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United States: Selected Issues

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INTERNATIONAL MONETARY FUND

UNITED STATES OF AMERICA

Selected Issues

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Approved by the Western Hemisphere Department

July 17, 1998

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I. EXPLAINING THE RECENT BEHAVIOR OF INFLATION AND UNEMPLOYMENT[1]

1. Low rates of inflation have been recorded in recent years despite a decline in the unemployment rate to levels that previously would have been associated with rising inflation. Indeed, over the period since 1990, there has been a positive correlation between the inflation rate and the unemployment rate, indicating that more than the traditional Philips curve relationship is at work. This phenomenon could be the result of a series of fortuitous, transitory shocks or of a permanent change in the structure of the economy leading to a lower natural rate of unemployment (NAIRU).

2. In order to evaluate these possibilities, alternative estimates of NAIRU were derived and various Philips curve equations were estimated over the period 1960–93, incorporating variables to reflect price shocks (such as changes in import prices and unit labor costs). The alternative measures of the natural rate and the Philips curve equations were then tested to see how well they forecasted inflation over the period 1994–97. The results suggest that the NAIRU may have fallen slightly, but this change, on its own, is not sufficient to explain recent inflation. The main explanation for recent performance of inflation appears to be that there have been a number of favorable price shocks; in particular, the cost of imports has fallen sharply as the dollar has appreciated.

3. A simple Philips curve equation relating inflation to the unemployment gap (the difference between the actual rate of unemployment and NAIRU) has overpredicted inflation since 1993 (Table 1 and the upper panel of Chart 1). [2] The mean forecast error for the period 1994–97 is greater than zero by an amount equivalent to two-thirds of the standard deviation of the forecast error. Positive errors would appear to be too pervasive to have been the result of random shocks or measurement error.[3]

4. In order to evaluate the extent to which the poor forecast performance of this Philips curve equation can be attributed to changes in the natural rate of unemployment, a simple semistructural model of the NAIRU was estimated.[4] The actual rate of unemployment was

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[1]Prepared by Vincent Hogan.

[2]The inflation variable is the annualized percentage change in the CPI for urban consumers excluding food and energy costs (often referred to as "core" inflation). The NAIRU is assumed constant over the period at 6 percent.

[3]A formal Chow test rejects the hypothesis that the average forecast error is different from zero. However, if the observed forecast errors are truly random draws from a symmetric distribution, the probability that 10 of them are positive is less than 1 out of 1,000.

[4]The model is semi-structural because observed unemployment is regressed on variables that are expected to affect it, but without attempting to identify the underlying behavioral

(continued...)

regressed on a quadratic time trend, several structural, and several cyclical variables. The structural variables included the dependency ratio,[5] an index of minimum wages, and an index of unionization. The cyclical variables included a dummy variable reflecting recessions (as defined by the National Bureau of Economic Research), an index of co-incident indicators of the business cycle, and a variable representing the deviation of capacity utilization from its trend (Table 2).[6] An estimate of the NAIRU was then calculated from the estimated equation by setting the cyclical variables equal to zero.

5. This estimate of the NAIRU is shown in Chart 2, together with the actual level of unemployment and a Holdrick-Prescott filtered unemployment series.[7] As can be seen from the chart, the point estimate of the NAIRU has fallen in recent years to below 6 percent, but the two-standard error band around the point estimate is approximately 1.3 percent. This implies that a 95 percent confidence interval would place the NAIRU in 1997 anywhere between just over 4 percent and just under 7 percent.[8]

6. The estimate of the NAIRU is used to recalculate the unemployment gap and then reestimate the Philips curve. The resulting Philips curve is shown in the second column of Table 1 and in the second panel of Chart 1. If the unemployment rate were to be maintained 1 percentage point above the NAIRU for a year, the inflation rate would fall by one quarter of a percentage point. The second panel of Chart 1 shows the actual and out-of-sample predicted inflation rate for the period 1994–97. It is clear that the reestimated Philips curve still consistently overpredicts the level of inflation.[9] This result is not altogether surprising, given the moderate decline in the estimated NAIRU and the size of the coefficient on the unemployment gap variable in the reestimated Philips curve. These estimates imply that the NAIRU would have had to decline to below 3 percent in order to explain recent inflation.

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[4](...continued)
relationships (i.e., it is a reduced-form equation).

[5]The dependency ratio is calculated as ratio of the dependent population (all those aged 15 and under plus all those aged 65 and over) to the labor force.

[6]Of the structural variables, only the index of unionization was statistically significant.

[7]The Holdrick-Prescott filter is equivalent to regressing actual unemployment on a series of time trends and then taking the fitted values. The idea is that short-run changes are "filtered" out, and what is left is the long-run trend rate of unemployment. This can be thought of as an alternative measure of the NAIRU.

[8]These point and interval estimates are similar to those found in Staiger, Stock, and Watson (1997) and also to those in Gordon (1997).

[9] The Philips curve equation would also systematically overpredict inflation if the Holdrick-Prescott measure of the NAIRU were used instead.

7. Since 1993, the United States has experienced a number of favorable supply shocks (including an appreciation of the U.S. dollar), which have restrained inflation while unemployment has declined. The third column of Table 1 shows the results from a Philips curve equation including supply-shock variables. These shock variables measure changes in the dollar price of imported goods and changes in the real unit cost of labor. The point estimates have the expected signs, and the import price variable is highly significant, but the unit labor cost variable is insignificant at normal significance levels.[10] The equation performs substantially better than those without supply shocks in forecasting inflation over the period 1994–97. The average error of the forecast during this period is close to zero, indicating that this equation does not systematically overpredict inflation. This can also be seen from the third panel of Chart 1, which shows actual inflation and the inflation rate predicted by the equation. Comparing this panel with the first two panels of Chart 1 suggests that the recent favorable U.S. inflation performance has been largely due to falling import prices and not to fundamental structural changes in the economy.

8. Further evidence for this hypothesis can be found by looking at how the price of imports has changed over the last eight years. Chart 3 shows both the level and the rate of change of the relative price of imports (defined as the implicit import price deflator divided by the GDP deflator). This ratio fell more or less consistently until the first quarter of 1994, before remaining relatively constant until the second quarter of 1995. Subsequently, the ratio has fallen sharply, with this fall coinciding with the period during which the traditional Philips curve equations significantly overpredict inflation (Chart 1). Therefore, it is not surprising, that including import price changes in the Philips curve regression improves the predictive power of the equation.

9. It is also worth noting the relative unimportance of the real unit labor cost variable. Some authors[11] have expressed the view that the reason inflation was falling faster than appeared consistent with the historical relationship between unemployment and inflation was that the structure of labor costs had changed. These authors have noted that productivity was rising faster than normal and that nonwage labor costs (such as benefits) were being cut back. The results presented here suggest that these factors have not been critical in explaining recent inflation.

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[10]The changes in the price of imports variable picks up the effect of a change in the value of the U.S. dollar, as well as changes in the foreign currency prices of U.S. imports. The real unit labor cost variable includes changes in wages, benefits, and productivity. These results are similar to those reported by Gordon (1997). He found that import prices had a significant effect on core inflation, but that the deviation of productivity from its trend (which is reflected here in the real unit labor cost variable) did not.

[11]See, for example, Lown and Rich (1997).

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Gordon, Robert, 1997, "The Time-Varying NAIRU and its Implication for Economic Policy," *Journal of Economic Perspectives*, Vol. 11, No. 1, pp. 11–32.

Lown, Cara and Rich, Robert, 1997, "Is There an Inflation Puzzle?," *Federal Reserve Bank of New York Policy Review*, December.

Staiger, Douglas, James Stock, and Mark Watson, 1997, "The NAIRU, Unemployment and Monetary Policy," Journal of Economic Perspectives, Vol. 11, No. 1, pp. 33–49.

Table 1. United States: Estimates of the Philips Curve 1/

(1961 Q2–1993 Q4)

Model	(1) Basic Model	(2) Natural Rate Model	(3) Supply Shocks Model
Lagged inflation	1.016 (0.000)	1.006 (0.000)	1.002 (0.000)
Unemployment gap	-0.246 (0.007)	-0.361 (0.004)	-0.255 (0.033)
Change in real unit labor cost	-	-	0.079 (0.398)
Change in relative price of imports	-	-	0.072 (0.001)
Adjusted R^2	0.755	0.754	0.803
Mean forecast error (Standard deviation)	0.38 (0.58)	0.27 (0.52)	0.002 (0.638)

1/ The table shows the sum of coefficients on four lags of the variables. The statistic in parentheses is the p-value from a Wald Test of the hypothesis that sum of coefficients on the variable is zero. The lower the p-value, the lower the probability that the variable has no effect on inflation. If, for example, the p-value is 0.04, the null hypothesis of zero effect cannot be rejected at the 1 percent significance level, but it can be rejected at the 5 percent significance level.

2/ Rate of change variables are scaled to measure annualized percentage rate of change.

Table 2. United States: NAIRU Equation

(1961 Q2–1997 Q3)

Variable	Coefficient	T-Statistic
Constant	2.6	0.27
Trend	0.13	1.10
Trend^2/1000	-.69	-1.49
Dependency ratio	10.42	0.99
Minimum wage	-0.09	-0.56
Unionization	-25.66	-2.28
Change in co-incident indicators	5.42	1.84
Capacity utilization	-0.23	-14.86
Recession	-0.03	-0.88
Autoregressive error term	0.95	35.59
Adjusted R^2	0.98	

Table 3. United States: Definitions of Variables 1/

Variable	Definition
Capacity utilization	Capacity utilization of all industry.
Coincident indicators	A composite index of coincident indicators.
Dependency Ratio	Population less than 15 years of age , plus the population greater than 65 years of age, all divided by the labor force.
Import prices	Implicit import price deflator from the national accounts, divided by the GDP deflator.
Inflation	Rate of change of CPI for urban consumers excluding the cost of food and energy.
Minimum wage	Minimum wage (dollars per hour) deflated by the CPI for urban consumers.
Unemployment	Civilian unemployment rate.
Unionization	Union membership as a percentage of the civilian labor force.
Recession	Indicator of recession as defined by the National Bureau of Economic Research (NBER)
Real unit labor costs	The unit labor cost of the nonfarm business sector divided by the GDP deflator.

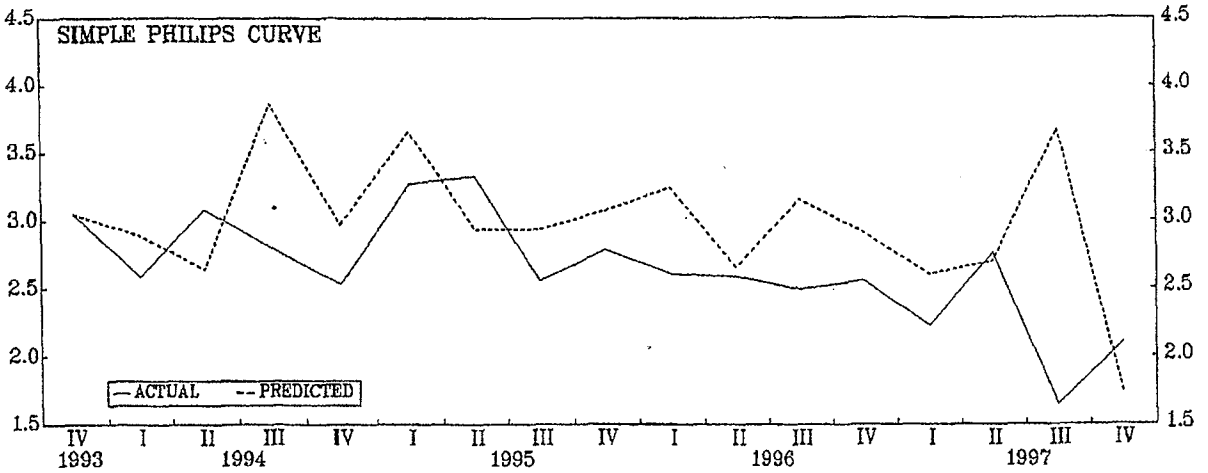
1/ All rates of change are expressed as annual percentage rate of change.

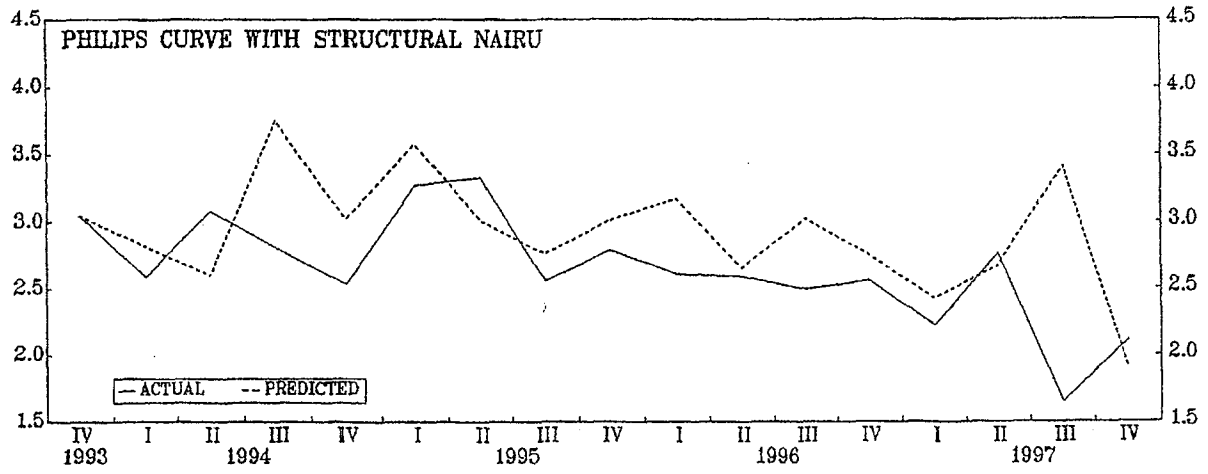
CHART 1

UNITED STATES

ACTUAL AND PREDICTED CORE CPI INFLATION

(In percent)





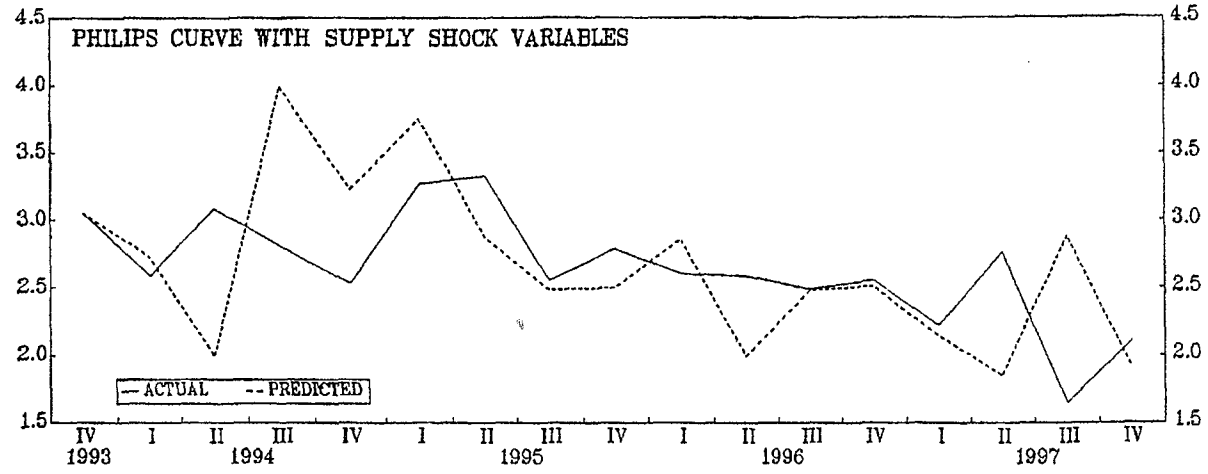


CHART 2

UNITED STATES

ACTUAL UNEMPLOYMENT RATE AND THE NAIRU

(In percent)

