

Prospects for Saving and Investment in Industrial Countries

by
Barry Bosworth

The economic recovery within the major industrial countries has led to renewed concerns and discussions of the potential for a future global capital shortage. The concept of a shortage is, in some respects, a misleading term since any shortage can be eliminated by a rise in price. Perhaps a more meaningful statement of the issue is to ask whether future demands for capital, including the financing of public budget deficits, will tend to outrun the growth of saving, putting upward pressure on real interest rates. This question takes on some relevance because of a general trend toward lower rates of private saving throughout much of the OECD, sharply higher public sector budget deficits, and a pattern of unusually high real interest rates over the past decade. Furthermore, increased attention is being directed toward the implications of a rapid aging of the population throughout most of the industrial world that is projected to reduce rates of private saving and sharply raise the public sector costs of retirement pensions and health care. Will public opposition to tax increases lead politicians to turn increasingly toward deficit finance to meet these bills?

Furthermore, trends in the availability of capital have taken on an international perspective because of the growing development of a global capital market in which financial markets of individual nations are linked together. A striking feature of the 1980s was the fast pace at which the global economy moved toward integrating what used to be a group of relatively independent economies free to follow their own economic policies in response to domestic concerns and problems. While trade in goods has been expanding rapidly for several decades, the more recent elimination of government restrictions on international financial flows and the explosion of innovations in communications have led to a sharp growth of cross-border financial transactions. Moreover, North America, while still a major center of

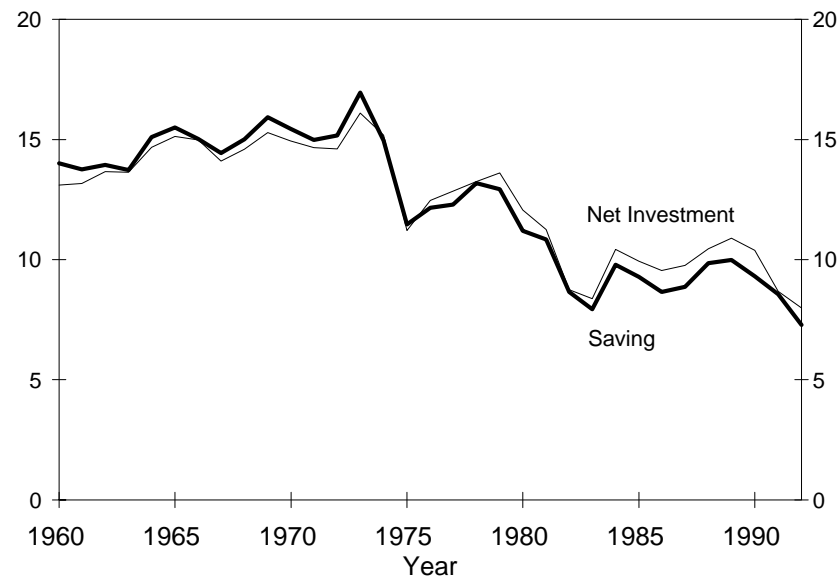
world trade and finance, no longer dominates the field: Japan in Asia and the Common Market in Europe have emerged as equally important financial hubs.

Prior to the 1980s, many economists had concluded that the international mobility of capital was limited, that each country was more or less a financial island, forced to live within its own means, dependent on its own saving to finance its own investment, and unable to borrow to any appreciable extent from other countries. As made evident by the large and sustained deficits of the United States, the liberalization of controls on financial transactions has changed that perspective. With the emergence of a global capital market, a nation's rate of investment is no longer constrained by its saving: domestic investment can, if it offers a sufficiently attractive rate of return, draw on a pool of worldwide saving. By the same mechanism, a surplus of domestic saving can easily flow abroad if foreign markets offer a higher return.

