

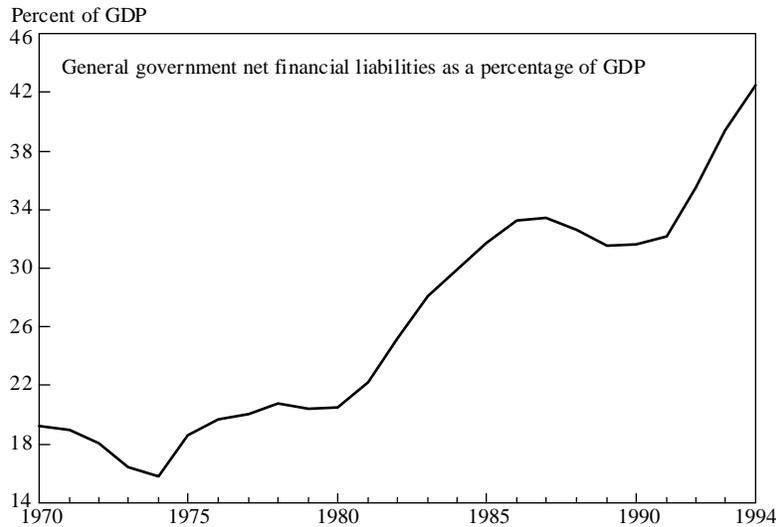
Commentary: Long-Term Tendencies in Budget Deficits and Debt

Kumiharu Shigehara

Michael Mussa and Paul Masson review the evolution of fiscal balances in industrial countries during the course of the present century and in particular, during the past fifty years. They point out that persistent budget deficits over the past two decades and substantial increases in debt-to-GDP ratios in recent years basically reflect the interaction between the growing sense of “entitlements” to many social benefit programs, and a failure to identify a number of developments that had adverse fiscal effects. They emphasize an increase in life span and a decline in birth rates, the general slowdown in productivity growth, the rapid rise in real health care costs, and the general upsurge and subsequent slowdown in inflation. They argue that current trends in industrial countries are unsustainable, and stress that, in particular, health care costs should be contained and public pension systems should be reformed. They note that the fiscal situations of developing countries are very diverse and generalization is difficult, but advise them not to repeat the industrial countries’ past mistakes and miscalculations.

I will limit my comments to Organization for Economic Cooperation and Development (OECD) member countries, and will focus on broad OECD-wide developments. In my comments, I am afraid that I will disappoint those who would have enjoyed a major dispute between the International Monetary Fund (IMF) and the OECD; in fact, our findings are quite similar.

Chart 1
Trends in General Government Net Debt in the OECD
Countries¹

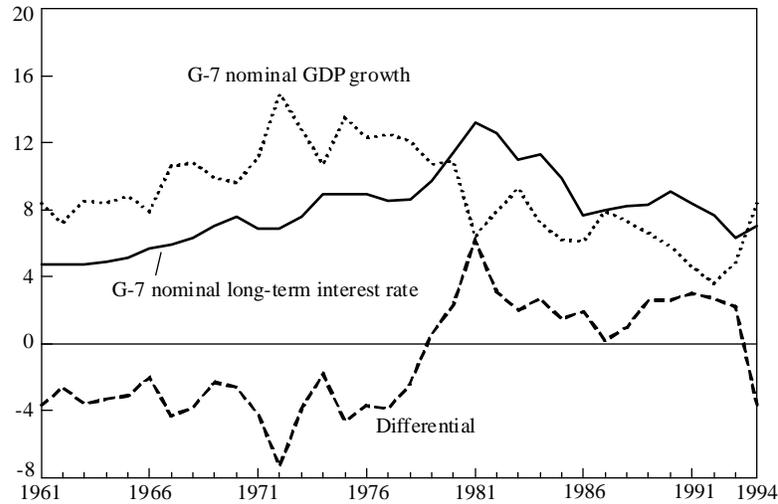


¹Including the major seven countries, Belgium, Denmark, Finland, Netherlands, and Sweden.

The evolution of fiscal balances in the postwar period

The evolution of budget deficits and public debt levels was well laid out by Mussa and Masson, and so I will keep my remarks on this subject brief. The postwar history of debt-to-GDP ratios in most OECD countries can be summarized in terms of three sub-periods. Until 1974, ratios of debt to GDP were declining in OECD countries as a whole. As Mussa and Masson show, this period is, in that respect, similar to the much longer history of deficits and debt. Beginning in 1975, however, the ratio of net debt to GDP rose steadily (Chart 1). Until the end of the 1970s, this was entirely due to chronic primary deficits, because interest rates were below output growth rates and, therefore, the dynamics of debt accumulation were acting to reduce debt-to-GDP ratios (Chart 2). In the period since 1980, however, interest rates have exceeded growth rates. Therefore,

Chart 2
Interest Rate - Growth Rate Differential¹

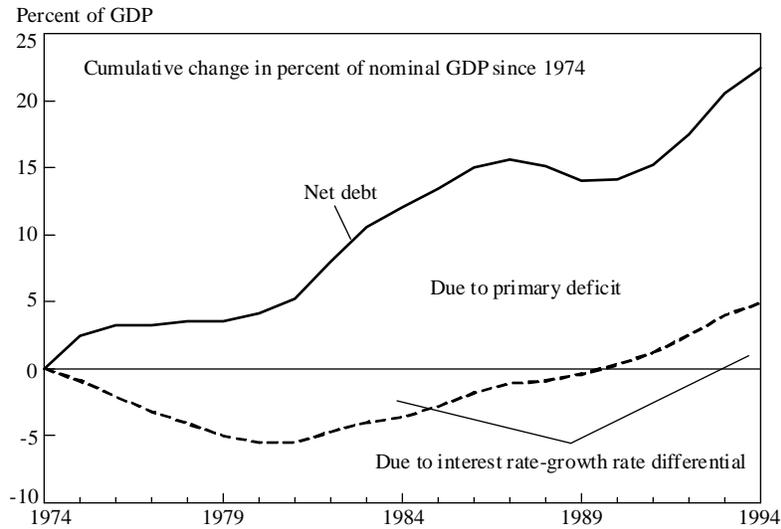


¹Before 1967, above aggregate excludes Japan.

during the past fifteen years, debt dynamics have reinforced the effect of primary deficits or, in the few years (1987 to 1990) when primary balances were positive, have worked against them.

The powerful effect of adverse debt dynamics becomes clear if the change in the debt-to-GDP ratio is decomposed into the cumulated primary deficit and the increase due to the differential between interest rates and growth rates.¹ For the two decades 1974 to 1994, the ratio of net debt to GDP for the OECD area as a whole rose by about 23 percentage points, of which about 18 percentage points can be accounted for by cumulated primary deficits, and 5 percentage points can be attributed to the differential between interest rates and growth rates (Chart 3). However, since 1980 when debt dynamics became unfavorable, the debt-to-GDP ratio for the OECD area has risen by about 18 percentage points, of which only 8 percentage points can

Chart 3
Determinants of General Government Net Debt:
OECD Average¹



¹The above averages include the major seven countries, Belgium, Denmark, Finland, Netherlands, and Sweden. The net debt aggregate shown is the cumulated total government financial balances, which differs somewhat from net financial liabilities as published in the OECD *Economic Outlook*.

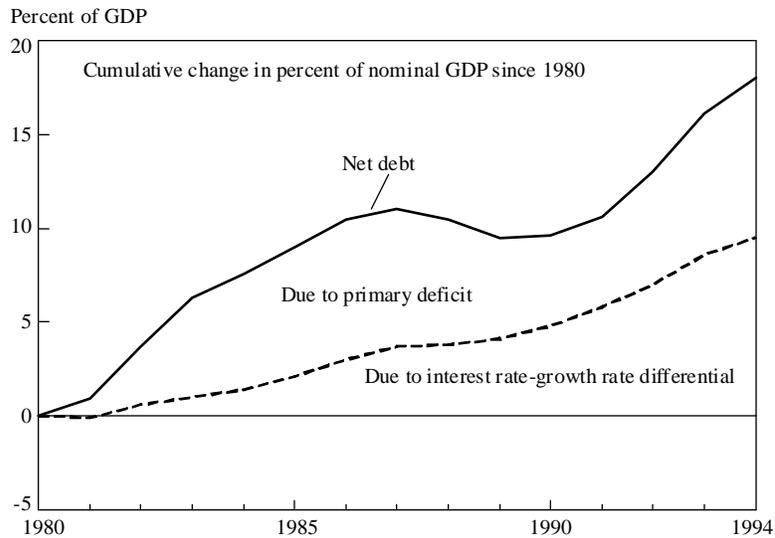
be attributed to primary deficits and 10 percentage points are accounted for by the effect of the interest-rate/growth-rate differential (Chart 4).

