748)	(0.518)	(1.104)	(0.521)	(1.014)
4. Inflation-adjusted	0.89	0.68	1.98	1.41	3.10
personal saving	(0.556)	(0.389)	(1.011)	(0.612)	(1.293)

Source: Equations in table 4a (estimated over the period 1950–81) used to forecast saving, 1982–86.

a. Errors are expressed as realized minus predicted saving rates as a fraction of real private disposable income. Numbers in parentheses are *t*-statistics computed using the standard error of the corresponding equation in table 4a.

this extra cash remains an open question. If they have reinvested it, repurchases and takeovers have not affected the overall saving rate. But to the extent that households have consumed it, the personal and private saving rate has been reduced. We suspect that consumption out of cash payouts from corporate restructuring may have been of substantial and growing importance recently. If households consumed 50 percent of those payouts in recent years, the personal and private saving rates would have fallen between 1 and 2 percentage points.

The Efficacy of Saving Incentives

Some analysts have concluded from the low recent private and personal saving rates that the Individual Retirement Account tax incentives for private saving enacted in 1981 have been ineffective. Such an inference is premature. IRA contributions in 1984, for example, represented less than 2 percent of disposable income.[13] It should be clear from the size of the prediction errors in table 4b that the fraction of these contributions that represented new incremental saving cannot be reliably inferred from aggregate data. If anything, the tendency for the equations to underpredict private and personal saving suggests the efficacy of IRAs.

13. Chris Carroll and Lawrence H. Summers, "Why Have Private Savings Rates in the United States and Canada Diverged?" *Journal of Monetary Economics,* vol. 20 (September 1987), pp. 249–79. See table 3.

Several pieces of microeconomic evidence suggest that a sizable part of IRA contributions does represent incremental saving. First, most IRA contributors have relatively little wealth or capital income. The Federal Reserve Board's Survey of Consumer Finances revealed that in 1983, the median-income IRA contributor had less than $10,000 in liquid assets. A two-earner family making the maximum contribution would have exhausted this sum in fewer than three years. Second, for the more than 60 percent of IRA contributors who contribute less than the statutory maximum amount, IRAs clearly provide an incremental saving incentive. Third, a sizable fraction of IRA contributors make their contribution near the last possible moment, suggesting that they are responding to the advertising blitz mounted by financial institutions each April. IRS statistics indicate that almost half of contributions for 1984 were made in 1985.[14]

While the macroeconomic data do not permit any judgment about the efficacy of targeted saving incentives, they do run counter to theoretical and empirical arguments suggesting that private saving responds strongly to rates of return.[15] If saving were highly interest-elastic, one would have expected the unprecedentedly high real interest rates of the 1980s to lead to large positive residuals in saving equations. One explanation for why they did not is that high real interest rates were caused in part by the strength of consumption demand. If so, saving rates and interest rates would move in opposite directions, even if saving were interest-elastic.

Another way to reconcile the observed data with theoretical arguments suggesting that saving should be responsive to rates of return is to note that measured real interest rates probably do not accurately reflect the expected returns on most of the assets in consumers' portfo-

14. See Steven F. Venti and David A. Wise, "Have IRAs Increased U.S. Saving?: Evidence from Consumer Expenditure Surveys," Working Paper 2217 (National Bureau of Economic Research, April 1987), and the papers cited there for a discussion of the microeconomic evidence on IRAs. See also comments by Harvey Galper, Charles Byce, and Lawrence H. Summers in *Tax Notes,* vol. 31 (June 2, 1986), pp. 917–21, and vol. 31 (June 9, 1986), pp. 1014–16, for alternative readings of the microeconomic evidence.

15. Such arguments are presented in Michael J. Boskin, "Taxation, Saving, and the Rate of Interest," *Journal of Political Economy,* vol. 86 (April 1978), pp. S3–27; and in Lawrence H. Summers, "Capital Taxation and Accumulation in a Life Cycle Growth Model," *American Economic Review,* vol. 71 (September 1981), pp. 533–44; and Summers, "The After-Tax Rate of Return Affects Private Savings," *American Economic Review,* vol. 74 (May 1984, *Papers and Proceedings, 1983*), pp. 249–53.

lios. Dramatic increases in price-earning and price-dividend ratios during the 1980s might well have been taken as indicative of reduced expected returns on corporate equities.[16] While these arguments have some appeal, the experience of the 1980s certainly creates doubt about the ability of economic policy to raise private saving by increasing the returns available to savers.[17]

The Downward Trend in Private Saving

The equations in table 4a generally find a substantial downward trend in recent years in the saving rate, with the estimates suggesting that, other things being equal, the private saving rate is currently trending downward at a rate as high as 0.4 percent per year. It is the strong trends that enable the equations in table 4a to predict reasonably accurately recent saving behavior.