This paper examines prospects for future trends in saving and investment and their implications within this perspective of an increasingly integrated international market for financial capital. As a point of departure, some reason for concern is given by noting, as in figure 1, the magnitude of decline in total saving and investment of the OECD as whole. Saving and investment averaged a relatively steady 15 percent on net domestic output during the 1960s with some evidence of an upward trend up to 1973, which was marked by the first oil crisis and a subsequent worldwide recession. Both saving and investment fell precipitously in the 1974-75 recession, but even more notable is the lack of a complete recovery in the following expansion. Another sharp decline occurred with the recession of the early 1980s; and, over the remainder of the decade, rates of saving leveled out at about 9 percent of income. It appears that saving rates declined again in the last recession; and, if the past pattern holds true, the OECD region can look forward to saving rates of only about 7-8 percent for the remainder of this decade. Second, real rates of interest were unusually high throughout the 1980s; and, coming out of the latest recession, they have

Figure 1. Saving and Investment in the OECD

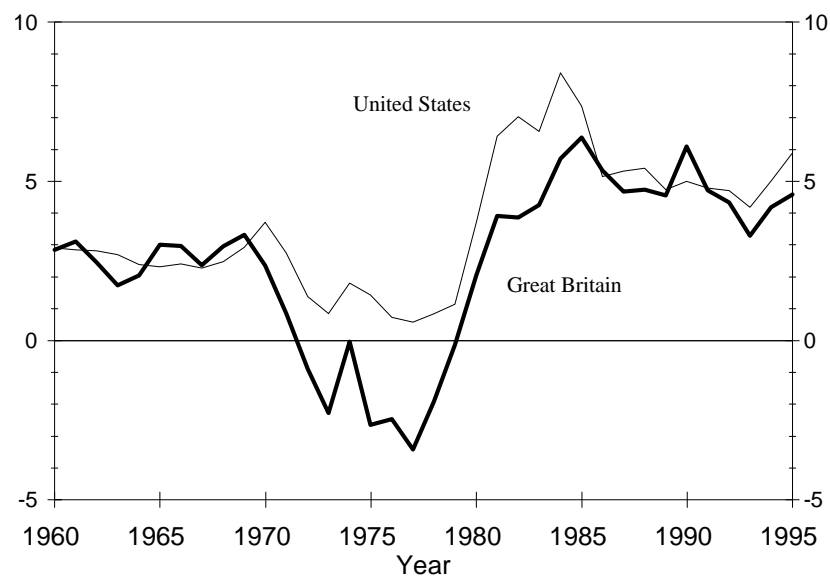
Percent of Net Domestic Product



Source; OECD National Accounts

Figure 2. Long-term Interest Rates, United States and Great Britain

Percent



Source OECD Economic Outlook. Real Interest rate computed using a 5-year centered average of annual change in the consumption price deflator

surprised everyone by the speed of their rise (Figure 2).¹

The following section provides a review of past trends in saving and investment within the OECD and some possible explanations for the decline. That is followed by a brief perspective on the extent to which capital markets have become international in scope. The third section examines prospects for the future path of saving and investment requirements.

I. Trends in Saving and Investment

Figure 1 provided a quick overview of the extent of decline in saving and investment rates over the past three decades within the OECD region. Some further details are given in figure 3 by distinguishing between three regions, saving of the public and private sectors, and a separation of private saving between that of households and the retained profits of incorporated businesses. All of the data are drawn from the SNA national accounts as published by the OECD so as to place all of the country accounts on an equivalent conceptual basis. This is of significance only for the United States, whose national accounts depart substantially from the international standard. The normal accounting system for the United States includes no capital account for the government sector and credits retirement saving of government employees to the public sector, rather than attributing it to households.² Second, the saving and investment data of Japan are adjusted to measure capital consumption allowances on a replacement cost basis to increase comparability with other countries.³ Finally, the data for Europe are based on an average of the

¹Particular note of the unusually large rise in U.S. long-term interest rates was made by the Council of Economic Advisors in the Economic Report of the President (1995).

²There are other differences, but they are of much less significance. The shift of the government retirement accounts raises the household saving rate in the United States by about one percent of net domestic product in the 1980s, and net government sector investment was about 0.5 percent of NDP.