Of course, performance during the past twenty-five years has varied significantly across OECD countries (Chart 5).² Nevertheless, the overall pattern is a significant deterioration in fiscal trends in OECD countries, beginning around the mid-1970s.

What factors have contributed to fiscal imbalances?

The mechanical decomposition I have talked about does not tell the whole story; after all, had countries run primary surpluses instead, the vicious circle would not have taken hold and nothing would have been attributed to the interest-rate/growth-rate differential. Moreover, large deficits and public debt are likely to have raised

Chart 4
Determinants of General Government Net Debt:
OECD Average¹



¹The above averages include the major seven countries, Belgium, Denmark, Finland, Netherlands, Norway, Spain, and Sweden. The net debt aggregate shown is the cumulated total government financial balances, which differs somewhat from net financial liabilities as published in the OECD *Economic Outlook*.

real interest rates by fiscal crowding out and reduced investment and output growth. Recent econometric evidence developed at the OECD and the IMF implies that the bulk of the real interest rate increases in recent years reflects fiscal crowding out.³ This effect has reinforced the vicious circle of debt accumulation, and also bears on the issue of the real effects of fiscal slippage.

This leads to the question of what caused deteriorations in primary balances since the mid-1970s. The pattern of revenues over business cycles was broadly consistent with the public finance rule of tax smoothing: tax rates should remain stable over the business cycle because that minimizes the distortionary effects of taxation. That is, tax receipts have been much more sensitive than expenditures to business cycles. Tax smoothing does not imply chronic deficits of course, since automatic stabilizers—or even countercyclical fiscal

Chart 5a (1-2)
Government Budgets of Major 7 OECD Countries

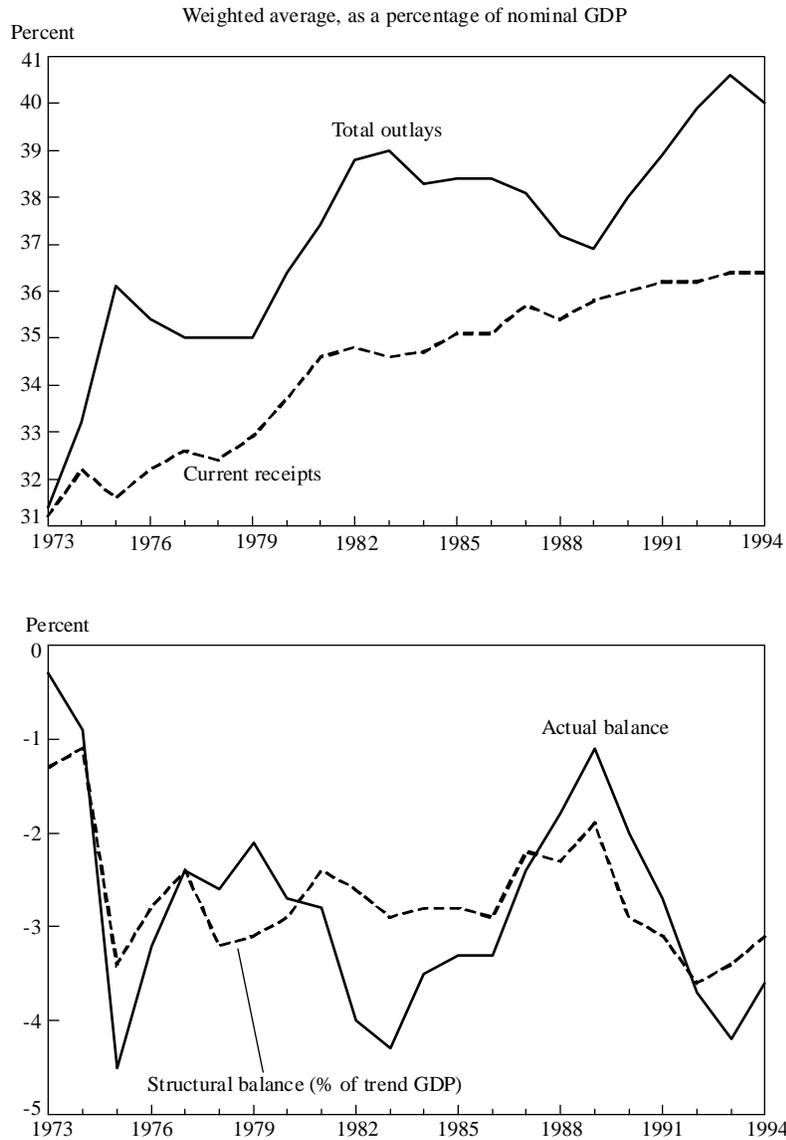


Chart 5a (3-4)
Government Budgets of Major 7 OECD Countries

Weighted average, as a percentage of nominal GDP

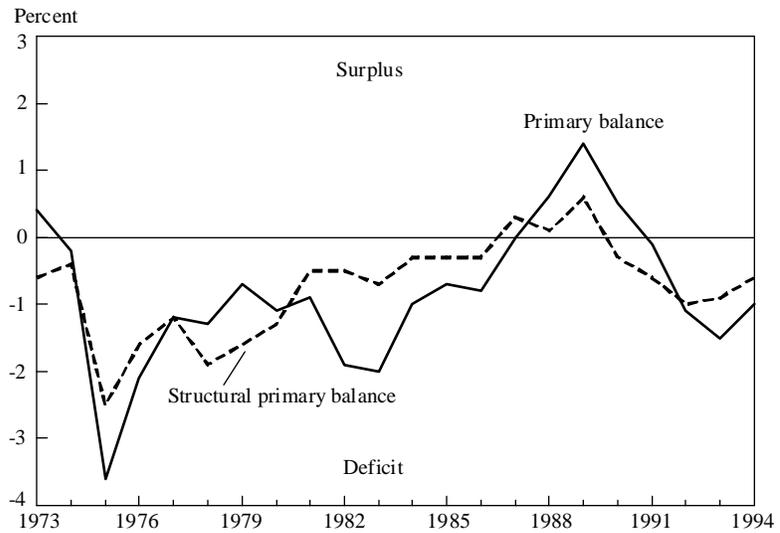
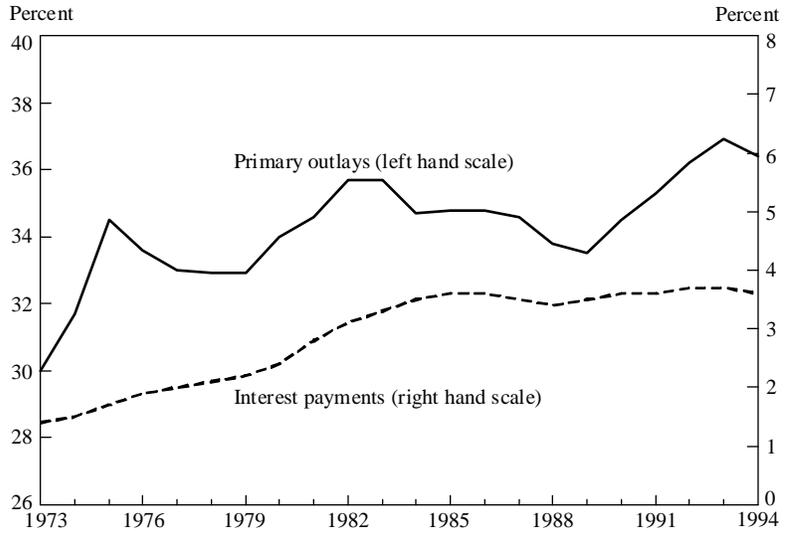