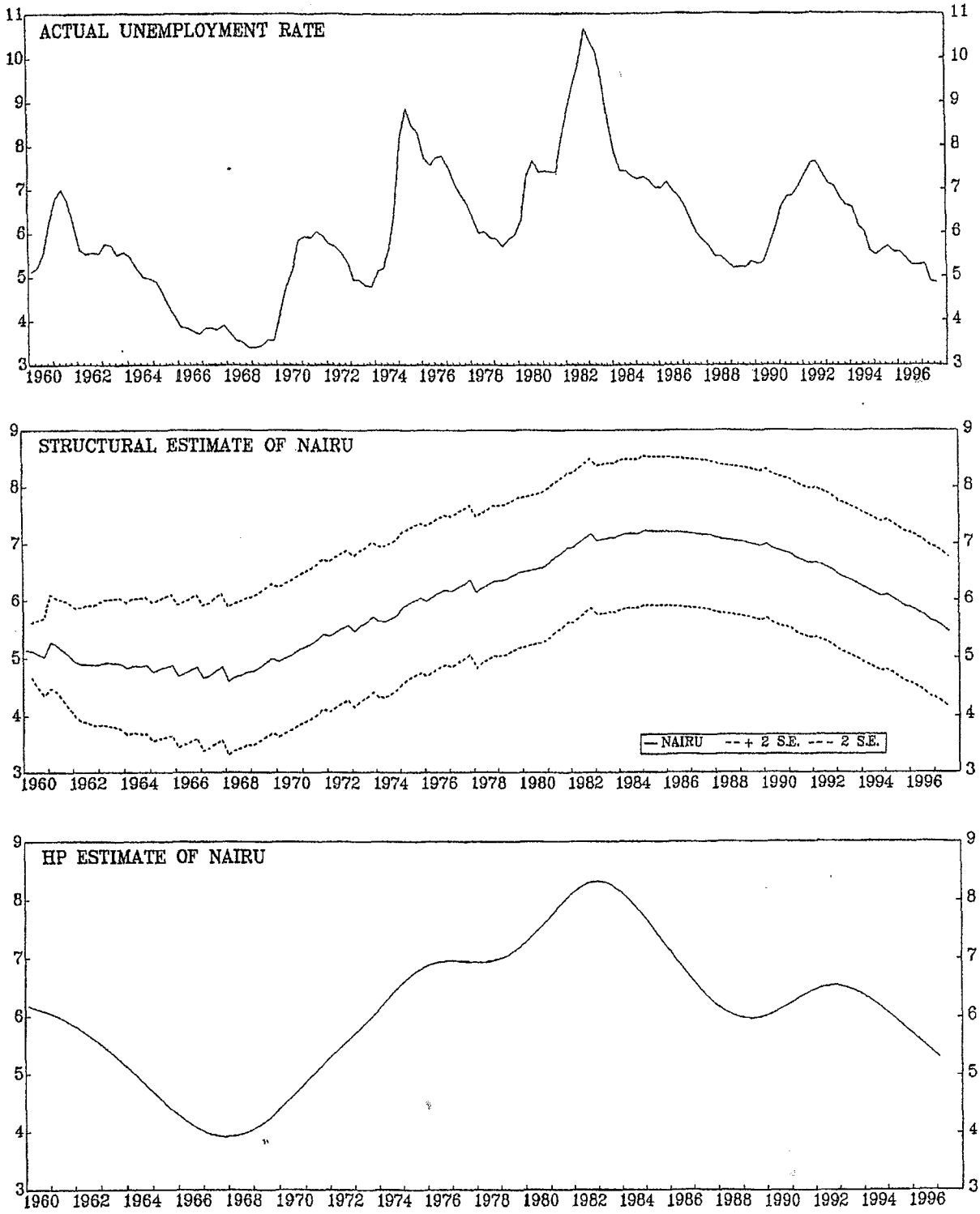
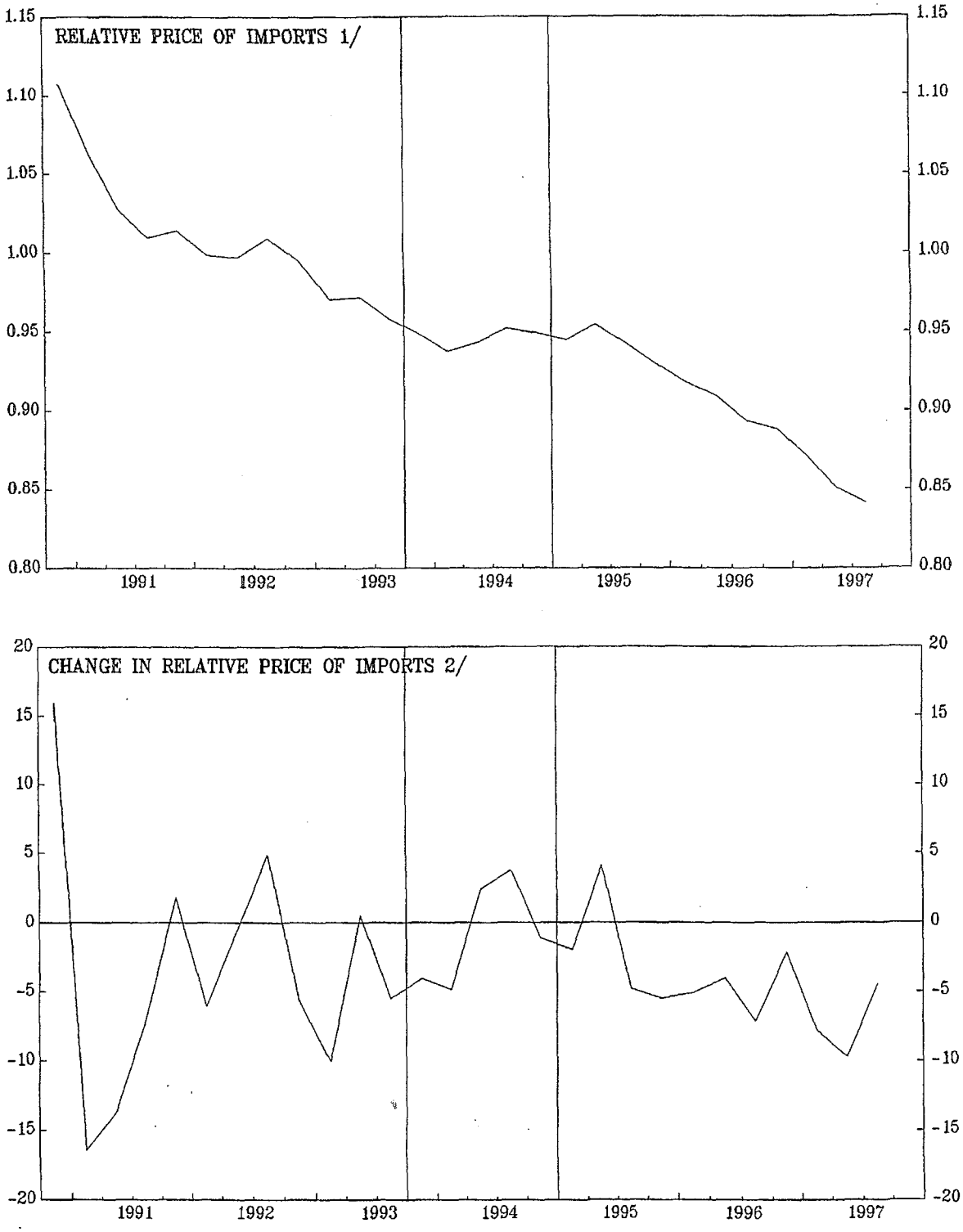


CHART 3

UNITED STATES

THE RELATIVE PRICE OF IMPORTS

(In percent)



1/ Import price deflator divided by GDP deflator.
2/ Annualized percent change.

II. RECENT DEVELOPMENTS IN U.S. STOCK PRICES[1]

1. Over the past three years, stock prices in the United States have risen dramatically, with the S&P 500 index of stock prices increasing at an average rate of around 30 percent a year (Chart 1). As a result, a number of traditional indicators of possible future returns on stocks have moved far out of line with their historical averages, raising a question whether stocks have become overvalued and creating doubts about the sustainability of stock prices. Other analysis, however, suggests that to some extent the rise in equity prices may reflect shifts in asset preferences toward stocks. Hence, it is difficult to say with any degree of confidence that stock prices have moved significantly out of line in relation to their fundamental determinants.

2. Among traditional indicators of stock market performance, price/earnings ratios have recently deviated sharply from their historical averages, suggesting that prices may be overvalued. In particular, the price/earnings ratio for the S&P 500 rose to about 28 in June 1998, compared with an historical average of about 17 (Chart 1).[2] The inverse of the price/earnings ratio (the earnings yield) historically has approximated the average annual real rate of return on stocks. Since the end of the Second World War, the average annual real rate of return on stocks has been around 7 percent, while the comparable real return on risk-free (U.S. government) bonds has been about 1 percent.[3] This results in a premium on equities of roughly 6 percent, which cannot be explained adequately by reasonable estimates of the riskiness of stocks relative to bonds (which in the economic and finance literature is referred to as the equity premium puzzle). In the period since 1970, the average equity premium has declined to around 4 percent, possibly reflecting changes in perceptions about the riskiness of stocks and in attitudes toward risk, as well as declines in barriers to stock holding (including transactions costs), particularly with the proliferation of mutual funds.

3. The current price/earnings ratio of 28 suggests that the long-run average annual real return on stocks would decline to about 3½ percent. With long-term U.S. government bonds yielding a real return of 3 to 4 percent, this suggests that the equity premium would virtually disappear. While some narrowing of the equity premium would be consistent with anecdotal information that investors have moved to diversify their portfolios, it is difficult to believe that

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[1]Prepared by Martin Cerisola and Steven Dunaway.

[2]This average is calculated for the period 1954–98, excluding the higher-inflation subperiod 1970–84. This subperiod is excluded because the price/earnings ratio was biased downward due to high inflation, as earnings were inflated largely reflecting inventory profits.

[3]The return on a risk-free U.S. government bond has been approximated by the yield on a ten-year Treasury bond. The use of long-term yields, rather than short-term ones, aims to match the implicit time horizon that investors have when purchasing stocks.

the equity premium would be eliminated. Therefore, on the basis of this indicator, stock prices seem to be overvalued.

4. The price/earnings ratio also reflects investors' expectations for the growth in company earnings, which can be derived using the capital asset pricing model.[4] Assuming that the expected nominal return on equity capital is around 9¾ percent (equivalent to the interest rate on long-term government bonds plus an equity premium returning to its average since 1970 of 4 percentage points), the current price/earnings ratio for the S&P 500 of 28 suggests that investors expect that earnings growth would be 8 percent in nominal terms and about 5½ percent in real terms.[5] These rates of growth in earnings would substantially exceed their post-Second World War averages of about 6 percent and 3 percent, respectively.[6] Alternatively, investors may be willing to accept a lower rate of return on equity capital (i.e., a lower equity premium). If earnings are expected to grow in line with their historical average, the current price/earnings ratio would suggest that investors have reduced their expected nominal return on equity capital to around 6½ percent, which (given a 5½ percent nominal interest rate on ten-year government bonds) implies that the equity premium has declined to 1 percentage point, substantially below its historical average.[7]

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[4]The CAPM suggests that for a constant dividend payout rate d and a constant rate of growth in earnings per share g:

$$\frac{P}{E}=\frac{d}{(r-g)}$$

where r is the expected return on equity capital.

[5]In the estimates presented here, the dividend payout ratio is assumed to be constant at its post-Second World War average of 0.5.

[6]The average rate of growth of nominal and real earnings per share for the S&P 500 have been comparable to the rates of growth in nominal and real GDP over the post-Second World War period. While earnings per share could grow faster than GDP for some time, they are not likely to do so for an extended period, since this would imply that the capital share of national income would rise (when historically it has been relatively constant over time), unless firms were to continually reduce the number of outstanding shares.

[7]Kennedy et. al. (1998) reaches similar conclusions regarding the possible overvaluation of U.S. stocks based on estimates of implied equity premia and real earnings growth derived from an analysis of the dividend/price ratio (the ratio of per share dividend payments to share prices).

5. Current stock market prices (and the price/earnings ratio) probably reflect some combination of expectations of continued higher than historical growth in earnings and some expected reduction in the equity premium to a level below its historical average. Projected higher earnings growth may reflect expected improvements in productivity, which are anticipated to stem from the adaptation of computer technology and other changes in business practices. Technological innovations might also have reduced the perceived riskiness of stocks and, thereby, reduced the equity premium. However, it is not clear that there has been a marked improvement in productivity, or that the equity premium has declined permanently to a new substantially lower level. In sum, combinations of expected earnings and the level of the equity premium that would be consistent with the current price/earnings ratio of 28 imply substantial deviations from historical experience, suggesting that stocks at present may be overvalued.

6. Another traditional approach to evaluating stock prices involves Tobin's q, the ratio of the market value of firms to the replacement cost of their capital. In 1997, q rose to about 1.2 compared with its historical average of about 0.6 (Chart 2).[8] Tobin's q exhibits a tendency to revert to its mean value, suggesting that stock prices should decline substantially in the period ahead. There are reasons, however, to expect that the equilibrium value of q may have shifted upward in recent years. For example, the value of new technology firms (especially software companies) may depend heavily on the ideas and human capital of their workers and less on their capital stock (hence, their market value would tend to exceed the replacement cost of their fixed capital and q would be greater than 1). Nevertheless, it is difficult to believe that q could be sustained at a level above 1 for an extended period of time.

7. The conclusions from the analysis of the price/earnings ratio and Tobin's q should not be carried too far. Similar analyses undertaken a year ago would have led to similar conclusions about stock prices potentially being overvalued. Meanwhile, in the past year, stock prices have risen by 27 percent. This development might be interpreted as suggesting that the market has moved significantly out of line with the fundamental determinants of stock prices, or it might suggest that there has been a significant shift in fundamentals that would justify a higher price/earnings ratio on a sustained basis.

8. Alternatively, as a means of trying to capture the influence of multiple factors that help to explain developments in stock prices, Kramer (1996) estimated a simple econometric model relating the dividend yield (the ratio of stock dividends to prices) to fundamental financial variables (real interest rates, the slope of the yield curve, and default premia) and to net purchases of mutual funds. This model does a good job of "forecasting" developments in the dividend yield since 1995 (and in forecasting stock prices because dividends have remained relatively constant in value over time). In recent periods, however, net purchases of mutual funds have explained most of the movement in the dividend yield. It is difficult to

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[8]Tobin's q is calculated using balance sheet data for the nonfarm, nonfinancial corporate business sector, as reported in the U.S. flow of funds accounts.

discern whether these shifts in the allocation of portfolios toward stocks reflect a fundamental change in asset preferences, or unreasonable expectations of future returns on stocks based on the very high returns of recent years. Evidence presented by Starr-McCluer (1998) supports the view that the shift in portfolio allocations toward stocks reflects a change in preferences. The paper notes that stock ownership by households through mutual funds and retirement accounts has broadened considerably since 1989, and that survey data indicate that stock-holders mentioned retirement savings as a key reason behind their decisions to increase their investments in stocks.[9]

9. The movements in U.S. stock prices can also be tested for evidence of systematic disturbances, which might suggest the presence of a price bubble, by using a simple variance ratio test. If prices in the stock market, as generally is expected, follow a random walk (the current price is the best forecast of future prices), the variance of the rate of return on stocks held for different time periods should increase in proportion to the length of time that the stock is held. Thus, an important condition for the random walk hypothesis to hold is that the ratio of the variances divided by the length of the holding periods should be equal to one.[10] If, instead, price increases today lead to further price increases in the future, the variance ratio would be statistically significantly greater than one, suggesting the possibility of a price bubble in the market. Table 1 shows variance ratios for various subperiods of the period 1980–98 based on the Dow-Jones Industrial Average. The variance ratio is statistically signifcantly different from one only in the subperiod prior to the stock market crash in October 1987. In the two subperiods after the 1987 crash (through 1995 and through April 1998), the variance ratio does not differ significantly from one. However, a strong conclusion should not be drawn from these results regarding the absence of a price bubble in the stock market. The variance ratio test, while providing some useful information on the behavior of prices, is not a completely reliable indicator of the existence of a price bubble.

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[9]The share of households owning stocks rose from 31.6 percent in 1989 to 40.3 percent in 1995. At the same time, the percentage of stocks held by households in retirement accounts rose from 20.7 percent to 33.3 percent of total stock holdings in the same period.

[10]The formula for the variance ratio is:

$$VR = \frac{var(r_{12})/12}{var(r_1)} = 1$$

where $var(r_{12})$ is the variance of the return for a 12-week holding period, and $var(r_1)$ is the variance of the return for a 1-week holding period.

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Star-McCluer, M., 1998 "Stock Wealth and Consumer Spending." Federal Reserve Board of Governors.

Table 1. Variance Ratio for the Dow-Jones Industrial Average

Period	Base Observations	Holding Period Three-Month 1/
1980-85	311	**1.46** (1.84)
1980-87 2/	404	**1.49** (2.41)*
1987-95 3/	427	**1.25** (0.85)
1987-98 3/	549	**1.22** (0.87)
1980-98	953	**1.30** (1.68)

1/ Based on weekly observations, heteroskedasticity consistent test-statistics reported in parenthesis under the null hypothesis of variance ratio equal to one. The statistics have a standard normal distribution asymptotically. An asterisk denoted rejection of the null hypothesis of a random walk at the 5 percent level of significance.

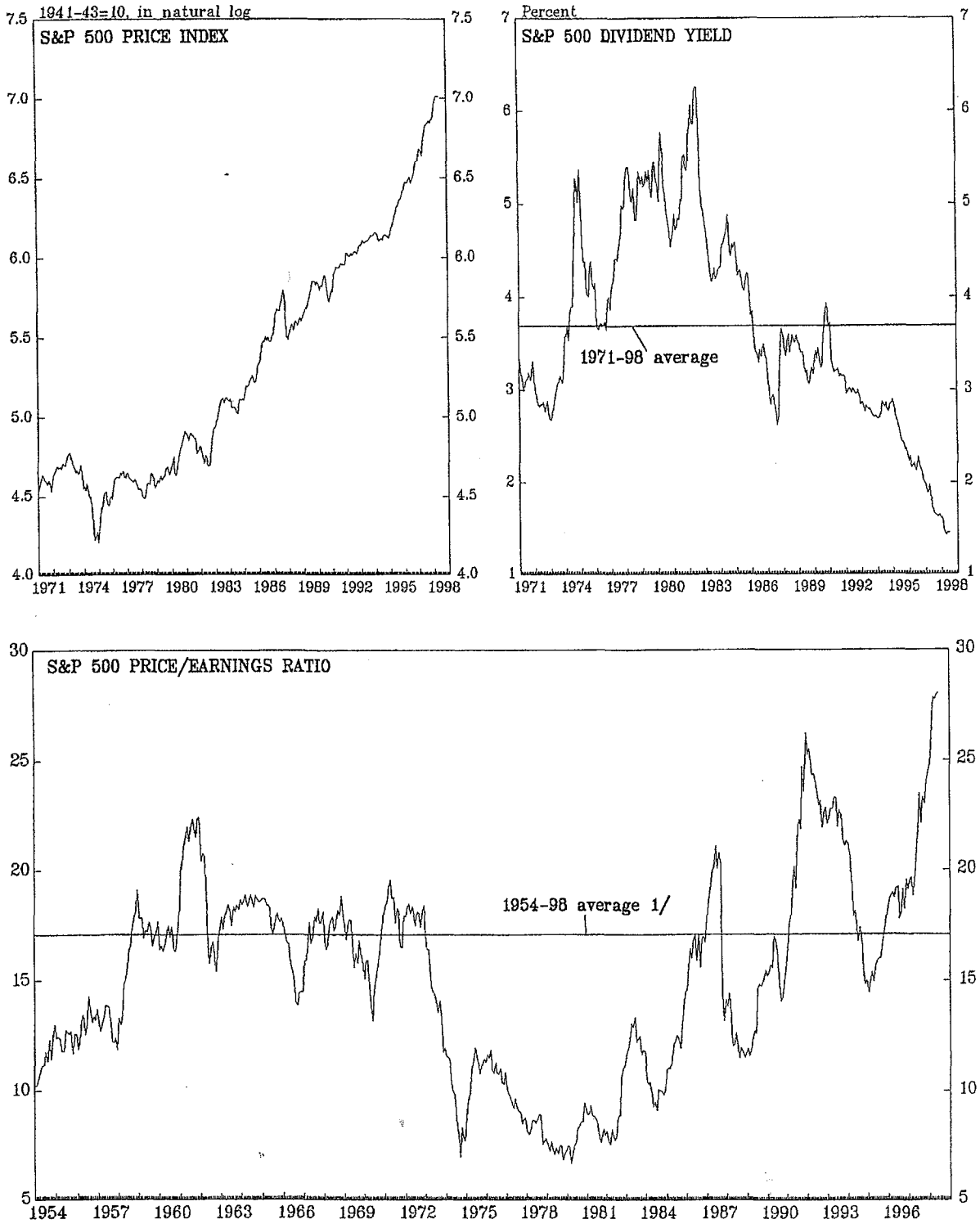
2/ Up to the week of October 16, 1987.

3/ From the week of October 23, 1987.

CHART 1

UNITED STATES

U.S. STOCK MARKET SELECTED INDICATORS



Sources: The Wall Street Journal, Standard & Poor's, a division of McGraw-Hill, and staff estimates.