³The adjustments are based on Hayashi (1986) and updates from the author. In addition to reporting depreciation on a historical cost basis, the Japanese national accounts do not depreciate all forms of government capital. The adjustments lower the Japanese national saving rate by 4-5 percent of NNP in the 1980s, and the private saving rate by 2-3 percentage points. They also tend to magnify both the extent of rise in the saving rate up to 1970 and its subsequent fall.

Figure 3. Net National Saving and Investment, United States, Japan, and Europe
Percent of Net National Product



Source: OECD, National Accounts, (Paris, 1994). European data is based on an average for France, Great Britain, Germany and Italy, using purchasing power parity exchange rates.

four largest economies, although the restriction has no appreciable effects on the conclusions.⁴

The most notable feature of the data is the widespread nature of the decline in both saving and investment across the OECD region. The drop-off is very evident at the level of national saving -- inclusive of the public sector -- and for private and household saving rates. Furthermore, despite the emphasis on a low rate of saving in the United States, it has actually fallen less, relative to the peak levels of the early 1970s, than saving in Europe and Japan. It is probably of greater concern, however, because the U.S. had such a low saving rate to begin with. The largest fall in both rates of saving and investment has occurred in Japan, but from levels of the early 1970s that were far in excess of Europe or the United States. There are, however, differences of timing. The decline in private saving within the United States and Europe is largely a phenomena of the 1980s. In contrast, the Japanese private saving rate rose sharply in the later portion of the 1960s and then fell precipitously after 1973.

Second, there are major differences in patterns of government saving. More than half of the decline in the national saving rates of Europe and the United States can be traced to the public sector. Public sector saving in Europe declined from a surplus of nearly 4 percent of net national product (NNP) in the 1960s to deficits averaging about 2 percent since 1980. The United States went from slightly positive public saving in the 1960s to deficits of 3 to 5 percent of NNP. The situation has been quite different in Japan where public saving turned down after 1973, but increased throughout the 1980s. The rise in public saving was large enough to more than offset the decline in private saving, and Japan stands out with an increase in the national saving rate during the 1980s.

Third, the decline in saving has been matched by a general falloff in rates of investment. Again, the drop is largest in Japan and the smallest in the United States, but from remarkably different initial levels. Once more, Europe is the intermediate case with a gradual by long-standing erosion of the share of net output devoted to investment. However, in all the countries the reduction of investment is concentrated

⁴Data for a larger number of countries is examined in Bosworth (1993).

in the private sector. There have been modest declines in the share of output devoted to investments of the general government sector in Europe and the United States, and it has remained constant in Japan.

Finally, the contrasts are most evident when the saving and investment rates are brought together to focus on the net balance. The fall in the national saving rate has exceeded that of investment in the United States, and it has experienced persistent current account deficits since 1980. Japan is the opposite case where the drop in the investment rate has exceeded that of saving and moved the economy toward persistent current account surpluses. Europe has seen nearly matching reductions in saving and investment, that have resulted in only a modest move toward current account deficits.

These data suggest two major questions. First, what have been the factors behind the reduced rates of private saving and investment that appear to be common to all of the industrial countries? And, second, what accounts for the differences in the behavior of the public sector in Europe, Japan, and the United States?

Private Saving and Investment

Relative to our theoretical expectations, it is the falloff in the rate of private saving, not investment, that seems surprising. Standard neoclassical growth theory emphasizes the long-run constancy of the capital-output ratio, β , under conditions of steady growth. If the relative price of capital and the capital intensity of technology are unchanged, the rate of growth of the capital stock should parallel that of output. Efforts to maintain a rate of growth of the capital stock in excess of that of output would drive down the return to capital under the law of diminishing returns. As a result, the share of net investment in output should be proportionate to the rate of output growth:

$$(1) K = \beta Y,$$

$$(2) I = K - K_{-1} = \beta(Y - Y_{-1}),$$

$$(3) I/Y = \beta y.$$

A decline in the investment rate, therefore, can be anticipated as a direct consequence of a slower rate of technological advance in the period after 1973.