Chart 5a (5-6)
Government Budgets of Major 7 OECD Countries

Weighted average, as a percentage of nominal GDP

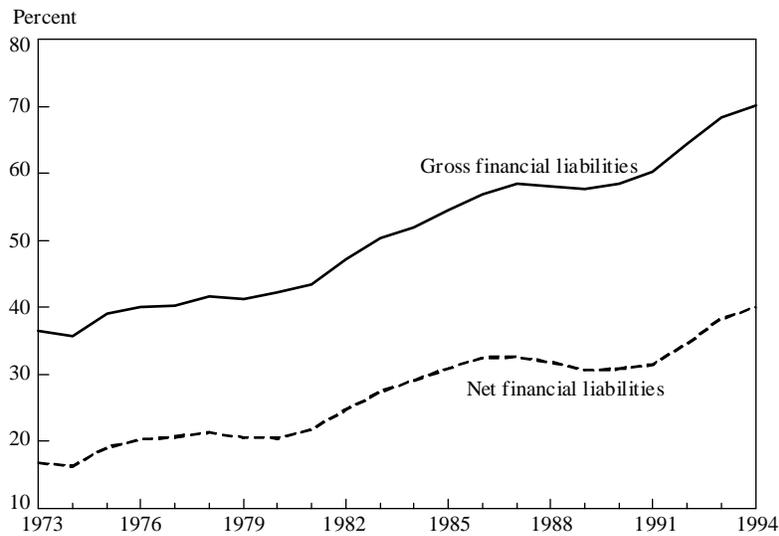
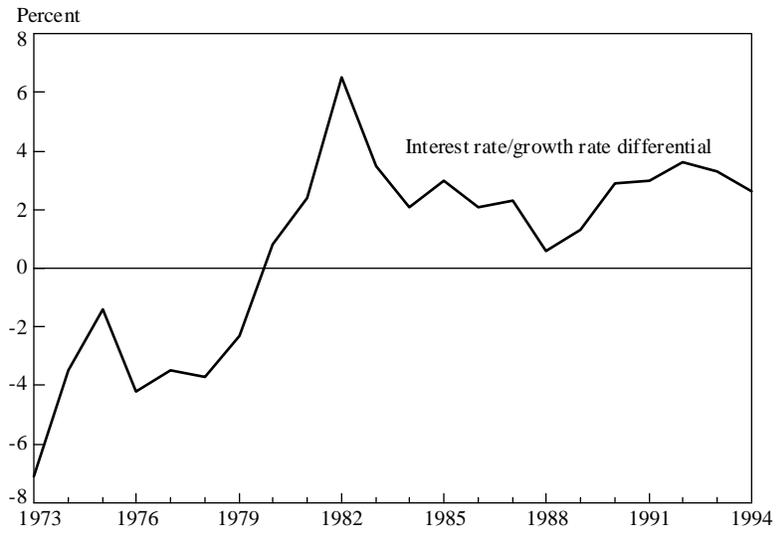


Chart 5b (1-2)
Government Budgets of the United States

As a percentage of nominal GDP

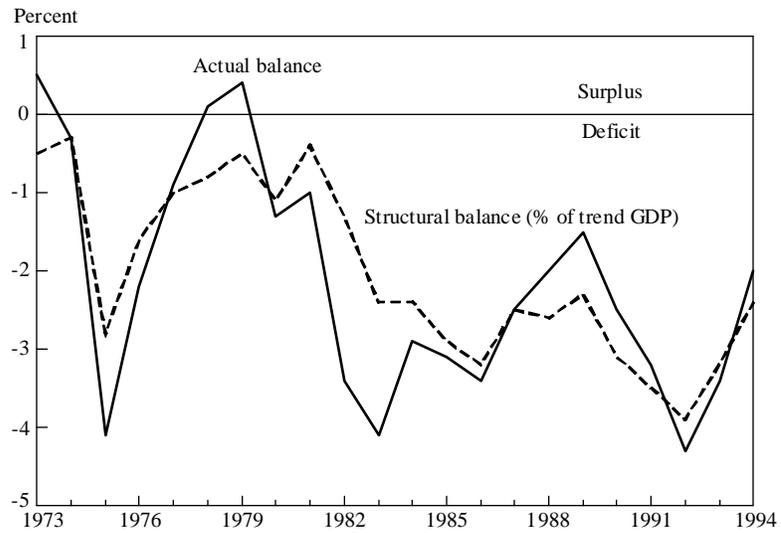
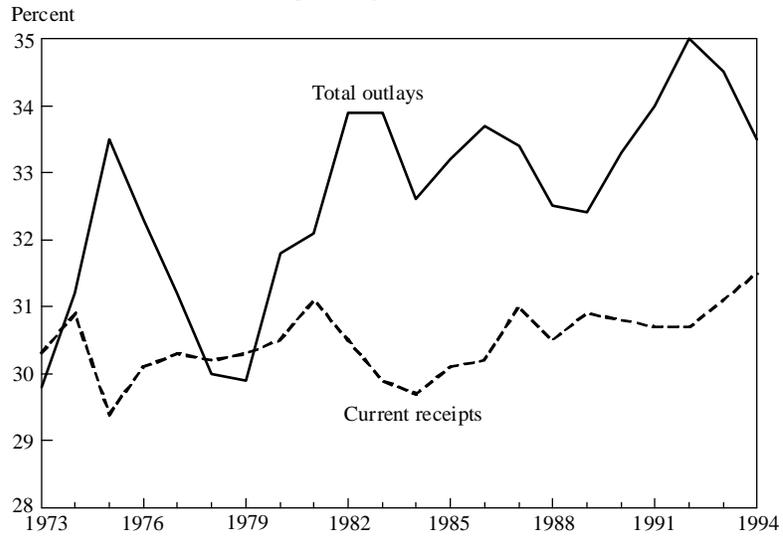


Chart 5b (3-4)
Government Budgets of the United States

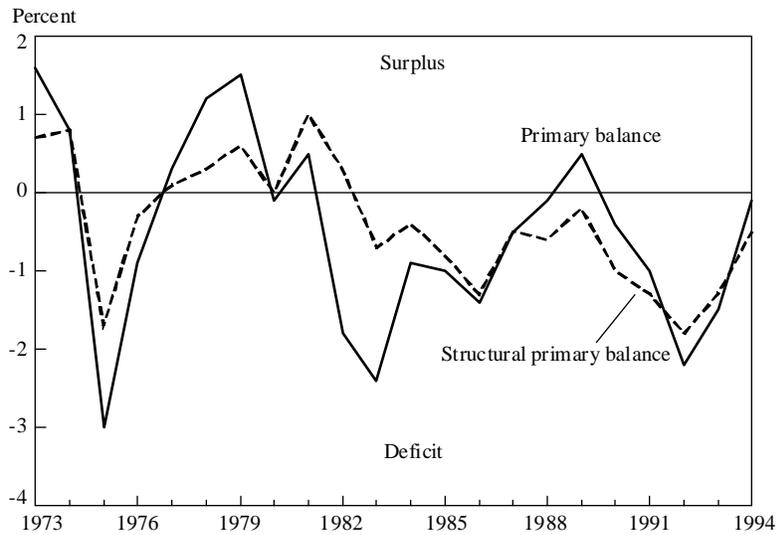
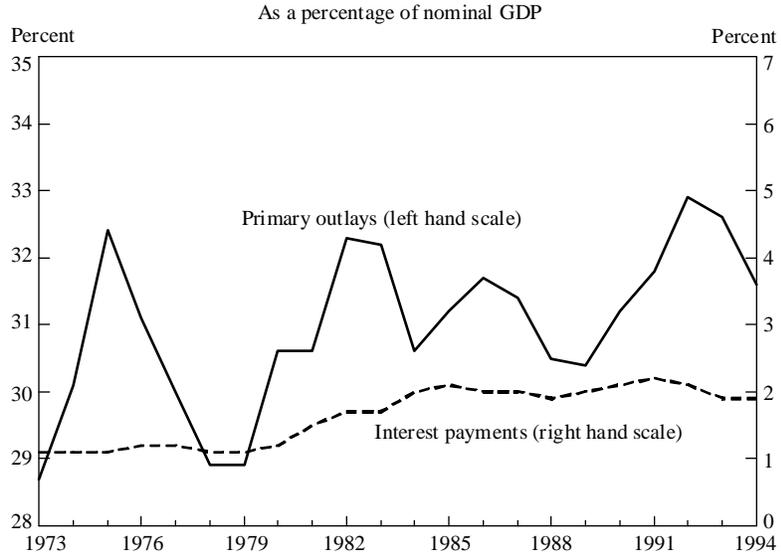