Judgments about the likely future course of private saving depend on one's beliefs about why it has trended downward. In this part of the paper, we briefly examine a number of possible explanations for declining saving. Since our interest is in secular rather than cyclical movements in saving, we do not try to fit econometric equations describing consumption or saving. Instead, our approach is informal. We begin by focusing on the primary motivations for saving: provision for old age, the possibility of "rainy days," the desire to purchase big-ticket items, and the desire to leave bequests. Then we examine possible connections between demographic changes and trends in the saving rate.

The most commonly adduced explanation for saving is the need to provide for old age. The celebrated life-cycle saving hypothesis holds that aggregate savings arise because the dissaving of the retired population is exceeded by the saving of the more numerous and prosperous

16. The available empirical evidence supports this possibility. See, for example, Robert J. Shiller, "Stock Prices and Social Dynamics," *BPEA, 2:1984*, pp. 457–98. A number of studies have also found that increases in real interest rates portend lower, not higher, stock returns.

17. See Carroll and Summers, "Why Have Private Savings Rates in the United States and Canada Diverged?" for a discussion as to why a comparison of the United States and Canada is more encouraging about the efficacy of saving incentives and high rates of return. These factors appear to explain why Canada's saving rate has trended upwards through time while the American saving rate has declined.

young.[18] The level of saving will depend on the extent to which consumers expect that their income will fall late in life, which in turn will depend both on retirement behavior and on the income support available to the retired population.

Table 5 presents data on changes since 1950 in the relative economic well-being of elderly Americans. Despite dramatic reductions in the labor-force-participation rate of married men over age sixty-five, from 37.1 percent in 1960 to 17.3 percent in 1986, and despite the aging of the elderly population, the income of the elderly has increased substantially relative to that of the rest of the population.[19] The income of the aged can increase even as they retire earlier because labor income accounts for about 15 percent of their income.[20] Primarily responsible for the improvement in the well-being of the elderly has been the dramatic increase in social security benefits. The ratio of those benefits per aged adult to per capita disposable income has grown nearly 50 percent in the past twenty years. Social security has been especially effective in putting a floor under the income of the aged. As a consequence, the share of the elderly poor is now lower than the corresponding share of the remainder of the population.

It seems reasonable to expect that the current relative income of the elderly influences the perception of younger Americans about how much they need to save for retirement. The observed change of about 10 percentage points in the ratio of the median income of the elderly to the median income of the rest of the population could easily account for a significant part of the decline in private saving. It is noteworthy that rising private saving rates in the 1950s coincided with declines in the relative economic position of the elderly, while the turnaround in the relative income of the elderly preceded the downward trend in private saving rates that began in the mid-1960s. The current importance of this

18. For a summary of the life-cycle hypothesis and supporting evidence, see Franco Modigliani, "Life Cycle, Individual Thrift, and the Wealth of Nations," *American Economic Review*, vol. 76 (June 1986), pp. 297–313.

19. The statistics in the table probably understate both the absolute economic position of the elderly and the improvement in their relative position through time because they do not take account of taxes or the value of the medical services provided under medicare. Nor do they take account of the fact that the elderly typically live in smaller families than the nonelderly.

20. *Economic Report of the President, February 1985*, p. 170.

Table 5. Relative Income of the Elderly and Nonelderly, Selected Years, 1950–85

Year	*Ratio of median incomes*[a]		*Ratio of poverty rates*[b]	*Social security payment–income ratio*[c]
	Men	*Women*		
1950	0.35	0.49	n.a.	0.02
1955	0.34	0.46	n.a.	0.05
1960	0.34	0.44	1.7[d]	0.26
1965	0.33	0.44	2.1[e]	0.27
1970	0.35	0.43	2.2	0.30
1975	0.41	0.55	1.3	0.37
1980	0.42	0.67	1.2	0.40
1985	n.a.	n.a.	0.9	0.40

Sources: Median incomes are from Susan Grad, "Incomes of the Aged and Nonaged, 1950–82," *Social Security Bulletin,* vol. 47 (June 1984), p. 9, table 6. Poverty rates for the elderly and nonelderly are from U.S. Department of Commerce, Bureau of the Census, *Current Population Reports,* series P-60, no. 154, "Money Income and Poverty Status of Families and Persons in the United States: 1985" (GPO, 1986), p. 22, table 16. Social security payments to the elderly are imputed from total OASDI payments by weighting total payments for each spending category by the ratio of beneficiaries over age sixty-five. Weights and payments are from *Social Security Bulletin,* various issues, tables M-9, M-10, and M-13.

n.a. Not available.

a. Median income of the elderly divided by median income of the nonelderly. Data for odd years are averages of preceding and following even-year data.

b. Poverty rate of the elderly divided by poverty rate of the nonelderly.

c. Ratio of average social security payment per elderly person to per capita disposable income.

d. Data are for 1959.

e. Data are for 1966.

effect depends, of course, upon the question of what level of social security benefits those who are saving today expect to receive.[21]

Providing for emergencies is a second motivation for saving.[22] As table 6 demonstrates, the extent to which the population is insured against the need for large medical expenditures has increased dramatically since 1950. Where direct patient payments covered 29.9 percent of hospitalization outlays in 1950, they covered only 9.3 percent of these outlays in 1985. There have been even larger reductions in the fraction of physician and nursing home care that is not covered by insurance.