The importance of the growth slowdown to understanding the drop in the investment rate is illustrated in table 1. Output growth for the periods of 1960-73 and 1973-93 is shown in the middle of the table for the United States, Japan, and Europe. Just as with the decline in the private saving and investment rates, the drop in the growth rate is smallest for the United States and largest for Japan. Furthermore, we can obtain a rough estimate of the incremental capital-output ratio in each sub-period by dividing the investment rate by the rate of growth of output. That value is shown in the lower portion of the table. The multiplication of the estimated initial-period value of β times the change in the output growth rate provides a simple estimate of the anticipated drop in the investment rate. As shown in columns (3) and (4) of the table, the actual and anticipated changes are very similar. In fact, the surprising conclusion is that the investment rate did not weaken as much as would have been anticipated. This, is also shown in the lower portion of the table by an implied rise in the capital-output ratio after 1973.

The argument might be made that the table has the causation backwards -- the decline in investment caused the decline in output -- and to some extent that is true. But data from the OECD can be used to adjust for the contribution of capital to output and focus on the underlying determinants of the long-run growth rate, the rate of growth of the labor supply and technology. Table 2 uses data on the stock of capital, employment, and output in the business sector to decompose the growth in output into three components of the change in employment growth, total factor productivity (technology), and capital-labor substitution (capital deepening). The contribution of each factor is based on its share in income of the sector. It is evident that the largest portion of the decline in output can be traced to a slower rate of gain in total factor productivity -- a negative technology shock.⁵ Again, the notion that the fall in investment has been somewhat less than would be anticipated under conditions of steady growth is reinforced by noting

⁵Alternative calculations, using more complex production relationships, have been carried out by the OECD and numerous academic studies; but they do not change the basic conclusion that the slowing of the investment rate played a minor role in the growth slowdown.

Table 1. Saving, Investment and Output Growth
Percent of Net National Product Product

Category	Average		Change	
	1965-73	1985-92	Actual	Expected
Private Investment				
United States	9.1	5.4	-3.7	-3.9
Europe	12.6	7.1	-5.6	-7.0
Japan	20.7	11.0	-9.7	-13.0
Private saving				
United States	10.6	7.9	-2.7	-4.6
Europe	13.7	10.6	-3.1	-7.6
Japan	20.0	11.9	-8.1	-12.5
Output growth				
United States	3.9	2.2	-1.7	n.a
Europe	4.5	2.0	-2.5	n.a
Japan	9.6	3.6	-6.0	n.a
Implied capital-output ratio				
United States	2.3	2.4	0.1	n.a
Europe	2.8	3.6	0.7	n.a
Japan	2.2	3.1	0.9	n.a
Implied wealth-income ratio				
United States	2.7	3.6	0.8	n.a
Europe	3.1	5.4	2.3	n.a
Japan	2.1	3.3	1.2	n.a

Source: OECD National Accounts, and author's calculations as described in text.

Table 2. Sources of Productivity Growth in the Business Sector
Annual percentage Changes

Component	United States		Japan		Europe	
	1960-73	1973-93	1960-73	1973-93	1960-73	1973-93
Output	4.0	2.4	10.0	3.8	4.9	2.3
Employment	1.8	1.8	1.5	1.0	-0.1	0.2
Total factor productivity	1.6	0.2	5.5	1.5	3.3	1.3
Capital-Labor substitution	0.6	0.4	2.9	1.3	1.7	0.8
Capital-output ratio	-0.2	0.8	2.8	2.2	0.2	0.6
Profit rate	16.9	15.5	23.9	14.4	13.3	12.0

Source: OECD Economic Outlook 56, Annex table 58 and author's calculations

the rise in the capital-ratio since 1973, and at least some rough evidence that the rate of return to capital has declined in response.