Chart 5b (5-6)
Government Budgets of the United States

As a percentage of nominal GDP

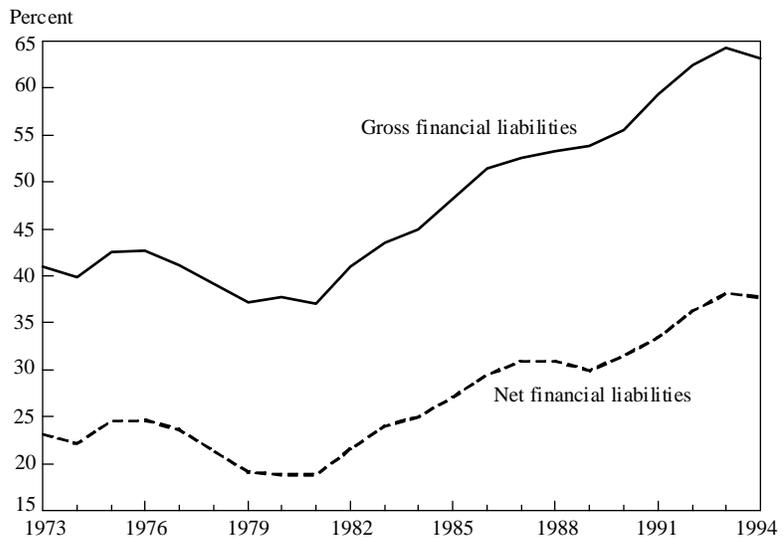
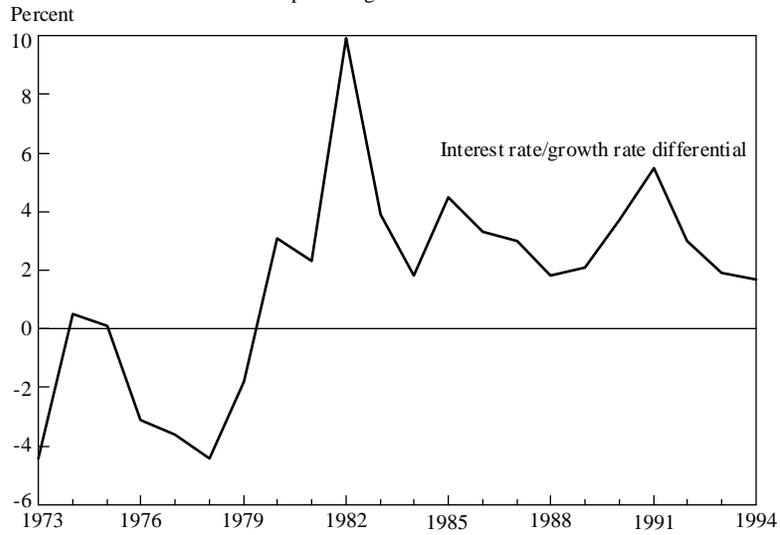


Chart 5c (1-2)
Government Budgets of Major 4 European Countries

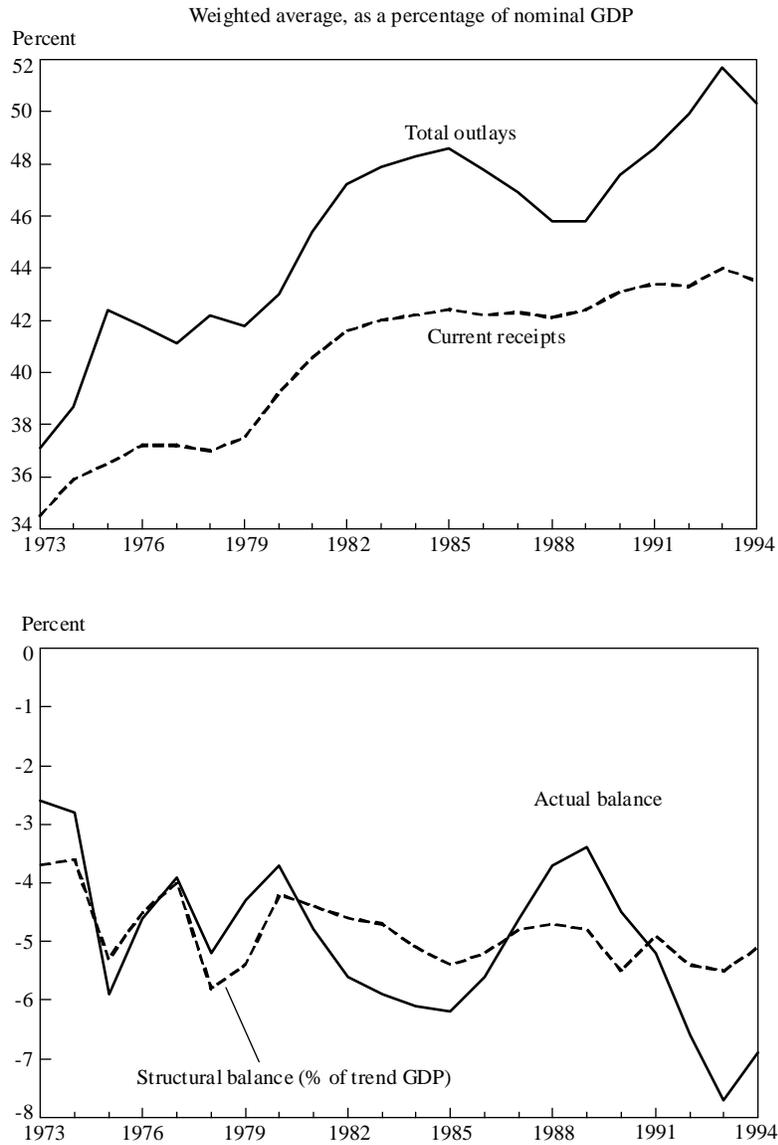


Chart 5c (3-4)
Government Budgets of Major 4 European Countries

Weighted average, as a percentage of nominal GDP

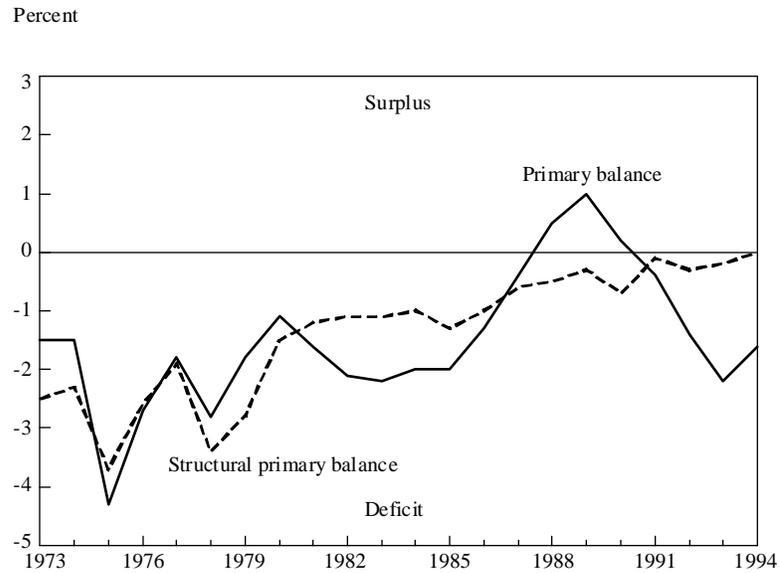
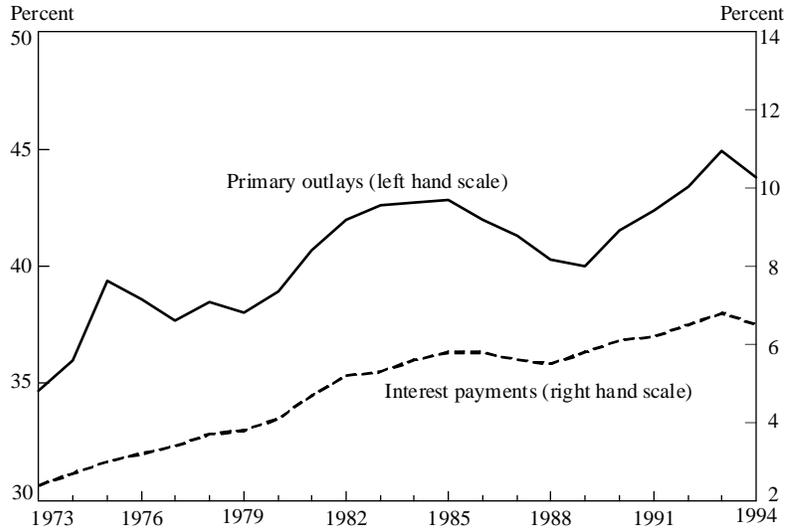