21. A large and inconclusive literature dating from Martin Feldstein, "Social Security, Induced Retirement and Aggregate Capital Accumulation," *Journal of Political Economy,* vol. 82 (September–October 1974), pp. 905–26, has examined the role of social security variables in aggregate consumption functions. Given that social security's effect on saving depends on perceptions about future benefits that are likely to respond sluggishly to legislative changes, it is not surprising that the studies of year-to-year movements in consumption have not shed much light.

22. The argument considered in this paragraph is discussed in the context of a simulation model in Laurence J. Kotlikoff, "Health Expenditures and Precautionary Saving," Working Paper 2008 (National Bureau of Economic Research, August 1986).

Table 6. Direct Medical Expenses by Patients, Selected Years, 1950–85

Year	*Total health care expenses*		*Hospital costs*		*Nursing home costs*		*Other costs*[a]	
	Percent of total medical payment	*Percent of disposable income*	*Percent of total medical payment*	*Percent of disposable income*	*Percent of total medical payment*	*Percent of disposable income*	*Percent of total medical payment*	*Percent of disposable income*
1950	65.5	3.4	29.9	0.6	n.a.	n.a.	n.a.	n.a.
1955	58.1	3.3	22.3	0.5	n.a.	n.a.	n.a.	n.a.
1960	54.9	3.6	19.8	0.5	n.a.	n.a.	n.a.	n.a.
1965	51.6	3.8	16.8	0.5	64.5	0.3	74.7	3.1
1970	40.5	3.7	11.4	0.4	50.3	0.3	63.9	2.9
1975	32.5	3.3	7.9	0.4	42.7	0.4	54.2	2.5
1980	28.7	3.3	7.8	0.4	43.6	0.5	47.3	2.4
1985	28.4	3.7	9.3	0.6	51.4	0.6	42.5	2.6

Sources: Health care expenditures are from Daniel R. Waldo, Katharine R. Levit, and Helen Lazenby, "National Health Expenditures, 1985," *Health Care Financing Review*, vol. 8 (Fall 1986), pp. 16–18, tables 4–8; and from Robert M. Gibson, Daniel R. Waldo, and Katharine R. Levit, "National Health Expenditures, 1982," *Health Care Financing Review*, vol. 5 (Fall 1983), pp. 8–11, tables 4–7. Disposable income is from *Economic Report of the President, February 1987*, p. 274, table B-25.

n.a. Not available.

a. Includes payments to physicians and other health care costs.

However, because the cost of health care has risen far faster than disposable income, the share of income that consumers devote to uninsured health care has not declined. As a consequence, it is unlikely that a reduction in the need to save for possible health outlays has contributed much to declines in the saving rate.

It may be, however, that improved disability and life insurance coverage has reduced the extent of precautionary saving. Since 1950, there has been a modest improvement in life insurance protection, as shown below.[23]

Ratio of life insurance per family to disposable income

1950	*1955*	*1960*	*1965*	*1970*	*1975*	*1980*	*1985*
1.12	1.33	1.65	1.85	1.95	1.87	1.89	2.14

While we have not located satisfactory data, we think it likely that the combined value of private and public disability insurance has also increased.

Yet another motivation for saving, the purchase of big-ticket goods, has probably grown less important because it has become easier to borrow to finance housing and durable goods. The first two columns of

23. American Council on Life Insurance, *Life Insurance Fact Book, 1986* (Washington, D.C.: ACLI, 1986), p. 22.

Table 7. Required Down Payment on House Purchases, 1976–85

Year	*Down payment of first-time buyers*		*Down payment of repeat buyers*	
	Percent of sales price	*Percent of median income*	*Percent of sales price*	*Percent of median income*
1976	18.0	42.9	30.8	97.6
1977	19.2	48.7	48.3	121.3
1978	12.4	31.1	27.6	87.8
1979	17.6	44.1	29.0	92.3
1980	20.5	59.3	32.7	116.6
1981	19.4	54.8	27.1	99.5
1982	15.1	38.1	27.3	115.0
1983	15.7	46.3	27.8	114.2
1984	13.2	40.7	25.6	97.1
1985	11.4	30.9	32.7	125.2

Sources: Down payment to sales price ratio is from U.S. Bureau of the Census, *Statistical Abstract of the United States, 1987* (GPO, 1987), p. 716, table 1293. Median income is from *Economic Report of the President, February 1987*, p. 278, table B-29. Median income is reported in 1985 dollars. The personal consumption deflator (from *Economic Report*, p. 248, table B-3) was used to form current dollar median income.

table 7 present data since 1976 on the average down payment by first-time homeowners, expressed as a fraction both of median family income and of the value of the purchased home. The decreasing need for large down payments almost certainly reduces some consumers' felt need for savings.