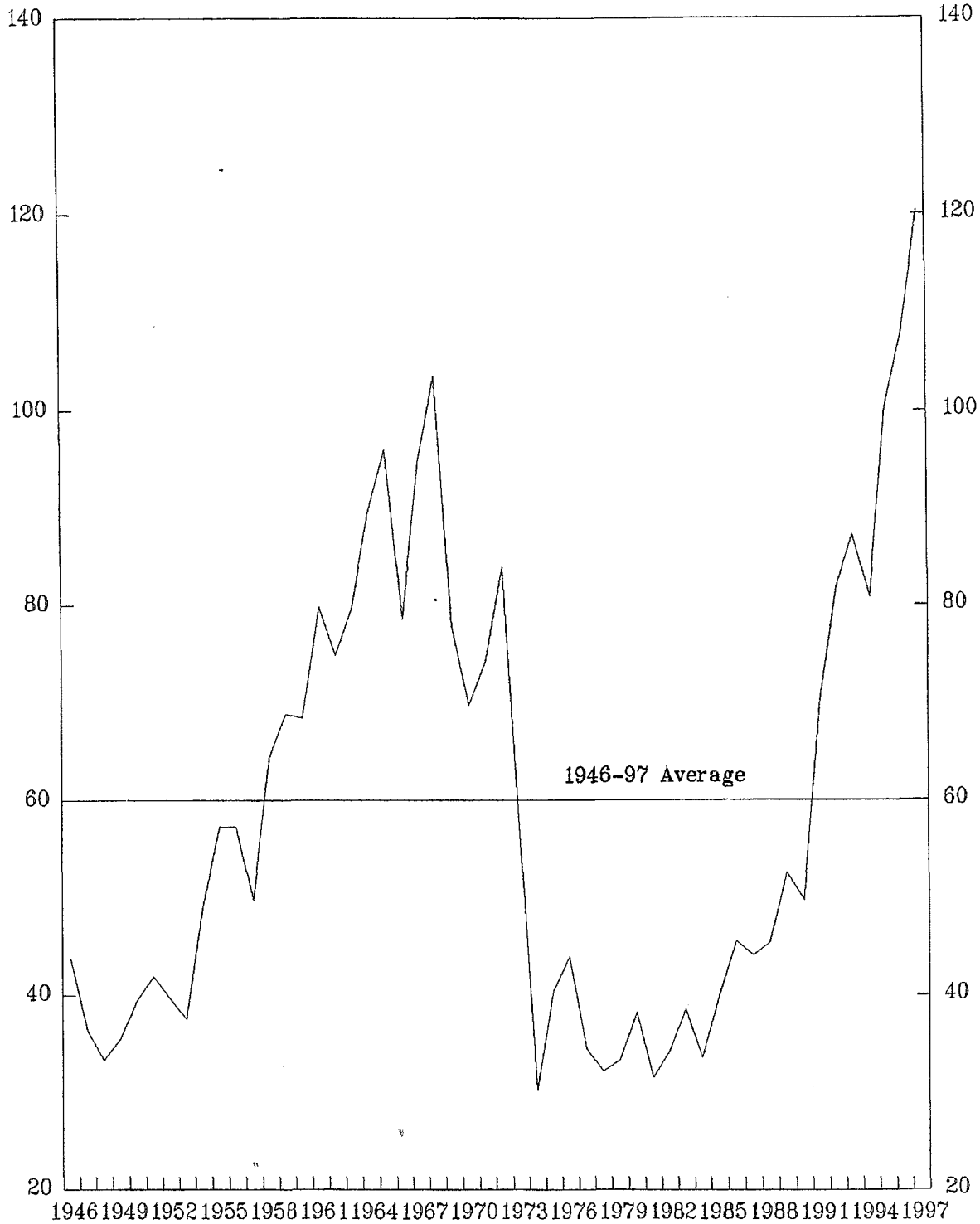
1/ The average P/E ratio for the period is calculated excluding the high-inflation subperiod of 1970-84.

CHART 2

UNITED STATES

TOBIN Q 1/

(In percent)



1/ Based on the balance sheets of the nonfarm nonfinancial corporate business sector as reported by the Federal Reserve's Flow of Funds.

III. A POSTMORTEM ON THE ACHIEVEMENT OF FEDERAL FISCAL BALANCE[1]

1. Since FY 1992, the U.S. unified federal fiscal deficit has been on a steep descent, falling from 4.7 percent of GDP to 0.3 percent in FY 1997 (Chart 1). Moreover, the extent of this fiscal consolidation has been consistently more rapid than expected (Chart 2). Some of the improvement in the fiscal situation is attributable to the strength of the economic recovery since the 1990–91 recession, but policies enacted with the Omnibus Budget Reconciliation Act of 1993 (OBRA93) and subsequent legislation have also been major contributing factors. More specifically, the fiscal consolidation that has taken place since 1992 can be attributed primarily to three factors: (i) significantly less than half of the fiscal improvement was cyclical;[2] (ii) almost half of the improvement in the structural budget deficit[3] was the result of tax increases that raised the structural revenue-to-GDP ratio by an estimated 2 percentage points; and (iii) the remainder of the structural improvement occurred because defense and nondefense discretionary spending were cut by 1½ percentage points and almost ½ percentage point of GDP, respectively.

2. Estimates of the contribution made by the business cycle to the improvement in the federal fiscal deficit can vary significantly, as they depend on the estimated size of the output gap (actual minus potential GDP) and the estimated elasticities of tax revenues and outlays with respect to GDP. In its FY 1999 Budget document, the Administration estimates that 35 percent of the reduction in the budget deficit between FY 1992 and FY 1997 resulted from the cyclical improvement in the economy.[4] The Congressional Budget Office estimates that just under 40 percent of the reduction in the actual budget deficit resulted from the cycle.[5] In order to eliminate one source of uncertainty affecting estimates of the structural balance, identical elasticities were applied to alternative estimates of the U.S. output gap prepared by the IMF staff, the CBO, and the OECD (Chart 3).[6] These estimates show that the lion's share of the reduction in the deficit over the period FY 1992–97 occurred for reasons other than the

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[1]Prepared by Michael Leidy.

[2]Uncertainties in the measurement of the output gap (actual minus potential GDP) and of revenue and outlay elasticities tend to be relatively large, and thus, it is impossible to say precisely how much of the deficit reduction was a result of cyclical improvement in the economy.

[3]The "structural" fiscal balance refers to the fiscal balance that would have resulted had GDP equaled its potential value. In other words, the structural balance eliminates that part of the fiscal balance that is attributable to the state of the business cycle.

[4]FY 1999 Budget of the United States Government: Analytical Perspectives, p. 12.

[5]CBO (1998, p. 109).

[6]For a description of the methodology used in these estimates, see Leidy (1998).

cycle. Based on these estimates, the improvement in the structural balance accounted for between 3.4 and 3.7 percentage points of the total improvement of 4.4 percentage points of GDP.

3. Actual tax revenues and revenues adjusted for cyclical developments (structural revenues) have risen steadily since FY 1992, from 17.8 percent of GDP in FY 1992 to 19.8 percent in FY 1997 (Chart 1).[7] The strength of revenues has largely reflected measures adopted under OBRA93 which caused both personal and corporate income tax revenues to climb (Chart 4).[8] Other revenues, including social insurance taxes and contributions, were essentially unchanged in relation to GDP during the period. The increase in total tax revenues accounts for about 45 percent of the actual deficit reduction since FY 1992. Questions have been raised whether the strength of revenues, particularly in FY 1996 and FY 1997, might be the result of temporary factors including realized capital gains associated with the rising stock market. Of the $106 billion by which the Administration's FY 1998 current services deficit projection exceeded the actual deficit in 1997 (Chart 2, lower right panel), the Council of Economic Advisers (1998, pp. 48–49) estimates that just $20 billion were unanticipated capital gains tax receipts.

4. Outlays adjusted for cyclical developments (structural outlays) also declined, from about 22 percent of GDP in FY 1992 to as low as 20 percent in FY 1997 (Chart 5). The reduction in outlays reflects a relatively steep decline in discretionary spending and comparatively small declines in mandatory spending and interest outlays.[9] Discretionary outlays

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[7]Applying the OECD (1995) estimate of 1.1 for the income elasticity of U.S. federal tax revenues implies that for any deviation of actual from potential GDP of less than 5 percent, other things being equal, the ratio of revenues to GDP remains constant up to one decimal point. Thus any change in actual revenues to GDP up to one decimal point given small changes in GDP relative to potential GDP must reflect a change in structural revenues to GDP.

[8]OBRA93 took a number of steps including raising the top marginal income tax rate on households from 31 percent to 36 percent; imposing a 10 percent surtax on taxable income over $250,000; making personal exemptions a decreasing function of household incomes over $162,700; raising the top marginal corporate tax rate from 34 percent to 35 percent; reducing a number of allowable business expenses; repealing the Medicare health insurance wage base cap; and increasing the taxable portion of social security benefits. For a detailed description of the revenue provisions of OBRA93, see the *Budget of the United States Government, Analytical Perspectives*, Fiscal Year 1995, pp. 36–39.

[9]Most of the government's spending authority is provided by permanent laws (mandatory spending). Mandatory spending includes Social Security, Medicaid, Medicare, and other entitlement programs. Debt service is also provided for under permanent laws but is usually

(continued...)

declined from 8.7 percent of GDP in 1992 to 6.9 percent in 1997, while "Programmatic" mandatory spending[10] fell from 11.2 percent of GDP in FY 1992 to 10.8 percent in FY 1997 (Chart 6).

5. At 8.7 percent of GDP in FY 1992, total discretionary outlays were the lowest they had been since at least World War II, and were significantly lower than the 10 percent level maintained from the mid-1970s through the mid-1980s. During the defense build-up of the early to mid-1980s, nondefense discretionary spending had slowed significantly, declining from 5.2 percent of GDP in 1980 to 3.5 percent in FY 1987. The consolidation in nondefense discretionary spending began to show some signs of reversal between FY 1989 and FY 1993 as it rose to 3.8 percent of GDP in FY 1993; however, nondefense discretionary spending fell to 3.4 percent of GDP in FY 1997.[11] Cuts in defense outlays were the single largest direct contributor to the reduction in discretionary spending as a share of GDP since FY 1992 (Chart 7). Defense spending declined from 4.9 percent of GDP in 1992 to 3.4 percent in FY 1997. This so-called "peace dividend," other things being equal, is 35 percent of the reduction in the actual budget deficit and 41 percent of the staff's estimate of the decline in the structural budget deficit since FY 1992.

6. The reduction in "programmatic" mandatory spending from 11.2 percent of GDP in FY 1992 to 10.8 percent in FY 1997 was a significant reversal of the sharp increase in such spending in the years just prior to 1992 (Chart 6). This reversal, however, is almost entirely the result of a decline in income security outlays (Chart 7), largely attributable to a cyclical drop in unemployment compensation of almost ½ percent of GDP from 1992 to 1997.[12] At the same time, Medicare outlays continued their steady upward climb, from 1.9 percent of

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[9](...continued)
treated separately from other elements of mandatory spending. Discretionary spending is authorized annually through appropriations legislation and includes such items as defense, transportation, energy and water development, administration of justice, agriculture, veterans affairs, and international affairs.

[10]"Programmatic" mandatory spending refers to mandatory spending, less undistributed offsetting receipts, including from the sale of government assets. Included are Social Security outlays, net outlays for deposit insurance, outlays for means-tested entitlements, and other mandatory outlays.

[11]The capacity to maintain control over this category of spending appears to be largely attributable to the statutory spending caps established under OBRA93.

[12]Income security includes general retirement and disability; federal employee retirement and disability; unemployment compensation; food and nutrition assistance; Supplemental Security Income; Family and other support assistance; the earned income tax credit; housing assistance; and offsetting receipts.

GDP in 1992 to 2.4 percent in 1997, while Social Security outlays were roughly stable at 4½ percent of GDP over the same period. Total programmatic mandatory spending on a cyclically adjusted basis was stabilized at about 10¾ percent of GDP from FY 1992 to FY 1997.

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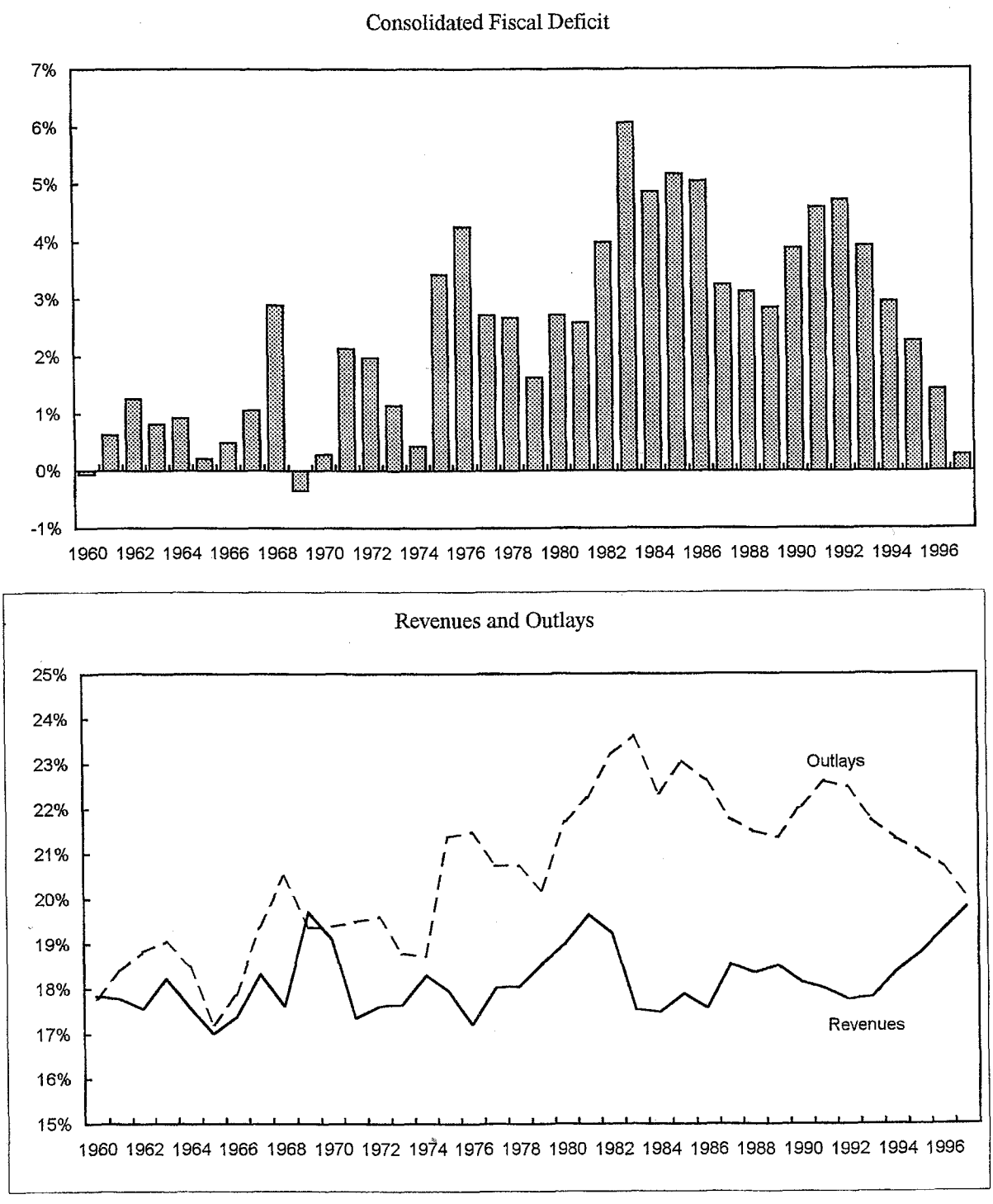
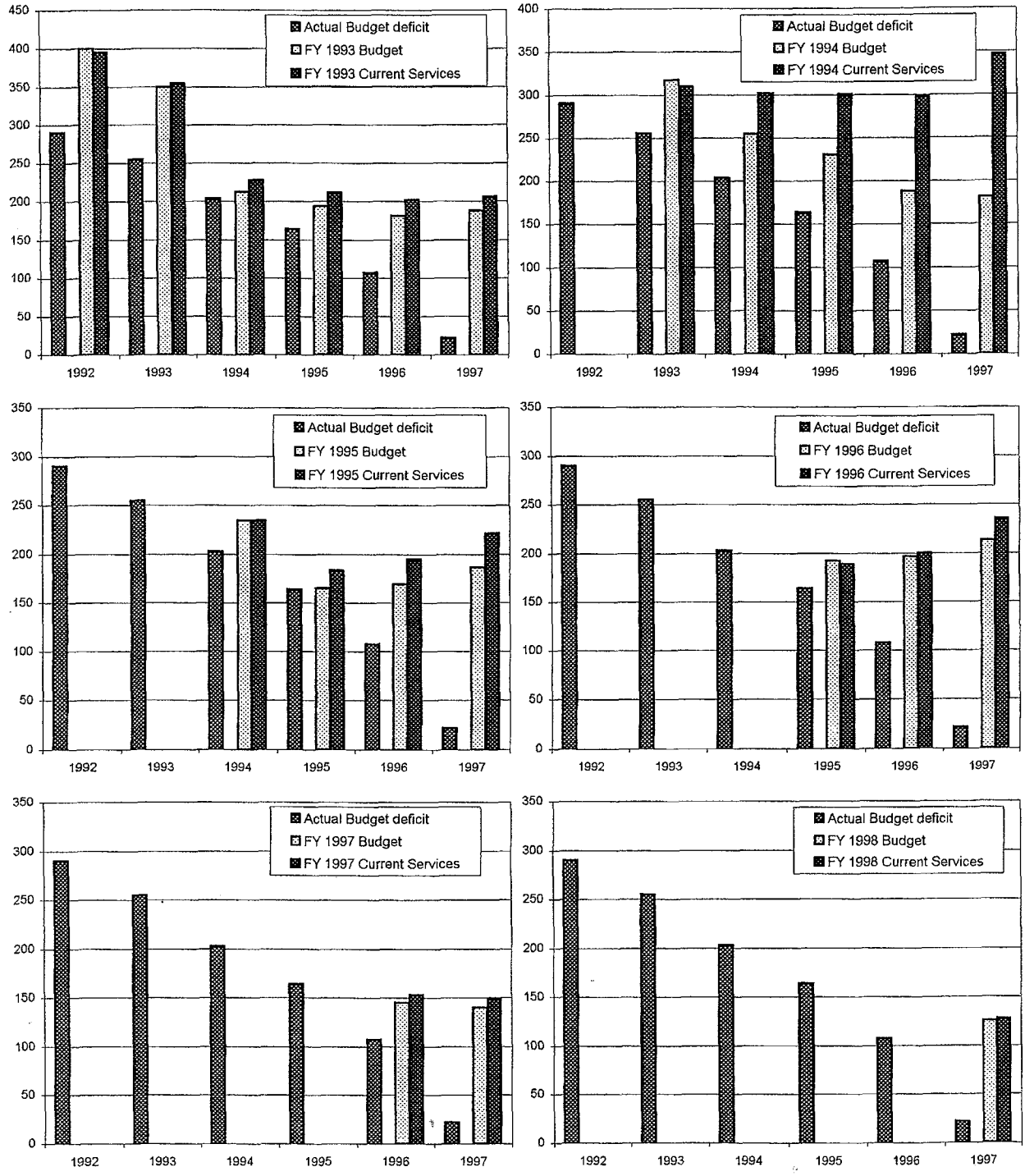
Chart 1. United States: Federal Government Fiscal Balance
(In percent, fiscal year)