Chart 5c (5-6)
Government Budgets of Major 4 European Countries

Weighted average, as a percentage of nominal GDP

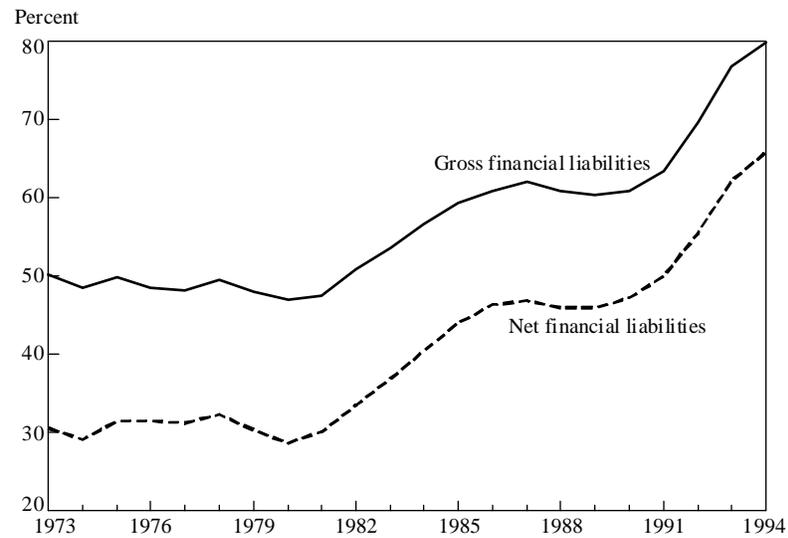
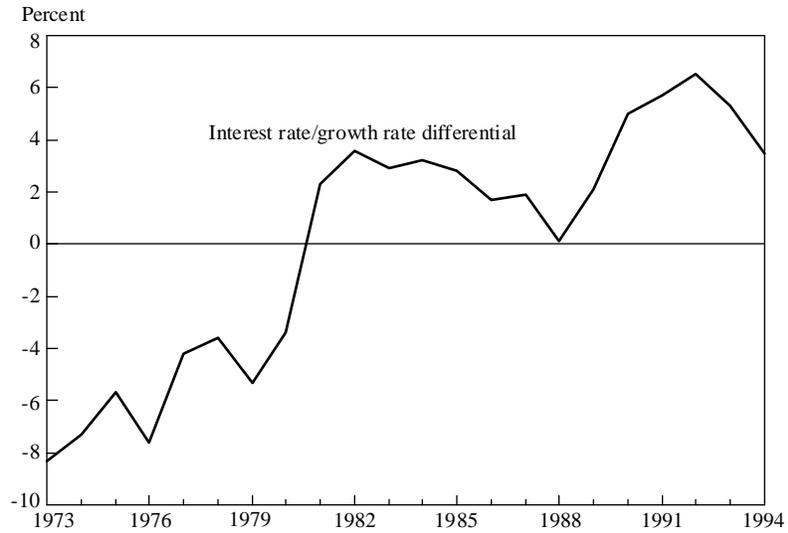


Chart 5d (1-2)
Government Budgets of Japan

As a percentage of nominal GDP

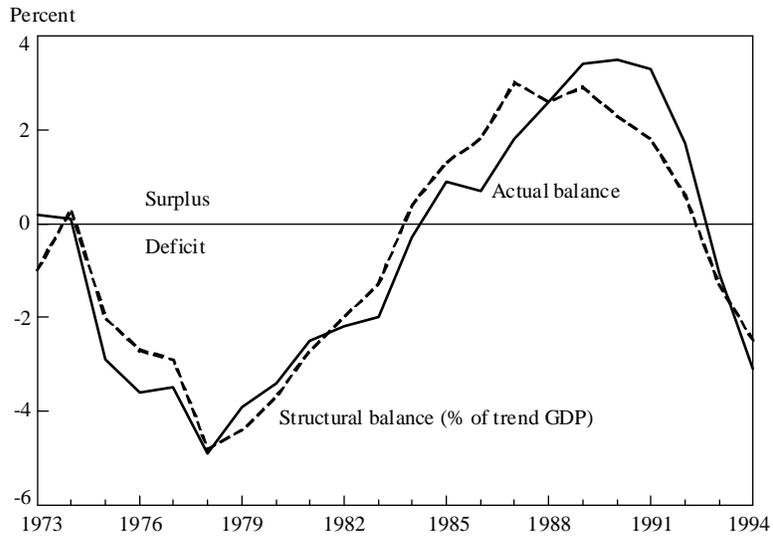
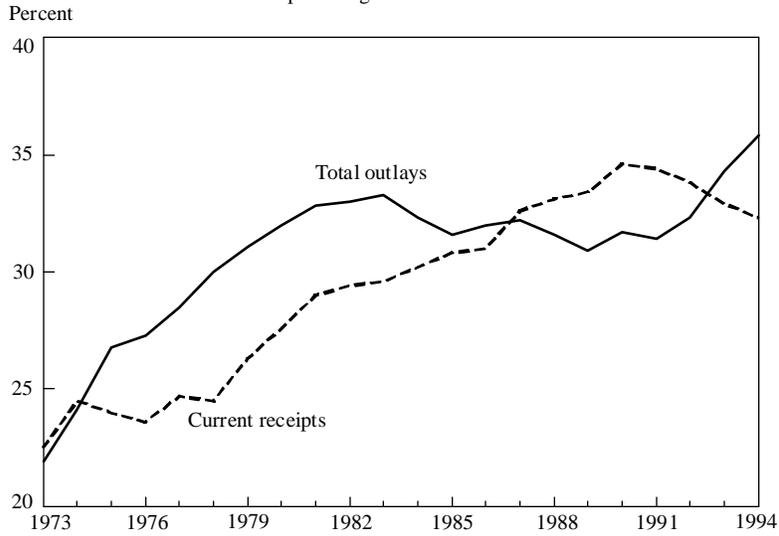