More generally, as table 8 shows, consumers have been taking on increasing amounts of debt. While some of this increase is probably matched by increased holding of assets, some probably has increased consumption and reduced saving. Installment credit, which rose from 12.6 percent of disposable income in 1960 to 19.4 percent in 1985, is particularly likely to represent an alternative to saving, since consumers are unlikely to take on substantial installment debt, which typically carries a high interest rate, while holding liquid assets. The ratio of mortgage debt to disposable income has increased as well. Recent increases in this ratio reflect the nearly $200 billion that has been borrowed on second mortgages since 1981.

A final motivation for saving is provision for one's children. It is not clear how the incentive for this form of saving has changed. Reductions in birth rates have dramatically reduced the number of children for whom parents must save. It may also be that the great increase in the number and quality of public institutions of higher education has reduced saving.

Table 8. Types of Debt Relative to Disposable Income, Selected Periods, 1956–85
Percent of disposable income

Time period	*Mortgage debt*		*Installment credit*		*Other credit*	
	Average ratio	*Average change in real debt*[a]	*Average ratio*	*Average change in real debt*[a]	*Average ratio*	*Average change in real debt*[a]
1956–60	36.9	2.7	11.6	0.6	5.5	0.2
1961–65	45.1	3.1	13.8	1.1	5.9	0.3
1966–70	45.0	0.8	15.0	0.4	5.6	0.0
1971–75	43.8	1.1	15.6	0.4	4.9	0.0
1976–80	48.3	2.9	16.3	0.6	4.1	0.0
1981–85	50.3	1.6	16.4	1.1	3.9	0.2

Sources: Federal Reserve Board, "Balance Sheets for the U.S. Economy," and NIPA.
a. Change in real debt divided by disposable income. Real debt is computed using the change in the GNP deflator.

In addition, the widespread use of financial aid formulas that penalize accumulated saving may also have discouraged saving for children. We doubt, though, that these considerations have reduced saving rates much, particularly given that data from the 1972 Consumer Expenditure Survey reveal that married couples with children saved 20.5 percent of their income, compared with 25.3 percent for married couples without children.

An alternative explanation for the decline in saving rates is that the changing age composition of the population might influence the aggregate saving rate. To examine this possibility table 9 reports adjustments to the saving rate, constructed by combining information on age-specific saving rates with information on the share of income going to different age groups. As table 10 indicates, there is considerable uncertainty about the age-specific pattern of saving rates. The uncertainty reflects large recall errors in the available microeconomic data, as well some conceptual differences between Consumer Expenditure Survey estimates of saving rates, which use a residual method, and Survey of Consumer Finances saving rates, which estimate saving from increases in asset stocks.

Regardless of which saving data are used, demographic changes do not appear to account for large variations in the saving rate, in large part because changes in the share of income received by different age groups are relatively modest. From 1968 to 1984, the largest change was the 5.7 percent drop in the share of income going to those aged forty-five to fifty-four. More typically, changes were on the order of 2–3 percent.

Table 9. Adjustments to Personal Saving Rate for Changing Demographic Composition of Income, Selected Years, 1970–84

Percent

Year	*Consumer Expenditure Survey*	*Survey of Consumer Finances*
1970	−0.1	0.0
1972	−0.2	0.0
1974	−0.4	0.0
1976	−0.3	−0.1
1978	−0.3	−0.1
1980	−0.4	−0.2
1982	−0.3	−0.4
1984	0.0	−0.4

Sources: Authors' calculations. Personal saving is a weighted sum of saving rates across demographic groups, calculated as the product of the saving rate for each age group (ages 18–24, 25–34, 35–44, 45–54, 55–64, 65+) times the share of total income accruing to that age group in that year. The numbers in the table are the rate for 1968 less the rate for each year. Consumer Expenditure Survey data are reported in Bureau of the Census, *Statistical Abstract of the United States 1987*. Survey of Consumer Finances data are from the Board of Governors of the Federal Reserve System. Income shares are from Michael J. Boskin, Laurence J. Kotlikoff, and Michael Knetter, "Changes in the Age Distribution of Income in the United States: 1968–1984," Working Paper 1766 (National Bureau of Economic Research, October 1985).

A different demographic explanation for the declining saving rate is that the rise of two-earner families has reduced saving rates by reducing the variability of family incomes. The fraction of married women in the labor force has risen sharply, from 30.5 percent in 1960 to 54.6 percent in 1986.[24] It is difficult to test whether that change has led to reduced saving. One negative piece of evidence is that the 1972 Consumer Expenditure Survey indicates that married couples with both spouses working full time had a saving rate of 22.1 percent, compared with 18.6 percent for married couples with only one spouse working.