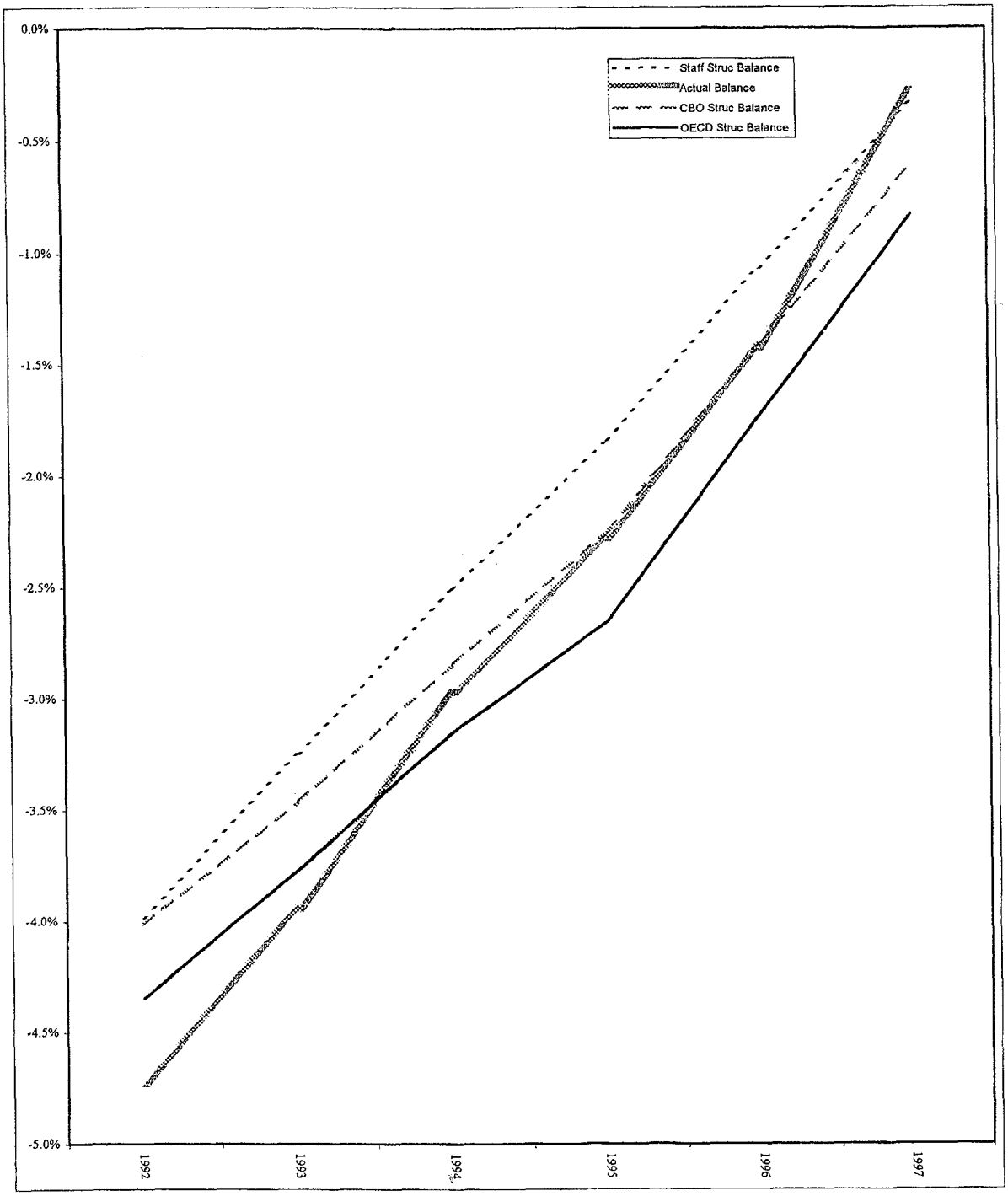
Source: Historical Tables, Budget of the United States Government, Fiscal Year 1999.

Chart 2. United States: Unified Fiscal Deficit: Actual vs. Projections under Current Services and Budget Measures
(In billions of current dollars, fiscal year)



Sources: Budget of the United States Government, various issues, FY 1993-1998.

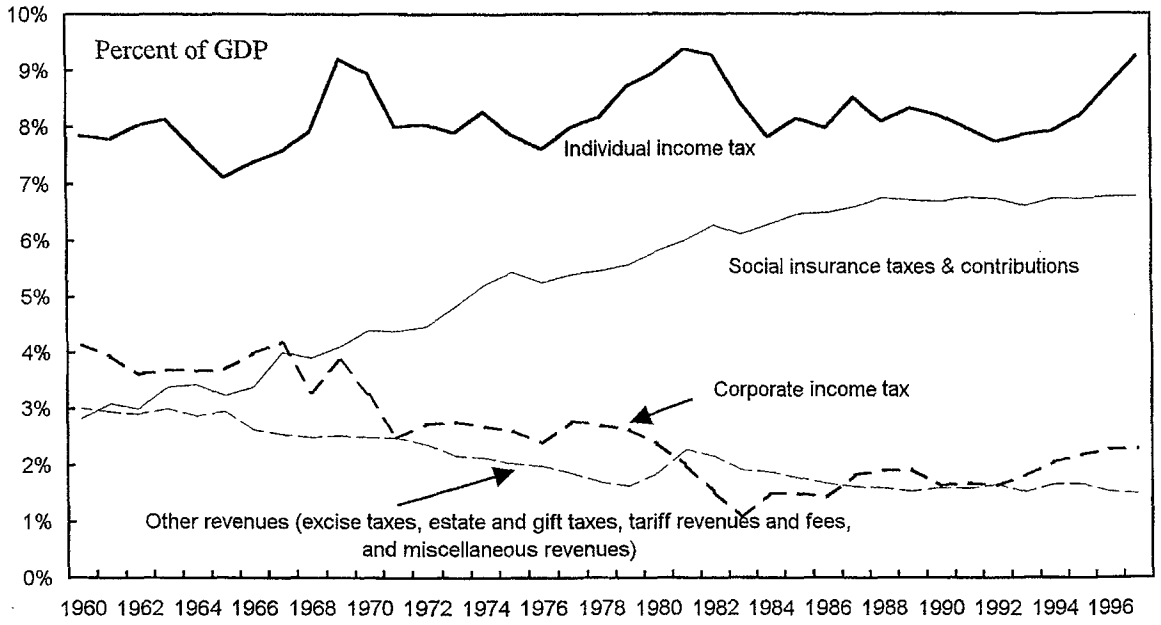
Chart 3. United States: Actual vs Estimated Structural Federal Fiscal Balance(s) 1/
(In percent of actual/potential GDP)

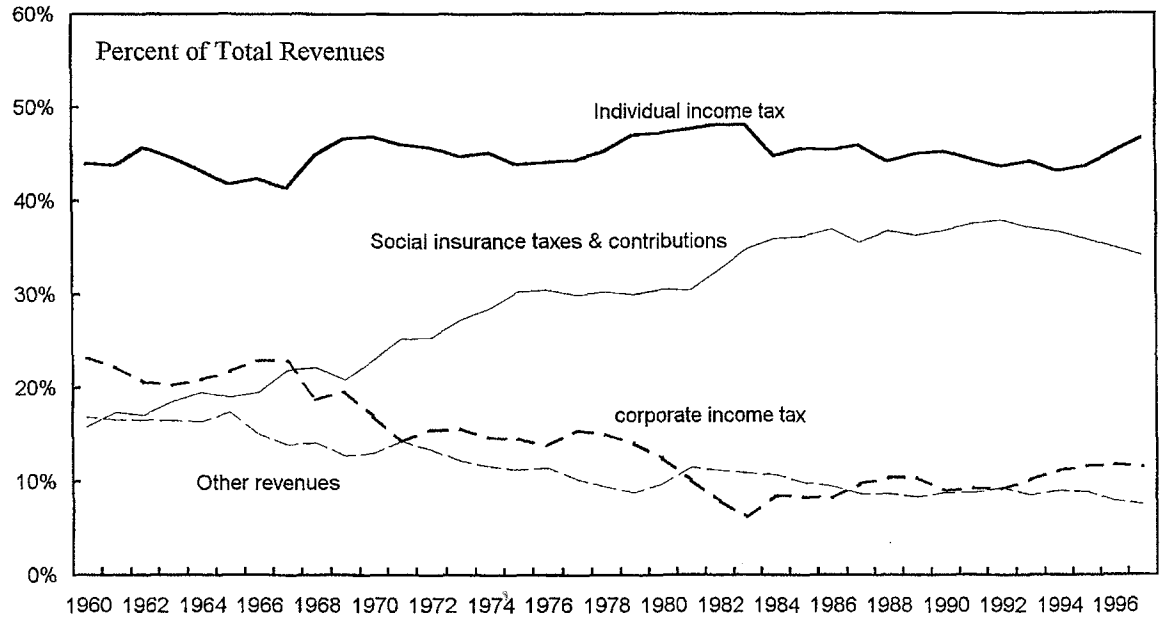


Sources: Giorno, Claude, Pete Richardson, Deborah Roseveare, and Paul van den Noord, (OECD, 1995), Congressional Budget Office (1998), and Fund staff estimates.

1/ Structural balances are obtained by applying OECD estimates of U.S. revenue and outlay elasticities to staff, CBO, and OECD estimates of the output gap from 1992-97. The elasticities applied are 1.1 percent and -0.2 percent for revenues and outlays, respectively.

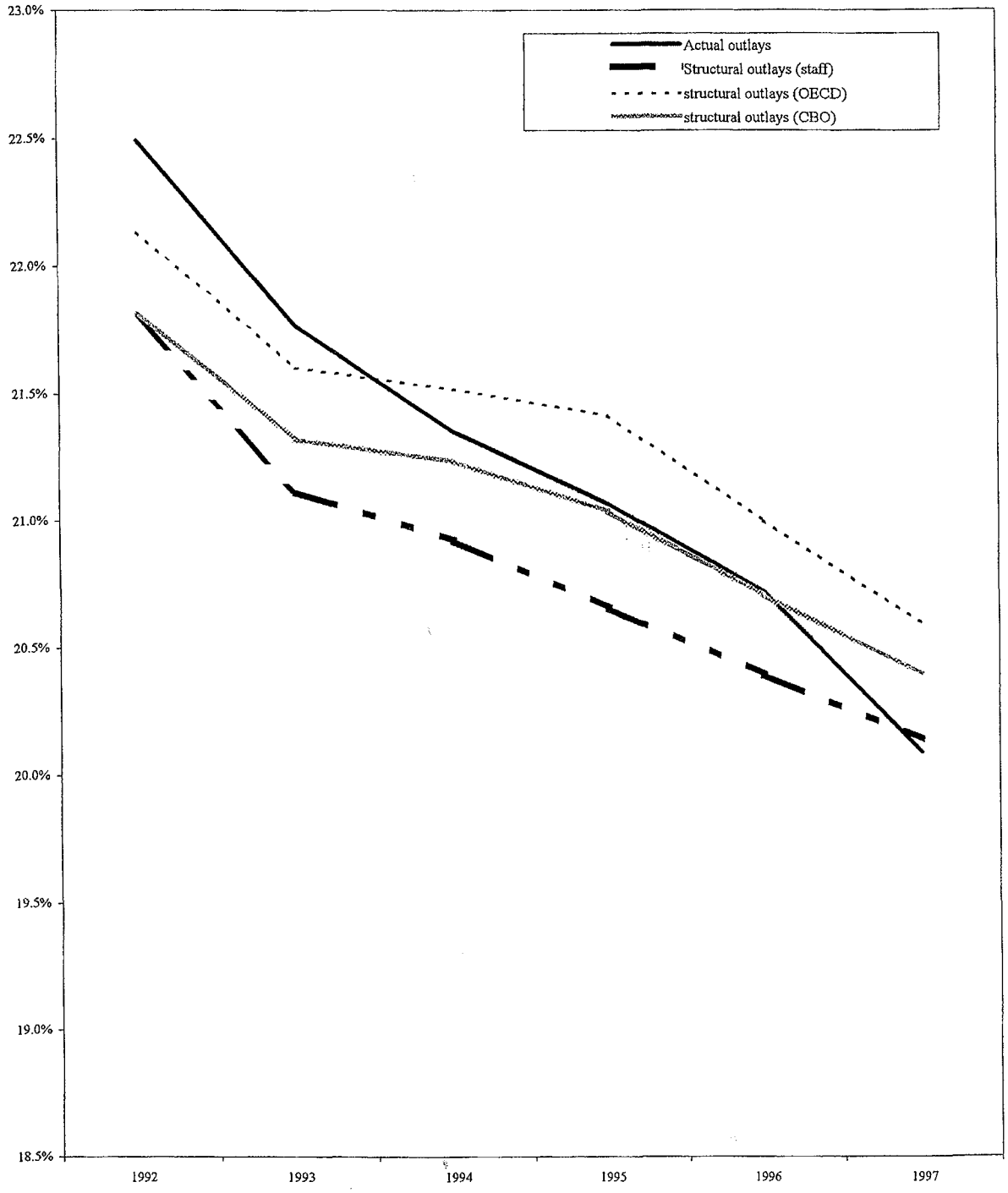
Chart 4. United States: Revenue Trends
(In percent)





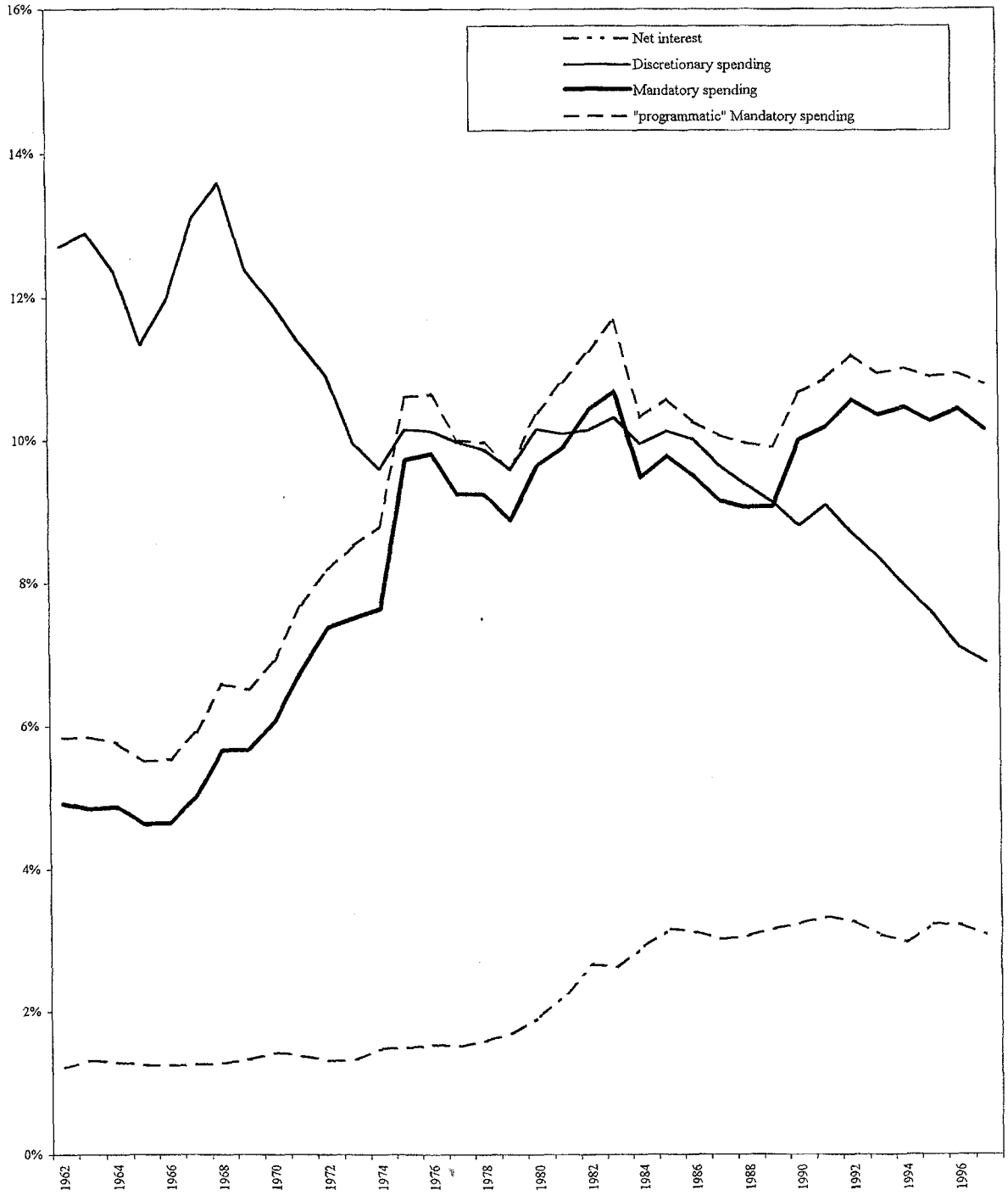
Source: Historical Tables, Budget of the United States Government, Fiscal Year 1999.

Chart 5. United States: Actual and Estimated Structural Federal Outlays
(In percent of actual/potential GDP)



Sources: Giorno, Claude, Pete Richardson, Deborah Roseveare, and Paul van den Noord, (OECD, 1995), Congressional Budget Office (1998), and Fund staff estimates.