Chart 5d (3-4)
Government Budgets of Japan

As a percentage of nominal GDP

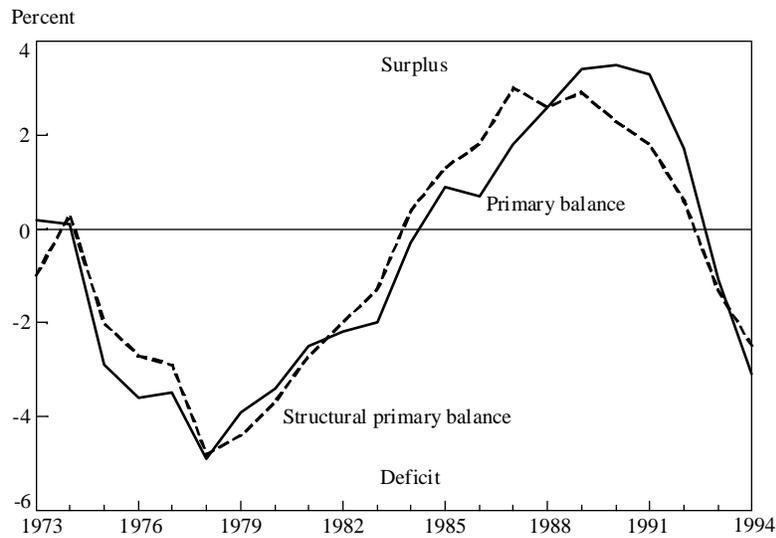
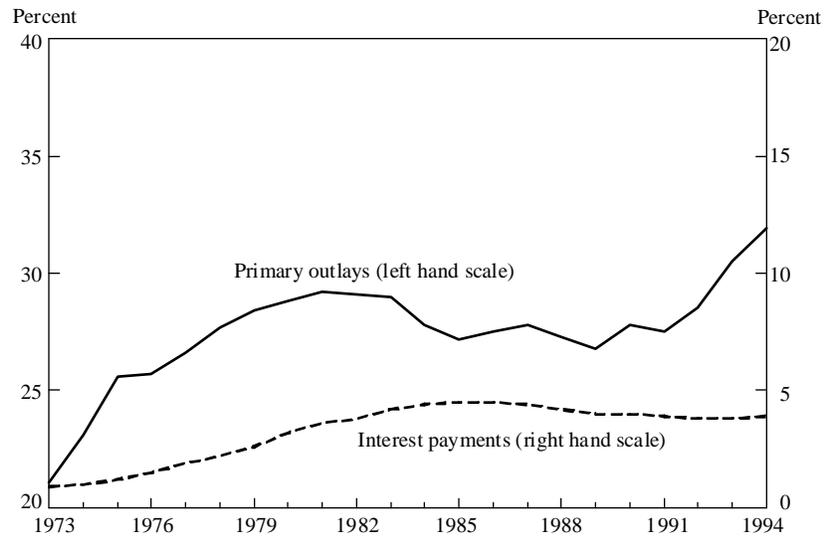
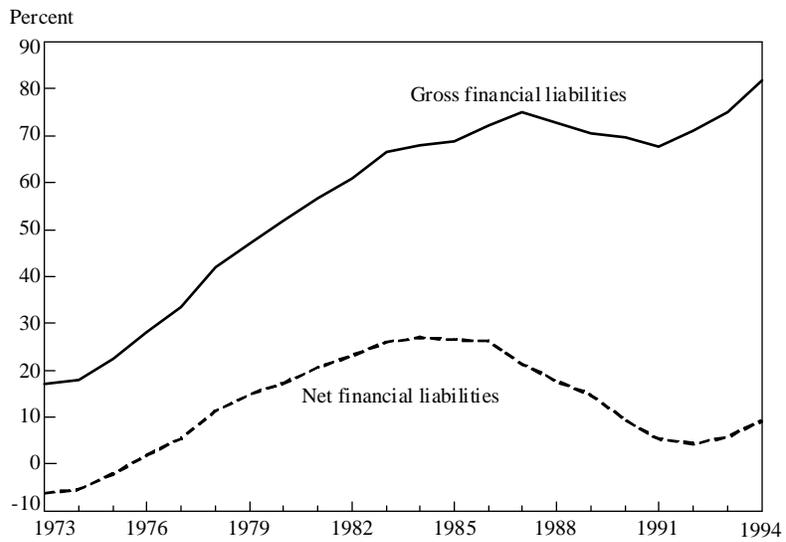
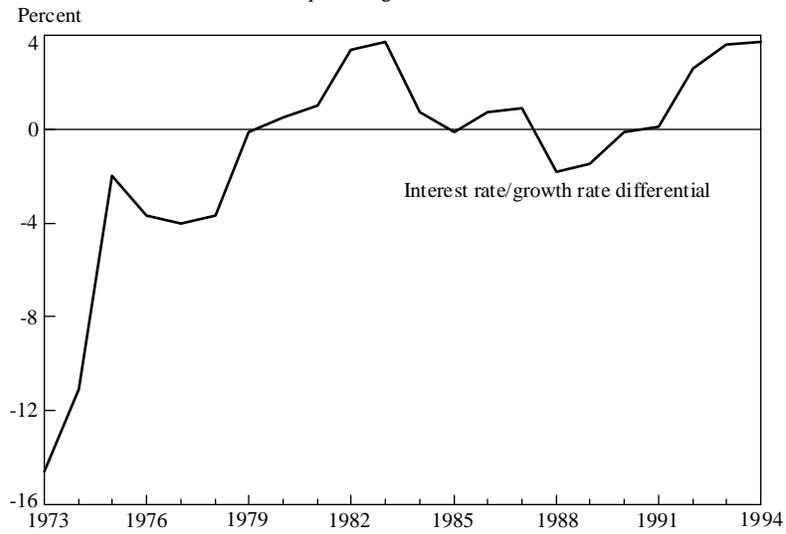


Chart 5d (5-6)
Government Budgets of Japan

As a percentage of nominal GDP



policy—could have been implemented to be consistent with balanced budgets and stable debt ratios over the medium term.

As stressed by Mussa and Masson, an important factor that led ultimately to increasing pressure on public expenditures was the introduction or expansion of social programs against the backdrop of a shift in political attitudes that increasingly favored a more activist role of government in many countries. An examination of public-sector budgets shows that social transfers as a percentage of GDP in OECD countries jumped on average from 8.1 percent in 1960-73 to 12 percent in 1974-79. There was a further, though more moderate, uptrend over the 1980s and the early 1990s. The growth in social transfer spending was driven by higher unemployment benefits, old age pensions, disability benefits, and, in some countries, health care spending. Data limitations make it difficult to assess the relative importance of the various factors underlying increases in transfer payments. Nevertheless, a forthcoming OECD study suggests that for all components where information is available, increases in the coverage, generosity, and take-up of transfer programs are much more important than demographic factors in explaining increases in transfer payments received by the working age population. In the case of unemployment benefits, for example, the rise in structural unemployment and the corresponding increase in take-up of benefits was clearly the dominant factor, although there were also some extensions to eligibility over the period from 1960 to 1980. Indeed, I would emphasize deteriorating labor market conditions as a key underlying factor in the expansion of transfer payments especially in Europe, since early retirement schemes (which affect old age pensions) and disability benefits have often been used as a means to reduce recorded unemployment.

Moreover, transfer programs can contribute to labor market rigidities, undermine incentives to work and to hire workers, and, when interacting with the tax system, create poverty traps. Paying for social benefits requires either higher taxes, which distort economic activity, or higher deficits, which raise interest rates and crowd out productive investment that could raise employment and incomes. Thus, countries can be caught in a “double vicious circle” of higher

primary spending leading to higher interest payments and public debt on the one hand, and of higher social benefits and greater structural rigidities on the other hand.

Mussa and Masson also assess the role of Keynesianism in bringing about fiscal imbalances over the past two decades in industrial countries. From an intellectual point of view, the Keynesian underpinnings of macroeconomic policy implied that fiscal policy could, and should, play an active role in smoothing economic fluctuations. This differed from the traditional fiscal rule that deficit financing should be used only for investment projects or under extraordinary circumstances, such as wartime. As pointed out by Mussa and Masson, Keynesianism was losing popularity just at the time debt-to-GDP ratios began to rise. Indeed, with the general acceptance of such things as the vertical long-run Phillips curve and the growing academic popularity of rational expectations, the economics profession was moving away from Keynesianism by the early 1970s. However, this was less true of the actual conduct of fiscal policy. To cite a few examples, a number of G-7 countries either explicitly or implicitly referred to fiscal stimuli to boost growth in the Bonn Summit communiqué of 1978. The early 1980s witnessed a substantial fiscal expansion in the United States, which was introduced in rhetoric in the context of “supply side” economics but was, in practice, Keynesian in both design and effect; and in France, the government that came to power in 1981 also undertook expansionary macroeconomic measures to attempt to stimulate economic growth. In the 1990s, the Japanese government has repeatedly used fiscal stimulus to attempt to end the current recession and to reduce the external surplus.

The fiscal expansions in the 1980s happened despite repeated declarations in the communiqués of the G-7 summit meetings and other international fora in the early years of that decade. It is also interesting to note that as large external imbalances between major industrial countries grew around the mid-1980s, international discussions of fiscal balances were often made in the context of using fiscal policy as a means to increase national saving in deficit countries and reduce national savings in surplus countries, rather than in

the context of increasing savings in industrial countries as a whole. If, however, this adjustment issue had been placed in the context of global savings, budget deficit reduction would perhaps have received more emphasis.