Quantifying the separate contributions of all these factors to the secular downward trend in private saving is impossible. Our judgment is that the improving relative economic fortunes of the elderly probably is the single most important cause of reduced saving. Improvements in insurance coverage and households' increased ability to take on debt to purchase durable goods have also been at work. We doubt that these trends are likely to be reversed in the near future, though ultimately the generosity of social security may have to decline. This suggests that

24. U.S. Bureau of the Census, *Statistical Abstract of the United States, 1987* (GPO, 1987), table 654, col. 1, p. 383.

Table 10. Personal Saving Rates by Age, 1963 and 1984
Percent

Age group	*Survey of Consumer Finances (1963)*	*Consumer Expenditure Survey (1984)*
18–24	5	−17
25–34	13	9
35–44	9	12
45–54	14	9
55–64	8	13
65 +	−1	3

Sources: Consumer Expenditure Survey saving rates are computed from consumption and income data published in the Bureau of the Census, *Statistical Abstract of the United States, 1987,* table 718, p. 428. Saving is defined as total expenditures minus retirement, pension, and social security expenditures divided by income before taxes minus personal taxes. Survey of Consumer Finances saving rates are from Dorothy S. Projector, *Survey of Changes in Family Finances* (Washington, D.C.: Federal Reserve System, 1968), table 7, p. 14.

even if government deficits return to historically normal levels, the U.S. national saving rate will remain between 4 percent and 6 percent.

International Capital Flows and the Low National Saving Rate

We next consider the implications of maintaining a level of national saving that is low by both historical and international standards. The economic effects of a low saving rate depend critically on the international response to it. In textbook models of small open economies, the level of national saving has no impact on the level of national investment. Instead, decreased saving is translated dollar for dollar into international borrowing. In a closed economy, by contrast, reduced saving is directly translated into lower investment.

The huge U.S. current account deficit of recent years and the vast international capital market make it tempting to conclude that the open-economy model is more appropriate for thinking about the effects of changes in U.S. national saving. However, consideration of the recent American experience, and of the international historical experience more generally, raises doubts that international capital flows can substitute for domestic saving on a long-term basis.

Compared with the vast international differences in national saving rates, the recent U.S. capital inflows of about 3 percent of GNP do not

appear large. Nor do they appear large compared with the movements in capital that would be necessary to equalize international rates of return. With a standard Cobb-Douglas production function, having a capital share of 0.25 and a capital output ratio of 2, an increase in the capital stock equal to more than 20 percent of GNP is necessary to drive down the rate of return by 1 percentage point. And yet observed capital flows in the United States and the associated movements in the trade deficit have been associated with huge economic dislocations as the traded goods sector of the economy has lost competitiveness. It is doubtful that a trade deficit of the current size would be sustainable politically, even if it were sustainable economically.

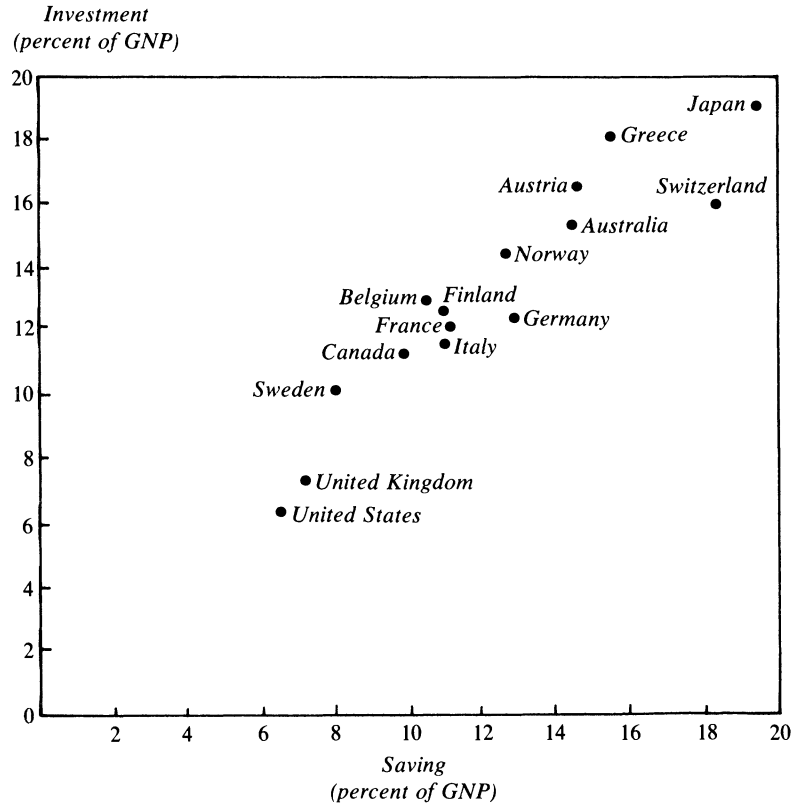
The judgment that large-scale capital import is not viable as a long-run strategy is confirmed by international experience. Figure 3 illustrates the point, first made by Martin Feldstein and Charles Horioka, that there is a near-perfect association between national saving and investment rates.[25] The consistent tendency for high-saving nations to have high investment rates and vice versa suggests that it would be difficult for the United States to maintain a high investment rate in tandem with a low saving rate. The reasons for the close association between saving and investment are unclear, but perhaps the answer suggested by recent U.S. experience is most plausible. Capital flows cannot take place without large changes in patterns of domestic production. The consequent economic dislocations create substantial pressure to bring saving and investment into balance, and sooner or later the government adjusts its policies accordingly. Evidence in favor of this view comes from the consistent tendency of countries with high private saving rates to run chronic budget deficits and the tendency for countries where investment exceeds private saving to run budget surpluses.