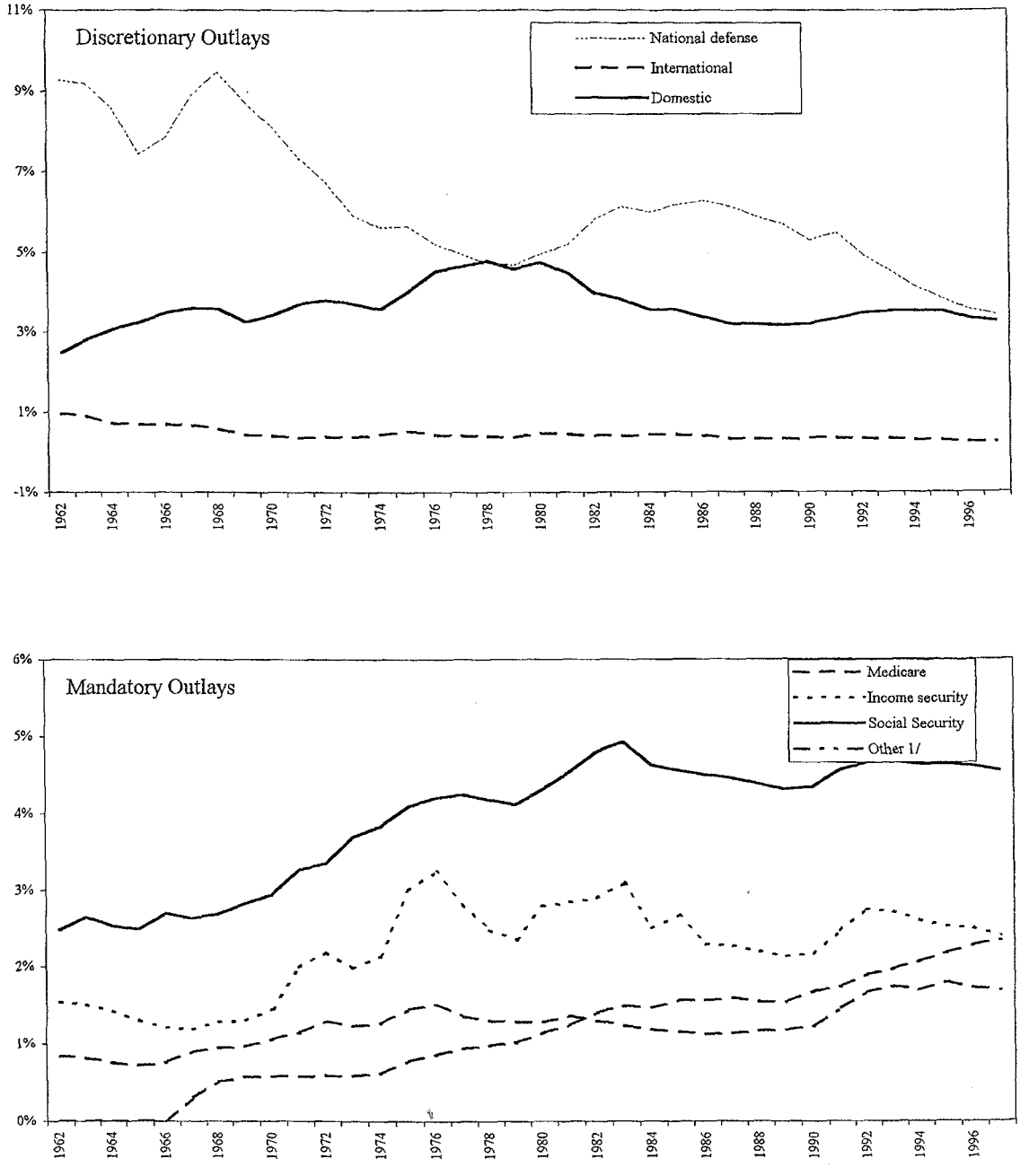
Chart 6. United States: Manadatory, Discretionary, and Net Interest Outlays
(In percent of GDP)



Source: Historical Tables, Budget of the United States Government, Fiscal Year 1999.

1/ "Programmatic" mandatory spending refers to mandatory spending, less undistributed offsetting receipts, including from the sale of government assets.

Chart 7. United States: The Composition of Outlays
(In percent of GDP)



Sources: Historical Tables, Budget of the United States Government, Fiscal Year 1999.

1/ Includes education, training, employment, social services, Medicaid, and veterans benefits and services.

IV. CONSIDERATIONS IN REFORMING THE U.S. INCOME TAX[1]

1. The complexity and lack of transparency in the U.S. income tax system, along with the disincentives for saving that it creates, have prompted a public debate in recent years on various reform proposals.[2] The Tax Reform Act of 1986 significantly improved the structure of the U.S. personal income tax system by reducing marginal tax rates on personal income and eliminating many tax deductions and income exclusions ("tax shelters"). However, these steps toward greater efficiency, simplicity, and transparency have been largely undone over the past decade, reflecting steps taken to consolidate the fiscal position, or the introduction of new tax incentives to promote specific economic or social objectives. This paper reviews economic considerations arising from three possible approaches to reform that are commonly proposed: simplification of the income tax system along the lines of the 1986 tax reform; a shift from income to consumption taxation via a value-added tax; and a flat income tax.

2. Compliance costs under the current income tax are estimated to be substantial owing in large part to the system's complexity. Such costs include the value of personal time spent on tax matters and expenditures on tax planning and preparation services. Slemrod and Bakija (1996) estimate that the personal and corporate income tax systems impose a compliance cost of about $75 billion (1 percent of GDP or just under 10 cents per dollar raised). They estimate that the total compliance cost of the personal income tax was $50 billion in 1995, based on an estimate of $42 billion for the value of time spent complying with tax rules and $8 billion in direct expenditures, such as payments to tax preparers. For the corporate income tax, they calculate that the value of time spent in tax compliance amounted to $20 billion plus an additional $5 billion to account for the administrative costs of the Internal Revenue Service (IRS).

3. Complexity and nontransparency of the income tax system also give rise to, and may result from, rent-seeking activities.[3] Because complexity and nontransparency tend to facilitate successful lobbying by interest groups, the current tax system imposes higher rent-seeking costs than would be associated with a simpler, more transparent system. Indeed, every time the tax code undergoes a revision that favors an interest group, a signal is sent out that the tax code is up for renegotiation which, in turn, can be expected to stimulate further rent-seeking behavior. A credible commitment to maintain a simple and transparent tax system would help to contain rent seeking by reducing its expected payoff.

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[1]Prepared by Michael Leidy and Stephen Tokarick.

[2]In recognition of the complexity of the income tax system, the U.S. House of Representatives in June 1998 passed the *Tax Code Termination Act* which would sunset the entire income tax code by 2003, but only if Congress has acted by then to adopt a new system.

[3]"Rent seeking" refers to the activities of interest groups to influence legislation (or political directives) supportive of member incomes.

4. In addition to the issues that arise from the complexity of the tax system, the income tax creates a saving disincentive by subjecting investment income to the personal income tax, which effectively increases the relative price of future consumption by reducing the return to saving. The tax also does not adjust the measurement of capital income for inflation, which has the effect of raising effective marginal tax rates applied to real capital income. Moreover, corporate income taxation can exacerbate the disincentive to save by reducing the return to investment. In attempting to measure the costs imposed by these factors, however, it is important to note that the effect of changes in the net-of-tax return to saving on total saving is theoretically ambiguous because of income and substitution effects that work in opposite directions. While many economists believe that the tax system imposes a serious cost by discouraging saving, empirical studies generally have been unable to establish a strong link between saving behavior and changes in after-tax rates of return.[4]

A. Simplification of the Current Income Tax System

5. Modifying the present income tax system without changing its basic structure could substantially reduce compliance costs and reduce the disincentives to save. Such revisions, along the lines of the 1986 reform, would focus on reducing marginal tax rates and broadening the tax base through the elimination of deductions and credits.[5] The cost of eliminating deductions and credits, however, may be a rise in inequity between rich and poor (vertical equity) and across individuals with similar incomes (horizontal equity). One reason for the existence of many deductions and credits is that they might, in principle, make the tax system fairer by adapting it to the particular needs and circumstances of individuals. Such equity considerations might be better addressed through government spending programs rather than indirectly through the tax system.

6. Altig *et al.* (1997) use a general equilibrium model to calculate the likely economic effects of reforming the income tax in a way that produces a "clean base," by eliminating many of the existing deductions and credits and taxing wage and capital income at a single (uniform) rate.[6] They find that making these improvements to the current tax system could raise the long-run level of output by 5 percent and increase both labor supply and the capital stock. The results of their simulations show, however, that reform of this type leaves lower-income

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[4]Bernheim (1996) surveys of a number of studies that examine this issue.

[5]One obstacle to tax reform is that many of the provisions in the existing tax code have been capitalized into asset prices (e.g., the mortgage interest deduction) and cannot be removed without inflicting serious losses.

[6]The simulations hold government spending and revenues constant. Tax rates fall as the base is widened.

groups worse off, as these groups tend to benefit more from the system of deductions and credits under the current system.

B. Shifting to Consumption-Based Taxes

7. Alternatively, the federal tax base in the United States might be shifted from income to consumption, and thereby eliminate saving disincentives associated with the income tax, by switching to a value-added tax.[7] A broad-based VAT with a single rate would achieve a high degree of efficiency and simplicity. Nevertheless, as a practical matter, the United States would have to adopt a federal VAT in the context of an array of state and local retail sales taxes.[8] These retail sales taxes vary extensively by rates, exempt traders (e.g., certain service providers, charitable, religious, and educational institutions), and exempt or zero-rated items. The imposition of a federal VAT on top of state and local retail sales taxes could result in relatively high compliance costs. Traders would face separate registration requirements, separate tax forms with some items taxed only under state retail sales taxes and others taxed only under the federal VAT, multiple tax rates (owing to differences across local, state and federal rates, and within each system), different rules for settlement with the tax authorities, and the like. The resulting complexity of the overall tax scheme and the associated compliance burden would seriously undermine a principle strength of the VAT.[9] In principle, this problem could be overcome by harmonization of state and local retail sales taxes and the federal VAT, so that each would cover the same set of goods and services, include the same exemptions (if any), and apply the same rates. However, harmonization is not likely to be a realistic option. Retail sales taxes are a major source of revenue for state and local governments and they would be expected to resist strongly the loss in sovereignty that harmonization would entail.[10]

8. Replacing the income tax system with a VAT would likely result in a significant reduction in the overall progressivity of the federal tax system. A uniform VAT applied to all goods and services with no exemptions or zero-rated items is not a progressive tax, and indeed is regressive if higher-income households are net savers and/or lower-income

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[7]For reviews of the literature on value-added taxes see IMF (1995). Tait (1988) and Shah and Towe (1995) present a brief history of recent VAT proposals in the United States.

[8]Currently, only Alaska, Delaware, Montana, New Hampshire, and Oregon have no general broad-based retail sales taxes in place.

[9]McLure (1987a, p. 154) concludes that a joint system of independent state retail sales taxes and a federal VAT should be eliminated from serious consideration.

[10]The case of Canada is instructive in this regard, where efforts to harmonize provincial sales taxes with the federal VAT (the goods and services tax) have resulted so far in just three provinces reaching agreement.

households are net borrowers. Attempts to achieve progressivity through exemptions, zero-rated items (e.g., food, clothing, and footwear), and multiple rates would cause significantly greater complexity, higher administrative costs, tax evasion, and distorted relative prices, in part defeating the purpose of introducing the VAT in the first place.

9. Moreover, the imposition of a VAT, because it would be fully reflected in retail prices, implies that accumulated financial assets would be subject to full federal taxation for a second time, since under the current tax system the portion of income that is saved has already been subject to taxation. Thus, those households that elected to save under the current system would be penalized relative to similarly situated households that chose not to save. This problem could in principle be alleviated through a system of VAT rebates to compensate households with accumulated financial assets during a transition period.[11] However, this solution would significantly complicate tax administration and create new opportunities for evasion. It might also raise objections on equity grounds because it implies favorable treatment for wealthy households.

C. A Flat Income Tax

10. A flat income tax, along the lines proposed by Hall and Rabushka (1995),[12] offers a way of reforming the income tax system that would provide the benefits of a consumption-based tax system, while avoiding the problems involved in trying to harmonize a federal VAT with state and local retail sales taxes.[13] Specifically, the Hall-Rabushka approach attains the simplicity and efficiency of a clean VAT without the problem of regressivity and without penalizing past savers. In the Hall-Rabushka system, the tax base for business income is sales revenue less payments to all suppliers (both of intermediate inputs and capital goods), workers, and retirees. All wages, salaries, and pensions are then taxed directly at the household level at the same flat rate as that applied to businesses with no deductions or special tax

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[11]Alternatively, Slemrod and Bakija (1996, p. 82–83) in describing such "transitional equity" problems, suggest that elderly people (the group with the most accumulated financial assets) might be granted an exemption from the sales tax, perhaps by way of an elderly "exemption card." They point out, however, that "the elderly exemption card would be valuable indeed. One can imagine making sure your elderly parents buy your next car for you ..."

[12]Hall and Rabushka are senior fellows at Stanford University's Hoover Institution, and Hall is also a professor of economics at Stanford.

[13]The Hall-Rabushka flat tax is in fact equivalent to a pure consumption tax with one rate, and no exemptions or zero-rated items. As Hall and Rabushka (1995, p. 70) explain, "a tax on income with an exemption for saving is in effect a tax on consumption." McLure (1987, p. 89) observes more specifically that the Hall-Rabushka flat tax is "a particularly ingenious version of the naive subtraction-method VAT."

credits. While there is no deduction for household saving, saving is effectively eliminated from the tax base since all capital expenditures by businesses are fully expensed. Progressivity in the application of this flat tax is achieved without appreciably complicating the tax system by establishing a "family allowance" and taxing only income that exceeds this threshold.[14] However, the extent to which progressivity under the Hall-Rabushka flat tax can be adjusted to suit alternative views of fairness, without undermining the system, is limited to what can be achieved by changing the family allowance and/or the flat tax rate. Attempting to increase progressivity by introducing graduated rates is not recommended because it would significantly undermine the efficiency and simplicity of the system.[15]

11. Unlike the VAT, the Hall-Rabushka flat tax does not raise the transitional equity problem associated with the taxation of the existing stock of financial wealth because it captures only the flow of consumption from current income. Adoption of a Hall-Rabushka flat tax does, however, raise a number of transitional issues. Among these, capital gains that were unrealized during the pre-reform period would remain free of taxes after the adoption of the tax. A significant transitional equity issue also would be raised by the elimination of the household mortgage interest deduction which would entail a significant rise in taxes paid by mortgage holders and a potential decline in the value of real estate.[16] Moreover, difficult transition problems could arise in conjunction with the change in corporate taxation. Firms are likely to demand transition rules for the phase-out of existing tax credits and exemptions, although this tendency might be mitigated by the right to expense capital expenditures fully under the Hall-Rabushka plan. It seems likely that the transition from the current income tax system to a flat tax would be complex and drawn out, diminishing the advantages of shifting to the system and potentially raising a barrier to its enactment.

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[14]Under Hall and Rabushka's 1995 proposal, a 19 percent flat tax combined with a family allowance of $25,500 for a family of four was estimated to achieve a revenue-neutral replacement of the current system of individual and corporate income taxes.

[15]Hall and Rabushka (1995, p. 60) point out that taxation of business income at the source is merely a means of taxing income that accrues to the owners of businesses. Taxing business income at the source, however, has the advantage of greater simplicity and reduced opportunities for leakage through tax evasion, since there are far fewer businesses to monitor than households with business-related income. It is possible to tax the business income that ultimately accrues to households at the source under the Hall-Rabushka system because only one rate applies, the common flat tax. A system of graduated rates, on the other hand, would require that business income be taxed at the destination (since the tax rate would be destination specific), with all of the implied complexity, tax administration and enforcement costs, and greater leakage from the tax base associated with destination-based taxation.

[16]In 1997, the deductibility of mortgage interest on owner-occupied homes was the single largest tax expenditure totaling $49 billion (0.6 percent of GDP).

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V. ALTERNATIVE APPROACHES TO SOCIAL SECURITY REFORM[1]

1. The *1998 Trustees' Report on the Social Security System* describes the long-term financing prospects of the system. Without changes in Social Security payroll taxes (contributions) or benefits, the cash flow of the system will shift to a deficit in 2021 (the system is currently running a surplus of about $89 billion a year or 1.1 percent of GDP), and the assets of the system will likely be depleted in 2032. At that time, the system will be unable to meet fully its obligations to retirees. This long-term financial imbalance reflects the large demographic change that will occur when the baby-boom generation begins to retire around the year 2010; increases in life expectancy; and fairly constant fertility rates. To deal with these financing problems, the recent Advisory Commission on Social Security, along with many prominent economists, have suggested reforms ranging from small changes in the parameters of the existing system to more far-reaching changes, including privatization. This paper reviews alternative approaches to Social Security reform. While each approach has some desirable features, none is unambiguously superior to any of the others. On balance, owing to potential difficulties in the transition to a new system and the uncertain response of savers to far-reaching reforms, making small changes to the parameters of the existing system may be the preferred option.

A. Modifying the Existing System

2. One approach to reforming the Social Security system would retain the basic features of the current system, but alter some of its parameters—payroll taxes, benefits, and/or the retirement age. The 1998 Trustees' Report estimated that over the next 75 years, the system's imbalance between income and expenditure could be eliminated through measures on either the revenue or benefit side equivalent to a payroll tax increase of about 2¼ percentage points, provided these changes were enacted soon.

3. To solve the system's financial problems by raising payroll taxes alone would not be desirable. An increase in the payroll tax has the effect of reducing the net-of-tax wage, which could induce individuals to reduce the amount of time spent working. The magnitude of this effect will depend on the elasticity of labor supply with respect to after-tax real wages. Most empirical estimates of this elasticity fall well below unity, suggesting that the effect would not be large.[2] Feldstein (1996) maintains, however, that the payroll tax is more distortionary than is usually thought, because Social Security forces individuals to accept a rate of return on their

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[1]Prepared by Vincent Hogan and Stephen Tokarick.

[2]Pencavel (1987) surveys the empirical literature on labor supply elasticities.

contributions that is far below the estimated real before-tax return on capital.[3] He argues that in addition to reducing hours worked, the payroll tax distorts occupational choice, location of work, work effort, and the form in which individuals choose to receive compensation (providing an incentive to receive compensation as untaxed fringe benefits). Taking these factors into account, Feldstein estimates that the deadweight loss from the Social Security tax is about 2.4 percent of the tax base, equivalent to about 1 percent of GDP.[4] However, the disincentives to work may be considerably mitigated to the extent that the payroll tax for Social Security is considered to be a pension contribution or payment for the insurance that Social Security provides against poverty in old age, which is available only to those that actually work.[5]

4. Alternatively, benefits could be cut to deal with the long-term financial imbalance in the Social Security system.[6] The level of pension benefits could be cut directly or indirectly by altering the earnings-based formulae for computing benefits or by providing for less-than-full indexation of benefits. In addition, the normal retirement age could be increased.[7] In cutting

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[3]Feldstein (1996, p. 3) estimates that the real pretax rate of return on nonfinancial corporate capital averaged 9.3 percent over the period from 1960 to 1995, while the return on Social Security contributions averaged 2.6 percent over the same period. However, this calculation of the return on Social Security contributions is biased downward. Social Security has served a welfare function directed at reducing poverty among the elderly, as well as being a pension plan. If this welfare function had been handled separately from Social Security, the return on contributions would have been higher, but tax rates would have also been higher to fund the welfare aspects of the system.