The use of countercyclical fiscal policy in accordance with Keynesianism would not result in the chronic deficits and steady increases in debt-to-GDP ratios that actually occurred over the past twenty years. There is the possibility that systematic economic forecasting errors resulted in chronic revenue shortfalls or expenditure overruns. Studies of U.S. budget outcomes for the 1980s and early 1990s, when data are available, indicate such errors have been fairly large and biased in the expected direction.⁴ But forecasting errors have always existed, and in any case such errors cannot, in themselves, account for persistent fiscal bias, since their fiscal effects could have been offset in subsequent years. I would identify three events that occurred around the early 1970s that could explain why fiscal policy appears to have adopted an expansionary bias.

First, between the late 1960s and the mid-1970s, output growth started to fall significantly on a cyclically adjusted basis in virtually all OECD countries, and in many countries unemployment rates began to rise. In retrospect, we now know that these developments reflected secular declines in underlying productivity growth and rises in structural unemployment. But at the time, policymakers and analysts—including analysts at the OECD—were inclined to interpret them in terms of shortfalls in aggregate demand, despite the contemporaneous increase in inflation during the 1970s. Potential output growth was systematically overpredicted and consequently, there was insufficient concern about overheating and structural budget deficits. Fiscal expansion based on the overestimation of potential output growth over the medium term also resulted in slower growth of revenues than expenditures.

Second, the first oil shock probably adversely affected existing potential output levels (through an increased rate of capital scrapping in energy-intensive industries, for instance) and led to more

generalized concerns about economic performance in industrial countries. This provided another ground for the use of expansionary macroeconomic policy, which proved to be excessive and contributed to the revival of inflation in the late 1970s.

Third, the Bretton Woods system was abandoned in the early 1970s. One important consequence of this appears to have been the weakening of fiscal discipline in countries with current account deficits, which have tended to look to currency depreciation for current account adjustment under the floating exchange rate system. More recently, as international capital transactions were liberalized, the greater possibility of financing budget deficits abroad may also have weakened fiscal discipline in some countries.

What forces will make it difficult to lower government deficits in coming years and decades?

What of the future? In their paper, Mussa and Masson provide an excellent account of fiscal consolidation plans of the major OECD countries, and I will not dwell on this here. As part of its exercise to assess longer-run economic policy issues, the OECD produces a medium-term baseline scenario which, in broad terms, assumes that such fiscal plans are, in fact, implemented and also assumes that OECD economies will follow smooth noninflationary growth paths and countries with large output gaps at present will reach full employment in five years' time. Under these conditions, the medium-term fiscal situation would not be very alarming, in the sense that debt-to-GDP ratios in most of the G-7 countries would stabilize, although at a high level (Table 1). However, this scenario is probably too rosy. An event not assumed in the baseline scenario, such as another decline in trend output growth or, more likely, another recession, would threaten to set off a vicious circle of further debt accumulation, unless interest rates decline below growth rates. I shall come back to this issue in a moment.

Of greater concern in the longer run is the aging of populations that will begin to occur in most OECD countries in fifteen to twenty-five years, depending on the country. Under current programs,

Table 1
Medium-Term Fiscal Scenario¹
As a percentage of nominal GDP

	Primary balances ²		Financial balances ²		Net financial liabilities		Gross financial liabilities	
	<u>1995</u>	<u>2000</u>	<u>1995</u>	<u>2000</u>	<u>1995</u>	<u>2000</u>	<u>1995</u>	<u>2000</u>
United States	0.4	0.1	-1.8	-2.2	37.6	39.2	63.0	64.7
Japan	-3.5	-0.8	-4.1	-2.0	13.2	23.5	88.9	101.6
Germany	1.2	1.2	-2.3	-1.9	45.8	44.6	62.5	61.3
France	-1.6	1.5	-5.0	-1.6	36.0	40.7	59.5	61.7
Italy	3.3	4.5	-7.8	-3.5	120.5	106.7	122.1	108.3
United Kingdom	-1.7	2.2	-4.2	0.1	47.1	40.2	53.4	46.5
Canada	1.3	3.8	-3.7	-0.1	64.2	54.0	94.6	84.4
Total of above countries	-0.3	0.8	-3.2	-2.0	41.9	42.8	72.5	73.7
Australia	-0.9	2.1	-2.9	0.5	25.3	20.2	36.3	31.3
Austria	-1.0	1.6	-4.5	-2.2	..	..	60.4	59.9
Belgium	4.3	6.1	-4.3	-1.5	126.0	112.5	138.3	124.8
Denmark	1.3	3.9	-2.1	0.5	35.7	29.3	68.8	62.4
Finland	-3.9	1.5	-5.0	-0.4	-0.3	6.5	69.1	88.5
Greece	2.9	4.7	-11.4	-4.5	..	..	120.2	115.8
Ireland	1.4	1.3	-2.5	-2.1	..	..	83.3	66.1
Netherlands	1.3	3.1	-3.3	-1.2	60.7	57.0	79.4	75.7
Norway	1.3	3.1	1.4	3.7	-14.7	-27.5	48.3	43.5
Portugal	0.0	1.0	-5.4	-2.4	..	..	70.8	65.0
Spain	-1.1	1.2	-6.2	-3.1	49.9	54.7	66.5	71.4
Sweden	-5.6	4.4	-9.2	0.8	31.5	35.2	84.5	79.3
Total of above European countries	0.2	2.4	-4.8	-1.8	60.2 ³	57.0 ³	75.3	71.6
Total of above countries	-0.3	1.0	-3.4	-1.9	43.5 ³	44.0 ³	72.7	73.4

¹The OECD Secretariat projections in this table are based on the historical data presented in the OECD *Economic Outlook 57*, Tables 30, 32, 34, and 35.

²Surplus (+) or deficit (-).

³Including gross financial liabilities for Austria, Greece, Ireland, and Portugal.

this will imply rapidly rising outlays for government pensions and, in some countries, for health care. In this context, the Mussa/Masson paper makes reference to the OECD's earlier work on the estimated net public pension liabilities including future rights and contributions in the G-7 countries. Our most recent exercise builds on this work by taking into account not only country-specific differences in public pension reforms, but also the fiscal effects of health care programs. Although estimating such effects is necessarily difficult, this work (Table 2) suggests that in the absence of policy changes:

For the United States, net public debt as a percent of GDP might rise from about 40 percent in 2000 to some 50 percent in 2015 and 120 percent in 2030. This increase largely reflects increases in public expenditures on health care.

For Japan, the net debt-to-GDP ratio might rise from 25 percent in 2000 to some 100 percent in 2015 and 315 percent in 2030. These striking increases beyond 2000 reflect a particularly sharp and early aging of the population.

For Germany and France, the ratio might remain broadly within a range of 40 percent to 50 percent between 2000 and 2015, and then rise to reach around 100 percent in 2030.

For Italy, the ratio might decline from 107 percent in 2000 to about 80 percent in 2015, but then rise to 145 percent in 2030.

It is worth noting that in all these countries debt ratios would still be rising in 2030, owing both to large primary deficits and to adverse debt dynamics. On the other hand, the calculations imply that the United Kingdom and Canada would be much better placed than the other major countries.

Another way of looking at the current and prospective fiscal positions of OECD countries is to consider the transfers across generations that they imply. One way of doing this is so-called generational accounting. Mussa and Masson refer to a study of this sort pioneered by Professor Kotlikoff for the United States. The

Table 2 (appearing on pages 80 and 81) is contained in the document S95SHTBL.PDF.

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OECD recently asked experts (including Professor Kotlikoff) to calculate intergeneration accounts on a comparable basis for those countries for which generational accounting models are available—the United States, Germany, Italy, Norway, and Sweden. Again, these estimates depend on a number of assumptions, some of which have generated considerable professional debate. But I can confirm the intuition of Mussa and Masson that, in all cases, current pension programs will imply that future generations will face much larger net tax burdens than current generations (Table 3). Generational imbalances appear to be extremely high in some cases. For example, assuming a discount rate of 5 percent and productivity growth of 1.5 percent, future generations in Italy may have to pay per capita net taxes that are more than five times as large as the generation born in 1993. Such large imbalances clearly reinforce from a different perspective the conclusion that the current fiscal situation in Italy is not sustainable. In the United States and Norway, future generations would have to pay 100 percent and 50 percent, respectively, more net taxes than today's newborn generation. In Germany and Sweden, the imbalance is smaller, although with unchanged policies, future generations will still have to bear an increase in the net tax burden of about 25 percent and 30 percent, respectively.