Conclusion

Even if the fiscal aberration of the Reagan years is corrected, the United States will continue to have a saving problem. Because of a secular downward trend in private saving rates, national saving will be

25. Martin Feldstein and Charles Horioka, "Domestic Saving and International Capital Flows," *Economic Journal*, vol. 90 (June 1980), pp. 314–29. For a discussion of a variety of possible explanations of the close association between saving and investment rates, see

Figure 3. National Saving and Investment Rates, 1960–83



Source: Lawrence H. Summers, "Tax Policy and International Competitiveness," in Jacob A. Frenkel, ed., *International Aspects of Fiscal Policies* (University of Chicago Press, forthcoming).

inadequate to finance even the levels of investment that have been observed historically. The forces causing private saving to decline—improvements in the economic well-being of the elderly, improvements in public and private insurance that have reduced the need to save for "rainy days," and increases in the ease with which consumers can borrow—are all basically benign. They are not likely to be reversed over the next few years. Public policy will not and probably should not seek

Lawrence H. Summers, "Tax Policy and International Competitiveness," in Jacob A. Frenkel, ed., *International Aspects of Fiscal Policies* (University of Chicago Press, forthcoming).

to reduce economic security or make it more difficult for young families to purchase houses.

This leaves a pressing problem for public policy. As long as the U.S. national saving rate lags far behind that of major U.S. competitors, restoring American competitiveness will be difficult. The experience of the 1980s suggests that saving incentives can spur private saving to some extent. But it remains the case that changes in the government's fiscal posture are the most potent and reliable way to increase national saving. Unless new ways of encouraging private saving can be found, it may be necessary for the federal government to run chronic budget surpluses in coming years.

Comments and Discussion

Alan S. Blinder: Lawrence Summers and Chris Carroll's nicely constructed and well-illustrated Michelin guide to low saving rates concentrates on the downward secular trend; it asks why saving rates in the 1980s were lower than in previous decades. Like the Michelin guides, there is a lot of valuable insight and information packed into a few pages. While I have no serious quarrel with their answers, I want to suggest that a more pointed question might be: why have national saving rates been so very low very recently?

For something like half the problem, neither the question nor the answer is in dispute. One seemingly obvious cause of a lower national saving rate is the large dissaving of the federal government, beginning around 1983. It is tempting to take this part as "explained" by an exogenous fiscal aberration and concentrate on what's left—a temptation to which I, like Summers and Carroll, will shortly succumb. But this is a bit facile for two reasons.

First, there is the possibility that debt and taxes are equivalent. The authors consider this hypothesis and reject it for good reasons. While I agree with their conclusion, I think they could have offered a more direct test by, for example, putting the government deficit into their table 2a regressions. A working paper by Summers several years ago did this using data through 1982 and estimated that each dollar of federal deficit raised private saving by about 20–40 cents.[1] I suspect that data through 1986 would reduce this estimate sharply. Why not tell us?

Second, both private and government saving are highly cyclical and the cyclical conditions of 1981–86 were atypical. We really want to know

1. Lawrence H. Summers, "Issues in National Savings Policy," Working Paper 1710 (National Bureau of Economic Research, September 1985), table 4.

whether the cyclically adjusted government deficit called forth higher cyclically adjusted private saving. In 1985, Angus Deaton and I asked this question using older data and a period ending in 1984. We found that there was no decline at all in cyclically adjusted private saving rates through 1984.[2] I would like to know if this still holds in the revised data and whether the years 1985–86 look different from 1982–84; I suspect both are true. Again, Summers and Carroll could easily use their table 2a regressions to tell us.

Summers and Carroll claim that the recent observations are not aberrant, and do so in an apparently reasonable way. They run regressions over 1950–81 (see table 4a), extrapolate them to 1982–86 (table 4b), and ask whether they overpredict private saving rates. Not all do. So Summers and Carroll conclude that recent behavior is in line with historical experience; saving may even have been surprisingly high.