[4]See Feldstein (1996, p. 5). He also notes that the payroll tax increases the deadweight loss from the personal income tax by as much as 50 percent because it is imposed on top of federal and state income taxes.

[5]Social Security provides insurance against the possibility that individuals will deplete their accumulated savings by living longer than anticipated. Valdivia (1997) finds that a government pension program can significantly raise welfare by providing insurance against this outcome.

[6]To give an order of the magnitudes involved, Diamond (1995) estimates the size of the benefit cut needed to restore actuarial balance to the Social Security system as a function of when the cuts are enacted. He found that if benefits for those reaching age 62 in 2002 or later are cut, then a reduction in benefits of around 20 percent is needed. If the benefit reduction is postponed until 2012, then a reduction of about 26 percent would be required. If the benefit cut is delayed until 2022, it would rise to over 33 percent.

[7]Under legislation enacted in 1983, the retirement age is scheduled to rise gradually in steps from its current level of 65 to 67.

benefits, care would have to be taken to ensure that the success that the program has had in reducing old-age poverty is not undone.

5. Diamond (1996) asserts that the effect of raising the retirement age on benefit outlays may be offset by an increase in disability payments, as there would be a greater incentive to apply for disability benefits, which are not subject to age-related reductions. Rust (1997) notes that raising the retirement age may engender other federal outlays to provide the additional training and health care benefits that may be needed to extend the average working life. Gruber and Wise (1998) report evidence that Social Security provisions have contributed to a decline in labor force participation of older workers, reducing the productive capacity of the labor force.

6. While the details of the actions that should be taken to address the financial problems of Social Security need to be worked out carefully in light of these and other considerations, if actions are adopted soon the magnitude of the problem is such that a combination of a relatively small increase in the payroll tax and reductions in benefits would be sufficient to restore the long-term financial viability of the system. Such a combination of measures would not likely seriously undermine work incentives or risk contributing to an increase in elderly poverty.

B. Fully Funding the System

7. Making small changes to Social Security entails partial funding of the current, defined-benefit system, since net assets are allowed initially to build up to meet, at least part of future obligations. In this way, the burden of dealing with the long-term financing problems of the current system can be spread across generations. Whether this partial funding of Social Security results in an increase in national saving depends on the response of individuals. Faced with an increase in mandatory savings through the Social Security system, individuals may simply reduce other types of savings. Leidy (1997) points out that national savings could decline with the implementation of a credible plan to meet Social Security's needs because concerns that the system would not be able to meet its future obligations (which may be boosting private savings at present) would diminish.

8. While making small changes to the parameters of the existing Social Security system addresses the demographic problem associated with the aging of the baby-boom population, at the end of the day (i.e., in 2070), it would leave the system on a pay-as-you-go basis, and as such it would remain vulnerable to future demographic shocks. To deal with this problem, the existing defined-benefit system could be shifted to a fully funded basis (i.e., the assets of the system would be built up until they are equivalent to the present value of future obligations). The necessary increases in contribution rates (or cuts in benefits) to fully fund the system would increase national savings to the extent that individuals do not reduce their other savings (as discussed above). Because these increases are larger than those required to keep the

system on a pay-as-you-go basis, national savings would be expected to rise by more, which would stimulate significant increases in the capital stock and output.[8]

9. In the end, it is not clear whether the social welfare gains from removing demographic effects on the current defined-benefit system and raising national saving are sufficient to offset the additional substantial up-front cost of moving to a fully funded system. Mitchell and Zeldes (1996) point out that the cost of transition is likely to offset much of the increase in savings resulting from a shift to a funded system.[9] They also note that the increase in capital formation reported in simulations by Feldstein (1997) is largely due to his assumption that fiscal policy changes to finance the shift to a fully funded system, and this effect is independent of a decision on how to address the long-term financial problems of Social Security. Kotlikoff (1996) shows that the welfare effects of a shift to a fully funded system are very sensitive to the method chosen to finance the transition. For example, if a consumption tax is used, the change can benefit all generations. Alternatively, if an income tax is used then early generations will loose.[10]

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[8]Kotlikoff (1996) finds that a shift to a fully funded system can generate substantial increases in output, capital stock, and real wages. He estimates that the gains could be sufficient to finance a 4 percent increase in annual consumption. These simulations, however, are likely to overstate the beneficial effect of a shift to a funded system on savings since they do no reflect the potential substitution of mandatory savings through the Social Security system for other types of personal savings.

[9]Establishing a fully funded system is expected to increase total savings by an amount roughly equal to the present value of one generation's pensions. However, in transition, the system will incur a liability equal to the value of the transitional generation's pensions. This liability will be of the same order of magnitude as the increase in savings, thus giving a net change in savings of approximately zero.

[10]Kotlikoff (1996) also finds that the capital stock rises, despite the cost of transition, because individuals increase their total savings in response to the higher return which is assumed to be offered by a fully funded system. For such an increase in returns on retirement savings to occur, it has to be assumed that the shift to full funding will be accompanied by a change in the system from a defined benefit to a defined contribution pension plan and that the assets accumulated by the fully funded plan will be invested in private securities. Moreover, the interest elasticity of savings with respect to expected returns is a crucial parameter in these simulations. Kotlikoff (1996) appears to assume that the substitution effect from a higher returns on savings would outweigh the income effect, so the elasticity is significantly greater than zero. If a value closer to zero was assumed, then the switch to a funded system would generated less of an increase in private savings and would have a correspondingly smaller effect on capital formation and growth.

10. If small changes were made to the parameters of the existing Social Security system or if a fully funded approach were adopted, the system would build up a large stock of assets in the early decades of the next century. It is argued that investing these assets in private securities could significantly raise returns and provide resources to meet the system's long-term funding needs. Feldstein (1997) estimates that over the last four decades, the real return on private investments has averaged a bit more than 9 percent, while the return on contributions to the Social Security system is currently about 1.5 percent. Therefore, he concludes that Social Security forces workers to save inefficiently, which would argue at a minimum for investment of the system's assets in private securities. Leidy (1997) demonstrates, however, that, in the absence of an increase in national saving, investing Social Security assets in private securities simply involves a reallocation of financial assets. Shifting trust fund assets to private securities requires an offsetting adjustment in the structure of private portfolios, which would tend to be more heavily invested in lower-yielding government bonds. Thus, while the average return on Social Security assets would rise (and the longer-term financing needs of the system might be met), the average return on other private assets would decline. Funding the system in this manner would be equivalent to levying a tax on current wealth holders.

C. Privatization

11. Once consideration is given to moving to investing in private securities, a more fundamental question arises as to whether Social Security should be privatized. Privatization refers to an increase in the degree of private sector involvement in the provision of Social Security.[11] This could be accomplished by crediting individual contributions to personal accounts rather than to the account of the system as a whole, and by providing individuals with some degree of control over how these funds are invested. The establishment of individual accounts would mean that Social Security would become, at least in part, a defined contribution system rather than a defined benefit system as it is now.

12. Proponents of privatization cite a number of advantages to adopting a plan with individual accounts that are privately managed. Mitchell and Zeldes (1996) note that moving to a private system reduces the risk that future retirees' benefits will be altered by congressional action, pointing out that the government has made changes to the tax and benefit structure of Social Security in the past. Feldstein (1997) maintains that a large and growing publicly owned or managed retirement fund could weaken the resolve of government to reduce its

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[11]Under any of the various privatization schemes proposed, the government would remain involved in Social Security. Participation in the system would continue to be compulsory; its operation would be regulated; and the government would continue to provide minimum benefits in an effort to guard against poverty among the elderly.

budget deficit, since the retirement fund's assets could be used to finance the budget. Consequently, national savings could be reduced, hurting future growth prospects.[12]

13. It is also argued that public managers investing Social Security funds in private securities might be subject to political interference. This problem could be addressed by having the government invest the funds in a passive way, for example, by holding a portfolio that would replicate the stock market's overall performance. However, the large size of the funds to be invested might affect market outcomes, and it might be difficult to invest in a diversified portfolio without the government holding a major stake in some companies. In addition, it can be argued that a mandate to replicate the performance of broad market indices could undermine effective resource allocation. Feldstein (1997) suggests that one of the virtues of a privately managed system is that private fund managers have an incentive to outperform the market, by investing in companies that perform well and selling shares in enterprises that perform poorly. Nevertheless, actual historical experience indicates that, on average, activist fund managers do not do as well as the market.

14. An important argument in favor of maintaining a public system is that a private system would have difficulty in dealing with the problem of annuities. Typically, the most desirable form in which to receive retirement income is an annuity, which provides a given level of income until death. A private system may have difficulty in converting the savings accumulated in the personal pension accounts into an annuity when individuals retire. Problems of adverse selection arise because individuals who have longer life expectancies would be more inclined to purchase annuities. As Diamond (1996) notes, no country has successfully organized a well-functioning annuity market and individuals who have chosen to purchase annuities have done so at high prices.

15. According to Diamond (1998), another important advantage of a publicly managed system is that it would likely entail lower administrative costs, compared with a privately managed system. Administrative costs for the privatized system in Chile are estimated to be 3 percent of the wage bill, which are higher than the approximately 1 percent of the wage bill it costs to administer Social Security in the United States. Mitchell and Zeldes (1996) suggest that these extra costs may be justified to the extent that private plans provide a wider range of services than Social Security. They argue that an arrangement, whereby individuals with different preferences can select the portfolio that is best for them, would be inherently superior to the current Social Security system. However, the choice of potential portfolios may need to be restricted in order to ensure that individuals invest prudently. If so, then the opportunity for product differentiation in the management of private funds could be limited. The primary vehicle for investing government-mandated pension contributions would be indexed funds, which would tend to be similar.

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[12]Feldstein's criticism could apply equally to a highly regulated system of privately managed accounts. For example, private fund managers could be obliged by law or regulation to invest a portion of their clients' Social Security contributions in government bonds.

16. In Chile, the type of investment that can be undertaken with the individually owned and privately managed retirement funds is limited by regulators. Diamond (1998) suggests that the extra costs associated with the private management of the Chilean system may not result in substantial benefits for workers. For example, private providers of retirement funds and annuities incur advertising costs in an attempt to differentiate what may be essentially standardized products.

17. Diamond (1998) also points out that a publicly managed collective fund has the advantage of being able to spread the risk of market declines across different generations by borrowing or lending across time. For example, if current retirees were unfortunate and retired when stock prices were low, a publicly managed fund could subsidize their pensions, incurring a liability which could be paid by future retirees who retire when prices are high. This kind of risk sharing is obviously open to abuse, but it is a form of risk sharing that only the public sector can undertake because private agents cannot write contracts with unborn generations.[13] A downside of this approach is that it breaks the link between individuals' contributions and their benefits. This may be a price worth paying, however, for the increased insurance that would be provided against adverse market outcomes which could occur.

18. Proponents of private ownership maintain that the creation of individual accounts would reduce disincentives to work by making the system more transparent. With individual accounts, the link between an individual's contributions and benefits becomes direct and obvious. With a publicly owned system, the link is not as strong or clear.[14] Thus, the work disincentives of a privatized system would be less than under a publicly owned system. The counter argument is that a system of individually owned accounts would substantially weaken the redistribution in favor of low-wage workers that is a feature of the current Social Security System. In order to address this issue and to provide a secure, stable benefit to retirees, all privatization plans include a minimum benefit. However, once an element of redistribution is introduced into the system, an element of taxation also is necessarily introduced. The link between total contributions and total benefits is broken (at least at the margin), and disincentive effects reappear. It is not immediately obvious, therefore, that the taxation element, and the associated work disincentives, would be lower in the case of a privatized system than in the case of the current system.

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[13]In other words, the government can diversify away some of the systematic market risk whereas the private market cannot, by definition. The Canadian Government recently promised to offset any gains or losses in the value of the pension fund due to unexpected market movements in precisely this manner. See Heller (1998) and James (1998) for a detailed discussion of these issues.

[14]There is still some linkage, since under the current system pensions are determined by a formula which relates benefits to lifetime earnings.

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VI. LONG-TERM PROSPECTS FOR THE U.S. CURRENT ACCOUNT BALANCE[1]

1. The persistence of external current account deficits in the 1980s led to a shift in the international investment position of the United States from a substantial net asset to a net liability position, and with continuing current account deficits being registered in the 1990s, the net liability position has grown rapidly. The appreciation of the U.S. dollar since mid-1995, together with the effects of the financial crisis in Asia, is contributing to a substantial widening in the current account deficit in 1998.

2. This situation has given rise to concerns that if deficits of the magnitude expected in 1998 persist, at some point in the next few years a disruptive adjustment in the current account might occur. Such an adjustment could be prompted by a sharp decline in the value of the dollar, as foreign investors become less willing to continue to accumulate substantial amounts of dollar-denominated assets. Also, given the current "low" level of private saving and the aging of the U.S. population, concerns have been expressed that, over the longer term, national saving in the United States may not be sufficient to meet domestic investment needs without continuing heavy reliance on foreign saving (i.e., large external current account deficits). In such circumstances, the exchange rate of the dollar would be expected to remain under downward pressure in real terms and real interest rates would be high, holding down investment and growth.

3. The concerns about the longer-term sustainability of the U.S. external current account position are often illustrated by simulations derived from partial-equilibrium models of U.S. international transactions. Such simulations, based on an assumption of a constant real effective value of the U.S. dollar at its current level, show growing imbalances in the U.S. external position over the long term and the need for a sizable real depreciation of the dollar to bring the current account back to a sustainable position.

4. A broader assessment of the long-term prospects for the U.S. current account derived using a general equilibrium model of the world economy, such as the IMF's multicountry model (MULTIMOD), provides a somewhat different picture. In particular, scenarios using MULTIMOD were developed to look at the implications for the U.S. current account of population aging, alternative fiscal policy rules, and the behavior of private saving and investment. These scenarios suggest that, under a long-term fiscal policy rule that provides for a solution to the financing needs of Social Security and Medicare while maintaining balance in the rest of the budget, deficits in the U.S. current account would decline gradually, and the current account would move to a small surplus in the longer term. World demographic trends would also contribute to an improvement in the U.S. external position, because the U.S. population is expected to age less rapidly than the population in other industrial countries. Under these circumstances, the U.S. dollar would depreciate in real terms on the order of 10–15 percent over the medium term, before appreciating slowly over the long term. The

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[1]Prepared by Martin Cerisola, Hamid Faruqee, and Yutong Li.

scenarios suggest that U.S. private saving would stabilize as a ratio to GDP, following a decline through the early years of the next century, and then gradually rise, exceeding private investment over the long term. The general conclusion from this analysis is that, provided that appropriate macroeconomic policies continue to be pursued, the longer-term current account position of the United States is expected to strengthen significantly, while the expected real depreciation of the U.S. dollar and the reduction in the external imbalance in the medium term are likely to be orderly.

A. Simulations from a Partial-Equilibrium Model

5. A simulation based on a simple econometric model of the current account illustrates the concern that the external position of the United States is not sustainable over the long term (Table 1). Assuming that the real effective value of the dollar remains unchanged at its current level, the U.S. current account deficit is expected to rise from slightly less than 2 percent of GDP in 1997 to around 2¾ percent in 1998 and remain at that level through 2003. Subsequently, the deficit would rise sharply, reaching roughly 7 percent of GDP after 2020.[2] The steady rise in the deficit over this period is primarily driven by increasing debt service on a growing net international debt position; by the middle of the next century, net foreign debt would rise to more than 150 percent of GDP, compared with 15 percent at present.

6. It is easy to draw the conclusion from this scenario that a significant improvement in U.S. competitiveness would be needed over the medium term in order to achieve a sustainable external position. The model suggests that a 40–45 percent real depreciation of the U.S. dollar between 1998 and 2003 would be required to balance the current account by 2003. However, with a real depreciation of this magnitude, the current account would shift into growing surpluses after 2003, and the U.S. dollar would need to appreciate in real terms to maintain the external position in rough balance. The cumulative real depreciation that would keep the external current account in balance by 2020 would be around 20–25 percent.

7. The gloomy picture for the current account deficit that emerges from the simulation of the simple current account model reflects a significant difference in the long-run income elasticity of U.S. exports relative to U.S. imports. In the model used for the simulation, an income elasticity of 1.3 was estimated for exports, while one of 2.2 was estimated for imports.[3] The

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[2]In the period after 2050, the current account deficit improves somewhat in relation to GDP. Import growth slows, as the growth of GNP declines because an increasing share of domestic output (GDP) in the United States is being transferred abroad to service external debt, leaving less income available for domestic consumption.

[3]These elasticity estimates are based on annual data for the period 1968–97 in the case of exports and 1961–97 in the case of imports. Hooper (1998) reports long-run income

(continued...)

effect of this difference in income elasticities is offset to some extent in the scenario because GDP growth in U.S. trading partners is assumed to exceed that in the United States by roughly 1¼ percentage points, which is roughly in line with the historical average for this differential. The faster rate of GDP growth in U.S. trading partners primarily reflects the growth of developing countries. Over the long run, it would be expected that the income elasticities of U.S. exports and imports would converge, as well as the growth rates of the United States and its trading partners. Such a convergence of income elasticities over time would significantly improve the outlook for the U.S. external position.

8. The large size of the real depreciation of the dollar needed to bring the current account into balance reflects an estimated inelastic response of import volume to the change in relative prices in the model. While the price elasticity of export volume is slightly greater than one, the import price elasticity is somewhat less than one half.[4] Also, the size of the potential move in the real exchange rate is overstated by a partial-equilibrium model like the one used here. The real exchange rate in this model bears all of the burden of adjustment, whereas, in the context of a more complete model of the world economy, interest rates would adjust as well to help equilibrate the external position. Moreover, the role of other key factors, such as economic policy developments (particularly fiscal policy) and demographics, in determining the path of the current account over the long term is not captured in a partial-equilibrium model.

B. A Multicountry Model

9. To examine more comprehensively the interaction between developments in the United States and those in the rest of the world, long-term prospects for the U.S. external position were assessed using a version of MULTIMOD. Illustrative scenarios were generated using the model over the period to 2070.

10. In the version of MULTIMOD used for this analysis, the world is divided into four areas: the United States; other industrial countries; developing countries that are net creditors; and developing countries that are net debtors. The model is also modified to capture the expected effects of population aging in the United States and other industrial countries. The macroeconomic implications of population aging are likely to be manifested in several ways. On the supply side, the resultant slowdown in growth of the labor force could have implications for the growth and level of aggregate production and gross capital formation. On the demand side, to the extent that consumption patterns vary over individuals' lifetimes, a changing age structure of the population will affect the saving propensity in the overall economy.