What policies should be implemented in the future?

Current deficit positions and the pressures that primary budgets will face in the longer term, together with unstable debt dynamics, lead to an unsustainable fiscal situation. In containing deficits and to reverse the rise in debt-to-GDP ratio, is there any way in which governments can count on future improvements in debt dynamics?

While the current levels of long-term interest rates in most OECD countries are lower than last years peaks and the averages of the 1970s and the 1980s, they are still substantially higher than in the 1950s and the 1960s. They may, in part, reflect market expectations of substantially higher productivity growth in the future than in the past two decades. And if growth in the future turns out to be much faster than in the past two decades, then OECD countries may simply grow out of their fiscal difficulties.

Table 3
Generational Accounts
Present values of lifetime net payments per person (males)
in thousands of dollars¹

Productivity growth (percent)	1			1 1/2			2		
	3	5	7	3	5	7	3	5	7
Discount rate (percent)									
United States									
Present generation ²	191	105	58	217	121	66	245	139	76
Future generations	384	226	151	422	243	157	468	262	164
Generational imbalance ³	102	115	161	95	100	137	91	89	117
Germany									
Present generation	311	168	91	362	197	107	419	231	126
Future generations	390	211	103	446	250	126	505	293	152
Generational imbalance	25	26	13	23	27	18	20	27	22
Italy (Case A) ⁴									
Present generation	102	54	22	114	65	29	122	77	36
Future generations	433	340	316	465	354	306	508	374	306
Generational imbalance	326	533	1,336	310	446	970	315	385	741
Italy (Case B) ⁵									
Present generation	122	59	24	144	72	31	166	88	39
Future generations	258	206	192	273	213	185	290	224	185
Generational imbalance	111	249	709	90	195	500	74	155	369
Norway									
Present generation	181	97	54	207	110	61	235	126	69
Future generations	299	130	48	376	171	72	466	216	98
Generational imbalance	64	34	-13	79	53	16	94	68	39
Sweden									
Present generation	272	136	75	317	156	84	371	180	95
Future generations	333	185	116	372	204	123	414	277	132
Generational imbalance	23	36	56	18	31	47	12	26	40

¹In constant prices adjusted for income growth converted to U.S. dollars using 1993 nominal exchange rates.

²Newborns in base year (1993).

³Generational imbalance is calculated as the difference between lifetime net payments for someone of the present generation and future generations (growth adjusted and in present value terms), expressed as a percentage of the net payments of the present generation. Generational imbalance in favor of the present generation is positive; generational balance corresponds to 0 and generational imbalance in favor of future generations would be negative.

⁴Case A: population projection by the World Bank which assumes a return of the fertility rate to replacement rate by 2030.

⁵Case B: more rapid return of fertility rate to replacement rate (by 2010) so that population falls less than in Case A.

However, it would be unwise to simply bet on this possible scenario without taking any policy action to improve underlying factors. Instead, concrete plans should be constructed to improve primary balances first of all. Given the high tax rates in most OECD countries and the distortionary costs that they impose, achieving the primary surpluses required to stabilize and reduce debt-to-GDP ratios should entail significant restraint of expenditure growth.⁵ Given the pressures that will arise from aging populations and the need to meet the legitimate goals of social protection and income distribution, reducing outlays on a sustainable basis will require rethinking transfer programs to make them more efficient, both in the narrow sense of meeting social goals at the lowest cost and in the broader sense of minimizing their distortionary impact on the economy as a whole. At their recent meeting in May, the OECD ministers instructed the organization to analyze several aspects of aging.

Improvements in primary budget positions and reductions in debt-to-GDP ratios will, in themselves, help to improve debt dynamics by lowering interest rates and by raising investment and potential output through crowding in. By contrast, the failure to take convincing action on deficits now, together with the prospect of large increases in pension outlays in the future, could result in further increases in real interest rates as lenders seek to protect themselves against the risk of the effects of much larger debt-to-GDP ratios in the future.

Monetary policy also has a role to play. Present high long rates may largely reflect market anticipation of higher inflation in the longer run, despite currently low inflation in most OECD countries and despite central banks' resolve to safeguard and build on recent good inflation performance. There is a possibility that, *ex post*, inflation could be even higher than the market expectations currently built into long-term interest rates. Then debt-to-GDP ratios could fall, as they did just after the war. But, it would be wrong for central banks to embark on such an inflationary strategy. Rather than that, central banks should act in such a way that market expectation about future inflation will fall to actually achieved low inflation or price

stability. By demonstrating that monetary policy is focused on price stability, the authorities can, over time, reduce a premium against the risk of rising inflation in the future which may be reflected to some extent in the current high levels of conventionally measured real long rates. Of course, markets would find a monetary policy of price stability more credible if they were convinced that fiscal imbalances would be corrected.

Finally, structural reforms are needed to improve economic performance. Enhancing product-market flexibility and domestic and international competition will raise productivity growth. In Europe in particular, reforms, such as those recommended in the OECD Jobs Study, are needed to reduce structural unemployment, which would cut government social outlays directly as well as raise potential output. In this context, when product and labor markets have not been flexible enough to absorb negative external shocks, restraint in the conduct of monetary policy, such as that imposed by the European exchange-rate mechanism, has, in some cases, forced countries to respond with fiscal expansion.

Such a comprehensive package of reforms is a tall order, and will be difficult to achieve. Some have questioned the ability of democracies to deliver the sort of sustained fiscal consolidation, strict monetary policy, and fundamental structural reforms that will be required. However, we should not despair that appropriate policy measures can be implemented. There is not a long history of fiscal irresponsibility in democratic countries. As Mussa and Masson have stressed, the problem of chronic deficits and rising debt-to-GDP ratios dates essentially from the early 1970s. Even in the past twenty years, there have been several examples of sustained and difficult fiscal consolidation. Notably, in the 1980s, structural deficits were sharply reduced or turned into surpluses in several countries, including Japan, Germany, Denmark, and Ireland. Looking forward, greater transparency of current and prospective overall fiscal positions, including governments' contingent liabilities, and the more articulate demonstration of the likely redistribution of income between current and future generations will be important factors in obtaining and maintaining broad political support for the

actions required to bring about significant improvements in budget positions. Both governments and international organizations, such as the OECD and the IMF, should intensify cooperation in such an endeavor.

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Endnotes

¹The increase attributed to the interest-rate/growth differential is the change in the net debt minus the cumulated primary balances. Consider the familiar relationship between debt accumulation and the primary deficit $d = d_{-1}(1+r)/(1+g) + p$, where d is the debt-to-GDP ratio, p is the primary deficit-to-GDP ratio, r is the real interest rate and g is the growth rate of output. Using the approximation $(1+r)/(1+g) \cong 1+r-g$, this can be rewritten as $d - d_{-1} = p + (r-g)d_{-1}$, where the second term on the right-hand side is the increase in the debt-to-GDP ratio attributable to the interest rate-growth differential.

²In terms of net debt-to-GDP ratios, in Germany and Italy, these were rising somewhat even before the 1970s, when the rate of increase accelerated; in Japan and France, they were relatively stable until the mid-1970s, or the late 1970s in the case of France, when they began to increase sharply; and in the United Kingdom, the debt-to-GDP ratio fell until the late 1970s, when it broadly stabilized.

³T. Helbling and R. Wescott, "The Global Real Interest Rate," *IMF Working Paper* WP/95/33, find a 1 percentage point increase in the debt-to-GDP ratio raises the "world" real interest rate by about 15 basis points. R. Ford and D. Laxton, "World Public Debt and Real Interest Rates," *IMF Working Paper* WP/95/30, find that such a rise in the debt-to-GDP ratio raises real interest rates by 15 to 25 basis points. A. Orr, M. Edey, and M. Kennedy, "Real Long-Term Interest Rates: The Evidence from Pooled Time-series," (forthcoming in *OECD Economic Studies*), find that an increase in the deficit of 1 percent of GDP raises real long-term interest rates by 15 basis points, which would imply a smaller effect.

⁴See OECD, *Economic Survey of the United States*, 1991/92 and A. Auerbach, "The U.S. Fiscal Problem," *NBER Working Paper* no. 4709, 1994.

⁵As long as GDP is growing, this need not imply reductions in expenditure levels.