I read the same evidence differently because I am inclined to be skeptical about extrapolating quadratic time trends. If regression 1 is taken as representative, the effect of raising t from 1981 to 1986 is to reduce the predicted saving rate by 2.47 percentage points—which exceeds the observed drop. That, as Summers and Carroll acknowledge, is how their equations are able to track recent experience. Without a quadratic trend, the equations would greatly overpredict recent saving rates.[3]

If the last two years really were unusual, what might the reason be? I have one explanation that does not even appear in Summers and Carroll's guidebook: the falling price of energy. Deaton and I found in our paper that the relative price of nondurable goods—which is, in turn, dominated by the relative price of energy—has a strong negative effect on spending. I have since learned that energy prices have an astoundingly strong contemporaneous effect on real spending on energy products. Furthermore, much of the change in real spending on energy seems to come out of saving, rather than out of spending on other goods.[4] So falling energy

2. Alan S. Blinder and Angus Deaton, "The Time Series Consumption Function Revisited," *BPEA, 2:1985,* p. 470, table 1.

3. It also seems odd to omit the interest rate from a regression that includes the inflation rate. If the interest rate had been entered, and earned a positive coefficient, the overpredictions would have been greater.

4. Jason Benderly called this to my attention. See his "Consumption and Housing," in The Conference Board, *U.S. Economic Outlook 1987–88,* Research Bulletin 211 (May 1987).

prices are a possible explanation of falling saving rates in 1985–86. I'd give it at least one Michelin star. In 1974–75, it should be noted, when energy prices were rising rapidly, saving rates were surprisingly high.

Let me now turn to Summers and Carroll's major focus: the long-term decline in saving rates—if, indeed, there is one. Summers and Carroll guide us intelligently through a list of possible causes of declining saving by going back to basics. They award the coveted star to very few. Stunningly, their list of basics never even mentions intertemporal choice and rates of return, both of which had featured prominently in earlier Summers guides. I say this not in criticism, by the way. Flexibility of mind is admirable when it comes from sampling the data.

In fact, I find little to quarrel with in the moderate 1987 Summers view of this issue. He is right, for example, that the fact that the median IRA contributor in 1983 had less than $10,000 in liquid assets raises the possibility that IRAs might have become a marginal incentive for many people after a few more years. But I don't think the fact that most IRA contributions are made at the last minute is germane. In fact, it may argue the other way: it paints a picture of lots of people with loose cash that they can toss into tax-sheltered accounts at the last minute.

But there is a far more basic point. If IRAs serve as a saving incentive, they must do so by raising the after-tax rate of return. Yet, as Summers and Carroll correctly note, titanic increases in rates of return during the 1980s failed to raise private saving. This suggests that the response of saving to the rate of return may not even be positive, much less large. And if that is the case, providing a marginal incentive will do little good.

Summers and Carroll's list of causes of the declining saving rate gives two stars to the increased relative affluence of the elderly, which suggests a reduced need to save for old age. The argument here is eminently reasonable. But does it explain the facts? That depends on what facts we want to explain. It certainly cannot explain an abrupt drop in saving during the last year or two. It is a more promising explanation for any secular decline in saving that may exist. However, their table 5 shows that the biggest jump in social security benefits relative to disposable income came in the late 1950s, just before saving rates soared in the 1960s. Of course, there are lags. So I am not suggesting that we reject the explanation—only that we downgrade it to one star.

General Discussion

Thomas Juster agreed with Alan Blinder about the importance of distinguishing between hypotheses about the secular trend of the saving rate and those about the trend in recent years. He noted that previous revisions of the NIPA raised estimates of saving; the apparently low saving rate during the past few years may be higher once the NIPA are revised. Evidence of a secular decline would be a more serious matter. However, Juster questioned the appropriateness of Summers and Carroll's inflation adjustment to the personal saving rate, which appeared to be a major contributor to the secular decline. The nonadjusted series shows a decline in just the past few years. While agreeing that an inflation adjustment may be appropriate for the corporate sector, Juster argued that it is by no means clear that households base decisions on real rather than nominal interest rates.

A number of participants discussed the logic of the authors' pension adjustment. Juster noted that their approach, regarding contributions to defined-benefit pension plans as corporate rather than personal saving, assumes that households do not take into account their claim to future pension benefits in making their saving decisions. The size of this adjustment has grown over recent decades, thereby contributing to the apparent decline in household saving. While agreeing that households do not know the precise value of their accumulated pension benefits, he argued that they do know whether the benefits are vested and for how many years they have credit, and they make pretty good guesses about the fraction of their income to which they will be entitled upon retirement. Hence he believed it plausible that accumulated pension benefits affect household behavior. William Brainard agreed about the desirability of an adjustment to recognize the future obligations incurred by corporations and the balancing claims of households on future benefits. He argued that such claims are in effect annuities owned by households and noted that taking into account pension obligations incurred in a given year by corporations substantially changes the picture of corporate and household saving.