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[3](...continued)
elasticities for U.S. exports and imports of 0.8 and 1.8, respectively.

[4]Hooper (1998) reports long-run price elasticities for U.S. exports and imports of 1.5 and 0.3, respectively.

Based on World Bank projections, the total dependency ratio[5] is expected to increase by around 17 percentage points in the United States and 24 percentage points in other industrial countries over the next half century.[6] This trend mainly reflects the relative increase in the number of elderly, stemming from increases in life expectancy and declines in fertility rates.

11. To illustrate the potential effects of changing demographics on key macroeconomic variables, Table 2 presents panel estimates for 21 industrial countries relating saving, investment, and the current account to the dependency ratio. The pooled estimates suggest that a rise in the dependency ratio (*DEM*) relative to that in other countries tends to lower a particular country's saving-investment balance as a share of GDP, reflecting a fall in domestic saving that would exceed a decline in investment. Based on the projected increase in dependency ratios, the long-run distributional and aggregate implications of population aging on saving-investment balances for the United States and other industrial countries are shown in Table 3. In spite of the rise in its dependency ratio in the period after 2010, the U.S. saving-investment balance (and its counterpart, the current account balance) is expected to improve in the long run, given the faster rise in the dependency ratio in other industrial countries.[7] The results from these panel estimates were incorporated in the simulation version of MULTIMOD.

12. In the main scenarios developed in MULTIMOD, U.S. fiscal policy was assumed to aim at ensuring the long-term actuarial balance of Medicare and Social Security, while maintaining balance in the remainder of the budget (referred to here as the "central" fiscal policy rule).[8] For simplicity, it was assumed that this policy rule would be achieved by increasing

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[5] The dependency ratio is defined as the number of persons aged 65 and older or 19 and younger as a share of the working population aged 20 to 64 years. The World Bank projections are used because of their extensive country coverage.

[6]The time profile for the long-run increase in the dependency ratio differs somewhat between the United States and other industrial countries. The dependency ratio declines in the United States until 2010, and then rises substantially above its 1998 level; for the other industrial countries, the average dependency ratio rises steadily from a level that is below that in the United States initially to one that exceeds the U.S. ratio in the long run.

[7]In the panel estimates, changes in the total saving-investment balance in response to fiscal or demographic shocks are identically zero by construction (i.e., adding-up restriction). In the MULTIMOD simulations, this adding-up restriction for the United States and other industrial countries is not imposed as developing country groups are also included. Broad adding-up between the United States and other industrial countries may still obtain, however, given their relative economic size.

[8]Monetary policy in the United States is assumed to aim at holding the rate of increase in the GDP price deflator to around 2 percent throughout the scenario period. Projections for the

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payroll taxes for Social Security and Medicare by the amounts required to restore actuarial balance in these programs (2¼ and 2 percentage points, respectively) according to the latest reports of the programs' trustees.[9] As a result, sufficient assets would be set aside to meet the future spending requirements of these programs.

13. Long-term projections for the rest of the budget are taken from estimates in the U.S. Administration's budget for FY 1999, adjusted to reflect differences in the economic assumptions (mainly interest rates and economic growth) underlying these estimates and the results for major economic variables derived in the MULTIMOD simulations. To maintain balance in this part of the budget, federal taxes are assumed to be cut through most of the scenario period, although they do rise slightly toward the end of the projection period when the assets in the Social Security and Medicare trust funds begin to decline. State and local governments are expected to maintain their budgets roughly in balance over the entire scenario period.

14. The central fiscal policy rule would result in a significant rise in the general government budget surplus from about ½ percent of GDP in 1998 to an average of about 3½ percent of GDP in 2004–20 (Table 4). As the baby-boom generation retires, the surplus would decline gradually, to an average of 2½ percent of GDP in 2021–30 and would shift to an average deficit of about ½ percent of GDP in 2061–70.

C. Long-Term External Prospects in a Multicountry Context

15. On the basis of the central fiscal policy rule and abstracting from demographic effects, the U.S. current account deficit would decline sharply over the medium term, and would be roughly in balance over the longer term (Chart 1). When the effects of worldwide

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[8](...continued)
rest of the world in this scenario are based on the WEO projections to 2003. After that time, the scenario reflects an assumption that fiscal policy in the rest of the world seeks to stabilize government spending and debt in relation to GDP.

[9] The impact on national savings, while not identical, would be similar if reductions in benefits (or a combination of benefits reductions and contribution increases) were used instead to ensure actuarial balance in Social Security and Medicare. Benefit reductions would stimulate private saving in a similar magnitude as increases in contribution rates. This is based on the substitution hypothesis advanced by Diamond (1977), in which rational decision makers would substitute expected future social security benefits for private wealth accumulation. Feldstein (1996) notes that several empirical studies have found evidence of the substitution hypothesis. However, Feldstein and Pellechio (1979) have also argued that a change in future social security benefits may have no impact on private saving behavior, if for example, households discount heavily future benefits. Leimer and Lesnoy (1982) also present empirical evidence that Social Security may have no impact on private saving.

demographic trends are also incorporated in the simulations, the current account moves into a small surplus in the long term, because the population in other industrial countries is expected to age faster than the U.S. population (see Chart 1 and Table 4).[10]

16. The budget surpluses that would arise under the central fiscal policy rule would boost national saving and improve the current account.[11] The movement of the external balance to surplus would be facilitated by a depreciation of the real effective exchange rate in the medium term, reflecting the fiscal contraction and lower domestic interest rates. Over the long run, the improvement in the external position (and in the net international investment position as a share of GDP) would induce a long-run real appreciation of the dollar. The private savings-investment balance also would shift from a deficit to a surplus over the long run. While savings would rise slightly in relation to GDP, private investment—after declining through the first two decades of the next century—would be largely unchanged over the longer term, reflecting the effects of a declining labor force growth on the marginal productivity of capital and on the returns to capital investment (Chart 2).

17. To illustrate the importance of the long-term fiscal policy rule that is pursued (and the rough range of results for different fiscal policy rules), an alternative scenario was developed assuming that the long-term fiscal objective would be to maintain balance in the unified U.S. federal budget (Chart 3).[12] Under this scenario, the U.S. external position would improve

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[10]In MULTIMOD, the long-run income elasticities for exports and imports are restricted to being 1. To test the effect of this restriction on the long-run current account projections, an alternative scenario was developed based on an income elasticity of 1 for exports and 2 for imports. The results show that the U.S. current account would still improve considerably over the next 25 years, achieving surpluses averaging 0.1 percent of GDP during the period 2006–24. As fiscal surpluses narrow, the U.S. current account would return gradually to deficits averaging about 0.9 percent of GDP in 2025–70. The real effective value of the U.S. dollar would depreciate by around 30 percent by 2025, before subsequently appreciating by about 5–10 percent. To an extent, this alternative scenario might be seen as a worse case. Over the 72-year horizon in the scenarios presented here, it would be expected that the income elasticities of exports and imports would converge.

[11]The panel estimates in Table 2 show qualitatively similar effects of the fiscal budget on the saving-investment balance. Overall, the long-run fiscal effects on the current account are somewhat larger in the panel estimates than in the dynamic simulations.

[12]In the balanced budget scenario, it is assumed that revenues would be adjusted to maintain budget balance. Accordingly, the ratio of revenues to GDP would initially decline from 31.8 percent in 1997 to an average of 30.3 percent in 2011–20. Subsequently, the revenue-to-GDP ratio would rise, reaching an average of almost 35 percent in 2061–70, about 7 percentage points of GDP higher than the ratio in the scenarios assuming the central fiscal policy rule.

(continued...)

gradually over the medium run and stabilize at modest deficit levels over the long run. Private saving would rise slightly in the medium term but would remain relatively stable in relation to GDP in the long term (Chart 4). Private investment would not differ significantly from the baseline scenario.

18. The greater fiscal effort required in the scenario incorporating the central fiscal policy rule results in a higher level of real national income over the scenario period than in the scenario based on a balanced budget fiscal rule (Chart 5). Over most of the period through 2070, the level of national income is about 2 percent higher, as fiscal surpluses reduce interest rates and crowd in private investment.

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[12](...continued)
The rise in the revenue-to-GDP ratio in the balanced-budget scenario reflects the needed adjustments to revenues in the latter part of the simulation period to keep the budget in balance largely owing to rising expenditures for Social Security and Medicare.

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Table 1. United States: Projections on U.S. Current Account

(Percent of GDP)

	1998-2003	2004-2010	2011-2020	2021-2030	2031-2050	2051-2070
Baseline Scenario						
Current account balance	-2.8	-3.6	-5.3	-6.9	-7.3	-5.5
Balance on goods and services	-2.1	-2.2	-2.8	-2.7	-0.8	2.2
Investment income	-0.1	-0.8	-2.0	-3.7	-6.0	-7.2
International investment position	-22.3	-35.5	-60.2	-96.7	-145.6	-170.5
Foreign real GDP growth	3.5	3.2	2.8	2.6	2.6	2.5
Income wedge 1/	1.00	0.99	0.98	0.96	0.94	0.93

Source: Fund staff estimates.

1/ Defined as the ratio of gross national income to gross domestic product.

Table 2. Panel Estimates: Saving, Investment, and Current Account Equations

	Saving	Investment	Current Account
Lagged dependent variable	0.68**	0.68**	0.68**
	(0.02)	(0.02)	(0.02)
$SUR - \bar{SUR}$ 1/	0.26**	0.05	0.21**
	(0.03)	(0.03)	(0.03)
$DEM - \bar{DEM}$ 2/	-0.08**	-0.02	-0.06*
	(0.03)	(0.03)	(0.03)
YPCAP 3/	-0.05**	-0.08**	0.02
	(0.02)	(0.02)	(0.02)
GAP 4/	0.06*	0.31**	-0.25**
	(0.03)	(0.03)	(0.03)
$\bar{SUR}$ 5/	0.25**	0.25**	....
	(0.07)	(0.07)	
$\bar{DEM}$ 6/	-0.004	-0.004	....
	(0.014)	(0.014)	
	$\bar{R}^2 = 0.98$, *D.W.* = 1.60, *S.E.E.* = 1.74		

Source: World Economic Outlook data base, except as indicated in table notes.

a * (**) indicates significance at the 5 (1) percent level.

1/ General government balance as percent of GDP minus GDP-weighted average ratio of general government balance to GDP for all countries in the panel.

2/ Ratio of populations age 65 and older and 19 and younger relative to age 20–64, minus GDP-weighted average ratio. Data source: United Nations, *World Population Prospects*.

3/ Per capita GDP relative to the United States, PPP-adjusted. Data source: Organization for Economic Cooperation and Development, *Main Economic Indicators*.

4/ Actual output minus potential output (logarithmic difference).

5/ GDP-weighted average ratio of general government balance to GDP for all countries.

6/ GDP-weighted average ratio of dependency ratio for all countries.

Table 3. Long-Run Effects of Demographic Trend in Industrial Countries

(Deviations from baseline, in percent of GDP)

	United States	Other Industrials	Total
Panel estimates			
Saving	0.9	-0.9	-0.3
Investment	0.0	-0.4	-0.3
Current account	0.9	-0.5	0.0
MULTIMOD			
Saving	0.4	-1.0	-0.5
Investment	-0.3	-0.7	-0.5
Current account	0.7	-0.3	0.0

Table 4. United States: Long-Term Macroeconomic Projections 1/

	1997	1998-2003	2004-2010	2011-2020	2021-2030	2031-2050	2051-2060	2061-2070
			(Percent change)					
Real GDP growth	3.8	2.4	2.0	1.6	1.4	1.4	1.3	1.3
Output gap	0.2	1.1	0.2	0.1	0.1	0.1	0.1	0.1
GDP deflator growth	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Labor force growth	1.7	1.1	0.9	0.4	0.2	0.2	0.1	0.1
Dependency ratio (in percent)	53.0	52.1	50.9	53.8	63.6	69.7	69.8	69.8
			(Percent of GDP)					
General government fiscal balance 2/								
Revenues	31.8	34.0	33.6	32.4	31.5	29.6	28.1	28.0
Expenditures	32.0	31.1	29.9	29.1	29.1	28.3	27.6	28.4
Balance	-0.2	2.9	3.6	3.3	2.4	1.3	0.5	-0.4
Current account balance (BOP basis)	-1.9	-2.1	-0.2	0.5	0.7	0.6	0.3	0.1
Private saving-investment balance	-0.8	-3.4	-2.7	-1.5	-0.5	0.5	1.0	1.6
Private saving	14.5	12.6	13.0	13.3	14.2	15.0	15.4	15.9
Private investment	15.3	16.1	15.7	14.9	14.7	14.5	14.4	14.2
Public saving-investment balance	-1.2	1.4	2.6	2.2	1.3	0.2	-0.6	-1.5
Memorandum item:								
Other industrial countries dependency ratio (in percent)	47.9	48.8	50.6	55.9	64.7	74.3	74.8	74.8

Source: Fund staff estimates.

1/ Based on the central fiscal policy rule and the effects of demographic changes.

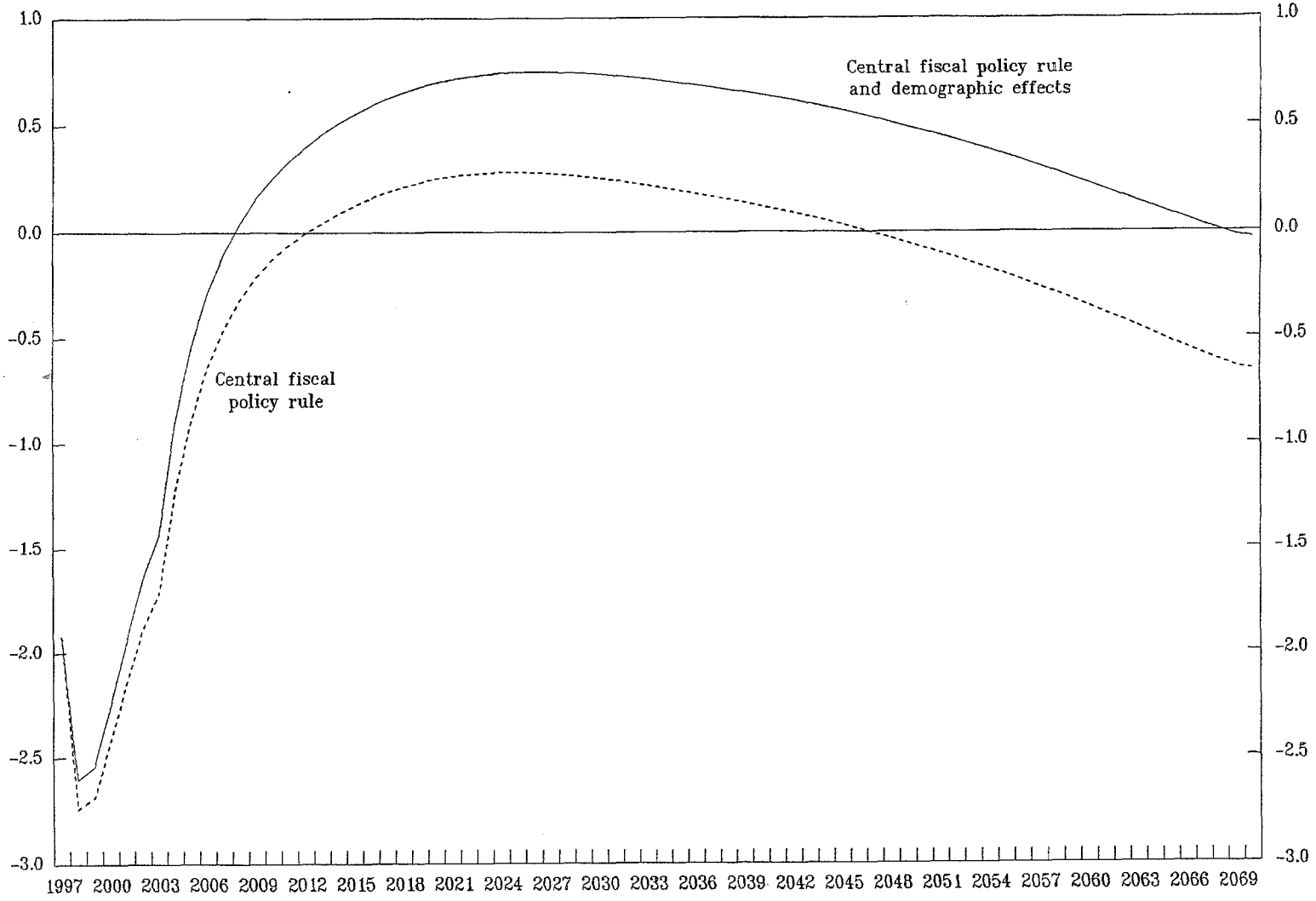
2/ On a NIPA basis.

CHART 1

United States

Current Account Balances

(In percent of GDP)



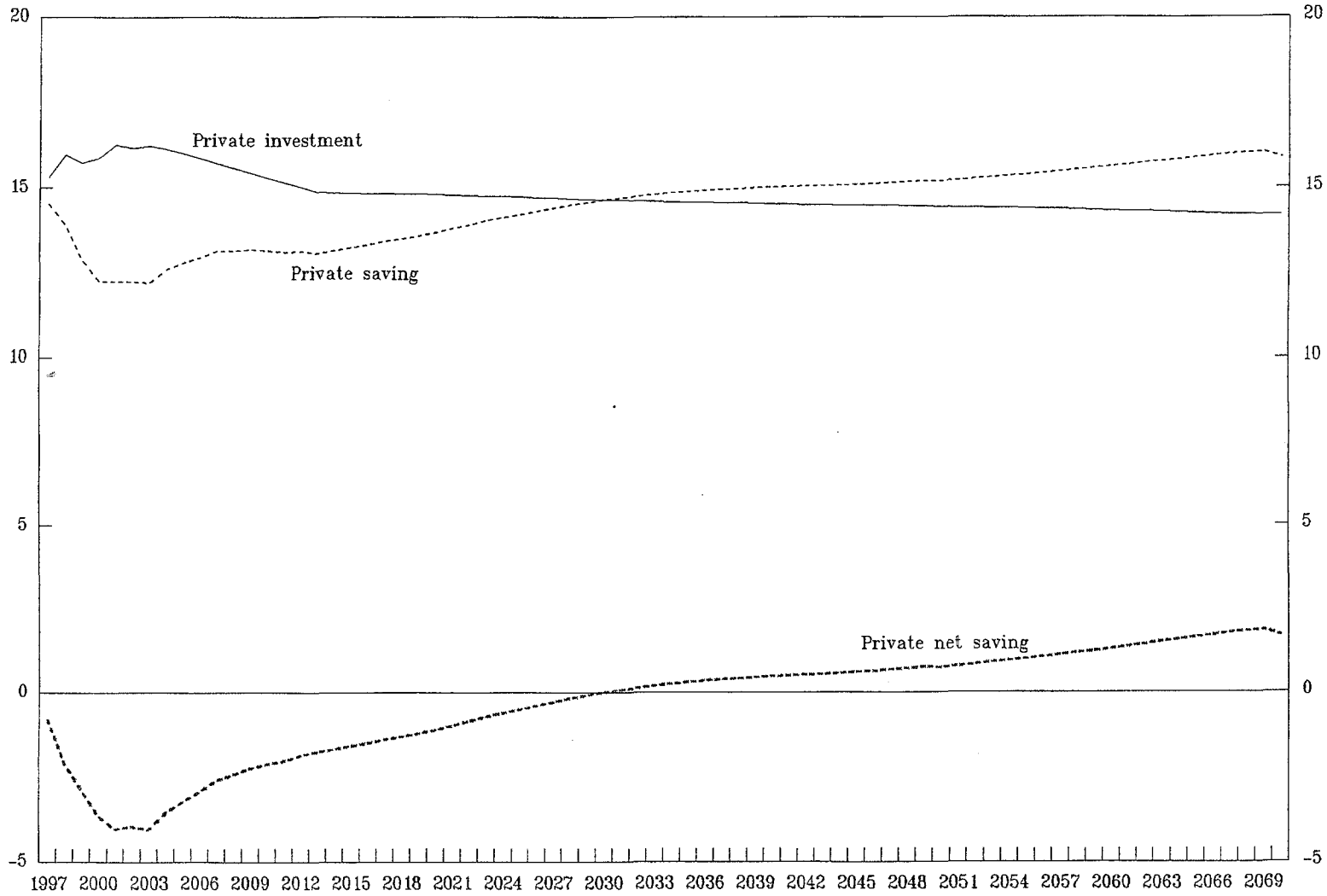
Source: IMF staff estimates.

CHART 2

United States

Private Saving-Investment Balance

(In percent of GDP)



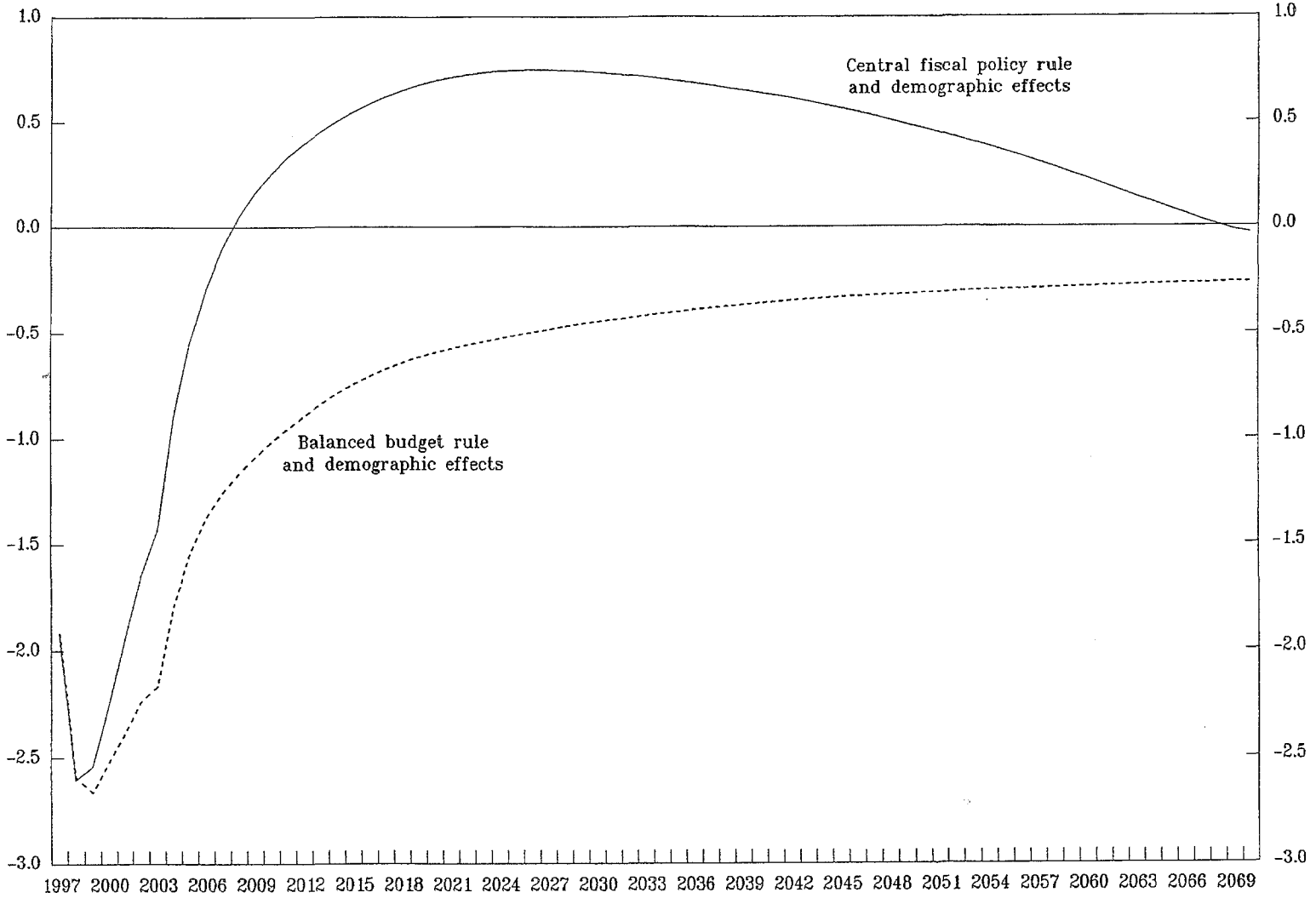
Source: IMF staff estimates.

CHART 3

United States

Current Account Balances under Alternative Fiscal Policy Rules

(In percent of GDP)



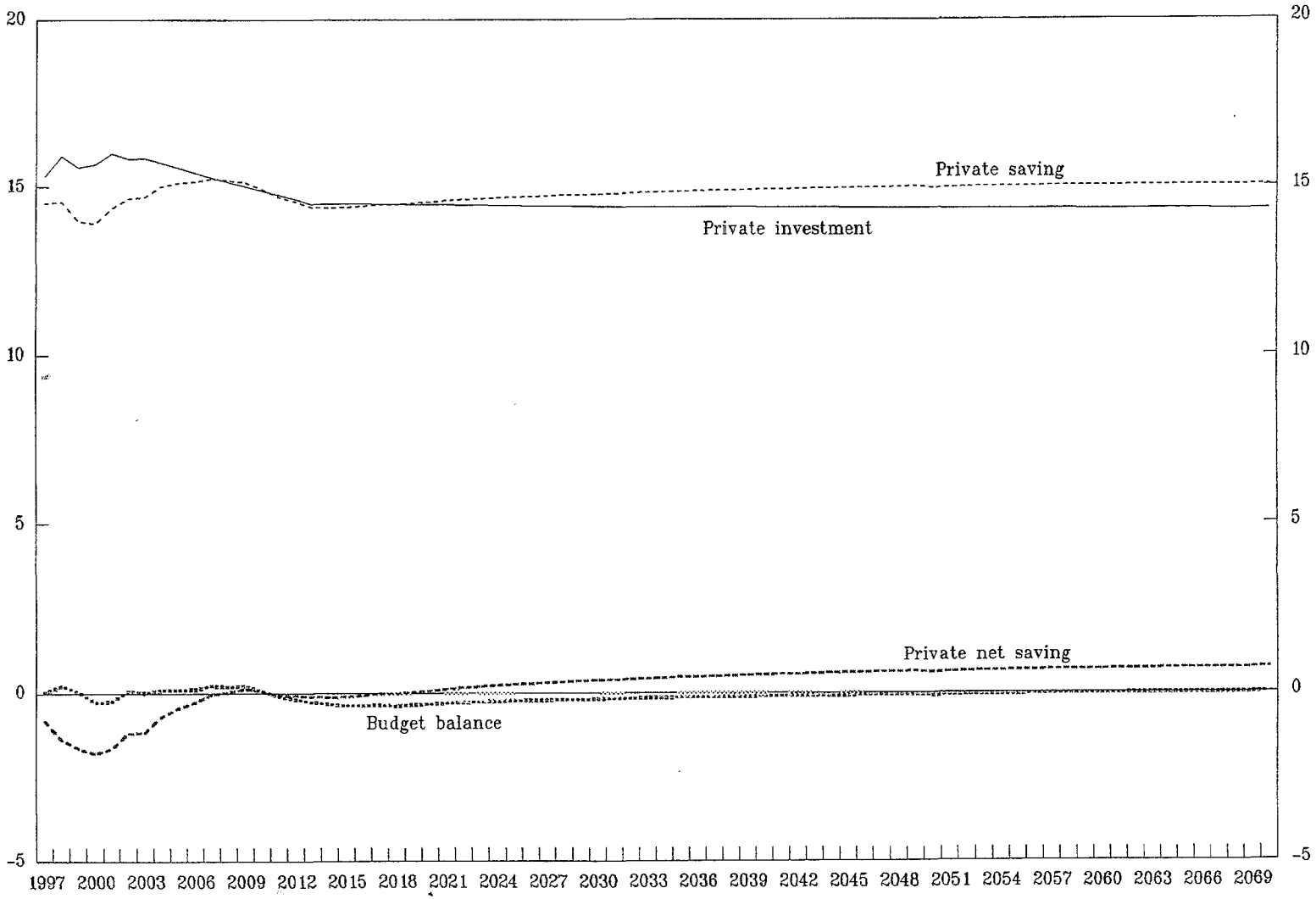
Source: IMF staff estimates.

CHART 4

United States

Private Saving-Investment Balance under Balanced Budget Rule

(In percent of GDP)

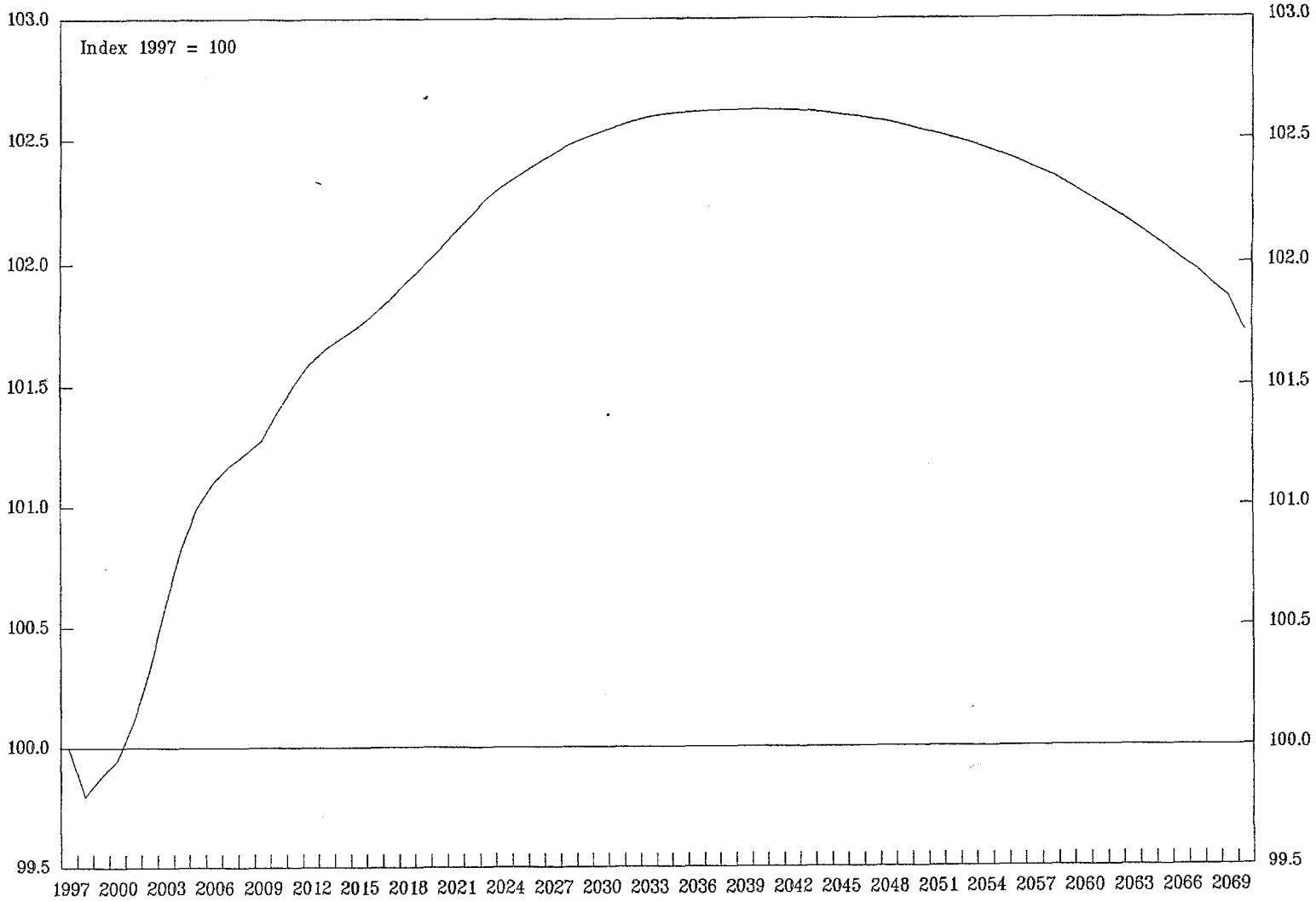


Source: IMF staff estimates.

CHART 5

United States

Ratio of Real Gross National Product under Central Fiscal Policy Rule Relative to Balanced Budget Rule



Source: IMF staff estimates.

VII. OFFICIAL DEVELOPMENT ASSISTANCE

1. The U.S. budget for development assistance is channeled mainly through the Agency for International Development (USAID), the Economic Support Fund (ESF), the multilateral development banks (MDBs), and food aid under Public Law 480. The USAID provides financial assistance to developing countries, mainly in the form of grants, to help complete projects related to agricultural development, population control, primary education, health, and the environment. The ESF makes financial assistance available to countries facing security risks, with a large share of these funds being provided to Israel and Egypt. In recent years, most of the contributions to the MDBs have been directed to the World Bank's International Development Association (IDA), which provides concessional lending to the poorest nations. Title 1 of Public Law 480 provides concessional loans for the purchase of U.S. agricultural commodities, Title 2 provides food aid to both government and private organizations, and Title 3 provides food aid conditional on policy reforms.

2. U.S. foreign assistance outlays on a budgetary basis are expected to decline from $8.42 billion in FY 1997 (0.11 percent of GDP) to $8.32 billion in FY 1998 (0.10 percent of GDP) (Table 1). While funding for some categories of assistance (such as PL 480 food aid and the Economic Support Fund) will likely increase in FY 1998, total assistance is expected to decline as a result of lower funding for USAID and MDBs. The Administration has indicated that clearing U.S. arrears with the MDBs is one of its highest priorities. In line with this objective, the Administration submitted a plan to Congress in 1997 that would eliminate arrears of $862 million to the MDBs and the Global Environment Facility (GEF) over three years, beginning in FY 1998. While the Administration made payments to reduce arrears in FY 1998, lower-than-requested appropriations for GEF and the African Development Fund resulted in the accumulation of additional arrears, so the net reduction in arrears during FY 1998 was less than planned.

3. In its 1997 report, the OECD Development Assistance Committee (DAC) noted that U.S. official development assistance (ODA) declined by $3.2 billion in 1997 to $6.2 billion (0.08 percent of GNP). In part, U.S. ODA in 1996 reflected a make-up in disbursements that were not made in 1995 owing to delays in the enactment of the FY 1996 budget. The decline in 1997 also reflected the removal of Israel from the list of DAC recipients; in 1996, Israel received $2.2 billion in payments that were classified as ODA. The United States was the third largest donor among DAC participants in 1997 in terms of the level of assistance, but it ranked last among DAC participants in terms of ODA as a percent of GNP (Table 2).

Table 1. United States: Outlays for Foreign Assistance on a Budget Basis

(In billions of dollars)

	Fiscal Year						
	1992	1993	1994	1995	1996	1997	1998
Outlays for foreign assistance by program:							
Agency for International Development	2.94	3.32	3.40	4.10	3.94	3.70	3.60
Economic Support Fund	2.94	3.23	2.77	2.74	2.24	2.23	2.42
Multilateral Development Banks	1.45	1.16	1.36	1.40	1.72	1.81	1.50
International Organizations	0.27	0.38	0.31	0.50	0.30	0.31	0.29
PL 480 food aid	1.35	1.44	1.73	1.37	1.08	0.89	1.11
Enterprise for the Americas Initiative debt forgiveness	0.0	0.0	0.0	0.02	0.03	0.0	0.05
Refugee Assistance	0.67	0.67	0.70	0.71	0.64	0.72	0.69
Peace Corps	0.20	0.21	0.21	0.23	0.21	0.23	0.24
Credit Liquidating accounts	-0.48	-1.01	-0.46	-0.52	-1.44	-1.51	-1.57
Offsetting receipts	-0.49	-0.94	-0.56	-0.56	-0.01	0.04	-0.01
Other	0.03	0.0	0.0	0.0	0.0	0.0	0.0
Total	**8.88**	**8.46**	**9.46**	**9.99**	**8.71**	**8.42**	**8.32**
(In percent of GDP)	0.14	0.13	0.14	0.14	0.12	0.11	0.10

Source: U.S. Agency for International Development.

Table 2. United States: ODA by DAC Countries in 1997, Preliminary

	In Millions of U.S. Dollars	Rank	Percent of GNP	Rank
Australia	1,076	13	0.28	12
Austria	531	16	0.26	15
Belgium	764	15	0.31	11
Canada	2,146	7	0.36	7
Denmark	1,635	9	0.97	1
Finland	379	17	0.33	8
France	6,348	2	0.45	6
Germany	5,913	4	0.28	13
Ireland	187	19	0.31	10
Italy	1.231	11	0.11	20
Japan	9,358	1	0.22	19
Luxembourg	87	21	0.50	5
Netherlands	2,946	6	0.81	3
New Zealand	145	20	0.25	17
Norway	1,306	10	0.86	2
Portugal	251	18	0.25	16
Spain	1,227	12	0.23	18
Sweden	1,672	8	0.76	4
Switzerland	839	14	0.32	9
United Kingdom	3,371	5	0.26	14
United States	6,168	3	0.08	21
Total DAC	**47,580**		**0.22**	
Memorandum items				
DAC average	.....		0.39	
EU countries combined	26,542		0.33	
European Commission	5,286		....	

Source: OECD News Release, June 1998.