James Poterba, while agreeing that the calculations made by the authors (similar to ones made in his own paper) leave out the accrual of

pension benefits by households, noted that constructing an aggregate series reflecting the accrual would require a large number of arbitrary assumptions. Summers stressed that this issue does not affect conclusions about total private saving, but only the division of private saving between corporate and personal saving. Summers also argued that the logic of Brainard and others would seem to imply the accrual of social security benefits in income and saving, a procedure he believed most would agree is inappropriate.

Olivier Blanchard was not convinced by the authors' dismissal of Robert Barro's view that the low saving rate may be due to the increase in the market value of assets. He argued that Barro's view is consistent with standard consumption functions, such as the one in the MPS model, according to which consumption depends on both labor income and wealth. An increase in expected dividends is captured in an increase in wealth, which should therefore be associated with an increase in consumption and a decrease in measured saving. Blanchard suggested that it would be informative to know how well such consumption functions had performed in recent years and whether the income and wealth coefficients appeared to have changed.

Robert Hall disagreed with Blanchard's, and the "standard," view of the effects of stock market appreciation on consumption. Consumption functions like that in the MPS model typically assume that the coefficient on wealth is constant. However, some changes in wealth, for example those caused by a change in the discount rate, would not result in an increase in the consumption of a long-lived household. If the stock market appreciates, but the real return is proportionately lower, the coefficient on wealth times the value of wealth remains unchanged. In other words, Hall argued, the expected flow of dividends need not have changed even though the value of stocks has risen. With a long time horizon, consumption and dividends will be approximately equal.

A number of participants questioned various of the authors' explanations for the decline in the personal saving rate. James Duesenberry was skeptical that the increase in the affluence of the elderly would result in a lower saving rate. He noted that the increase in life expectancy may offset the higher incomes of the elderly. Although social security benefits are like an annuity, Duesenberry reasoned, to the extent that the elderly rely on other income sources, the need to save for a longer lifetime may outweigh the increased social security payments.

Poterba noted that changes in social security benefits are likely to have different effects upon the saving of various age groups. He questioned the authors' conclusion that the current relative well-being of the elderly is likely to reduce saving on the part of younger individuals. He believed that recent changes in social security benefits may encourage individuals who are near retirement to reduce their saving. In support of this view Henry Aaron cited public opinion polls that show that young people anticipate little or no return from the social security system. He agreed that lower saving rates for younger households are not likely to be the result of recent improvements in social security benefits. Summers discounted the validity of survey responses that suggest a lack of confidence in the social security system. In his view, individuals who observe that their parents enjoy a good retirement income from social security will be less inclined to save for their own retirement.

Juster, while suggesting that the evidence on saving rates across age groups is not conclusive, noted that the data suggest that the elderly may save more than any other age group. He believes that more careful analysis of the characteristics of saving at the microeconomic level, both across age groups and across time, will be necessary for understanding the reasons for changes in the overall saving rate.

Aaron argued that the relevant comparison for explaining the saving of the elderly is that between their current and prior economic status rather than that between the economic status of the aged and nonaged. If the economic status of the elderly has improved, Aaron reasoned, their consumption would be high. He cited a study by John Shoven and Michael Hurd that indicates that the aged, on average, are able to sustain their preretirement standard of living. Aaron wondered whether this finding represents a change from earlier periods.[1]

William Nordhaus suggested that the focus upon the life-cycle model, with the emphasis upon the representative individual or family, has led to the neglect of the role of distribution in the explanation of aggregate saving. While agreeing that the life-cycle paradigm was useful, with its emphasis upon individual maximizing behavior, Nordhaus noted that work by Kotlikoff, Spivak, and Summers appeared to demonstrate that

1. Michael Hurd and John B. Shoven, "Real Income and Wealth of the Elderly," *American Economic Review,* vol. 72 (May 1982, *Papers and Proceedings, 1981*), pp. 314–18.

the life-cycle model could explain only a small fraction of aggregate saving.[2] He reminded the panel of Keynes's view, as expressed in *The General Theory,* that the distribution of income and wealth is an important determinant of aggregate saving and suggested that it would be useful to examine the effect of recent changes in the distribution of income upon saving. Nordhaus observed, however, that according to earlier theories, the increased dispersion in incomes should have increased saving.

Glenn Hubbard added that several other changes in the environment facing households have helped reduce saving. He cited the evidence provided by the authors that down payments have declined over time as one example of a change in capital markets that may have been important. A second change is the role of government programs that contain an insurance component and thereby reduce the need for precautionary saving.

2. Laurence J. Kotlikoff, Avia Spivak, and Lawrence H. Summers, "The Adequacy of Savings," *American Economic Review,* vol. 72 (December 1982), pp. 1056–69.