It is more difficult to account for the decline in private saving rates. Table 1 includes an exercise, parallel to that for investment, indicating the change in the saving rate that would be expected, if saving is based on a target wealth-income ratio. Such a formulation is roughly consistent with the data. However, it is important to note that the hypothesis is contrary to the standard theories of saving behavior. The common model of a forward-looking individual seeking to smooth saving over the life-cycle would imply that saving would rise in response to a lower expected rate of income growth. A household's current saving rate should be negatively related to expected growth in future income: individuals who expect to be rich in the future should consume some of that wealth now. Thus, a negative productivity shock should lower the investment rate, but raise the saving rate. While temporary changes in income will be buffered by compensating changes in saving, it is hard to believe that, after twenty years, consumers believe that the slowing of income growth (total factor productivity or TFP) is temporary. Instead, we need to look elsewhere for an explanation for the behavior of the private saving rate.

It might be possible to argue that the previous suggestion that international capital mobility has increased is wrong, and what is really going on is that saving has been forced down by the need to maintain a balance with domestic investment requirements. Such an interpretation seems implausible, however, when we note that real rates of interest have tended to rise during the period in question. If the problem was a surplus of saving, we would have expected interest rates to fall, and for the OECD region as a whole to at least move in the direction of a current account surplus, rather than a deficit.

It is increasingly popular to relate the past decline in saving to demographic factors. From the standpoint of the life-cycle hypothesis, slowing population growth and an aging of the population should be associated with a fall in the private saving rate. As the aged share of the population rises, the ratio of dissavers to savers rises, reducing the overall saving rate. Some support for this hypothesis has been found

in cross-country studies in which differences in saving were related to variations in the proportion of the population that is young or aged.⁶ In general, an increase in the ratio of persons over age 65 to those of age 20-65 is expected to reduce the private saving rate by about one percent, and a rise in the proportion of young dependents reduces the rate by about 0.5 percentage points. However, these results are dependent on the inclusion of a third, variable, the labor force participation rate of those over 65 which is used as a proxy for differences in the expected length of the retirement period. Thus, low rates of labor force participation among the elderly are associated with a high saving rate in anticipation of high retirement needs.

The basic difficulty with the demographic argument is that past changes in the age composition of the population are not correlated with changes in the saving rate over time. The age distributions of the populations are shown in table 3. While there is a steady increase in the share of the population that is over age 65 in all three regions, it is offset by a sharp decline in the proportion under age twenty. As a result, the dependency rate, computed using the relative weights of the old and the young from the cross-country studies, does not rise over the period of 1960 to 1990. There is an increase in the ratio of the aged alone to those of working age, but it grows both in the period when the private saving rate was rising and when it was falling. For Europe, the ratio actually declined during the 1980s.

The hypothesis is most consistent for Japan where the rise in the ratio of the elderly to those of working age accelerated after 1970.⁷ It is not clear, however, why the decline in the size of the younger cohorts should be ignored. It is also important to note that the demographic change is occurring against the backdrop of a very large lengthening of retirement periods, which should have raised the private saving rate.⁸

⁶See Bosworth (1993, p.63) for a summary of the various studies.

⁷Horioka (1972). The inclusion of this variable in a statistical equation for the Japanese saving rate implies that the private saving rate will turn negative in about ten years and reach a negative -12 percent by 2020.

⁸Bosworth (1993, pp. 62-66).

Table 3. The Age Distribution of the Population, 1960 to 2030
Percent of total population

Country	Year							
	1960	1970	1980	1990	2000	2010	2020	2030
United States								
Age 0-19	38.5	37.7	31.8	28.8	28.6	27.4	26.2	25.8
Age 20-64	52.3	52.5	56.9	58.7	59.0	59.7	57.7	56.5
Age 65+	9.2	9.8	11.3	12.5	12.4	12.9	16.1	17.8
Japan								
Age 0-19	40.7	32.8	30.6	26.5	21.0	20.2	19.6	19.5
Age 20-64	53.6	60.1	60.3	61.5	62.6	59.3	55.3	54.4
Age 65+	5.7	7.1	9.0	12.0	16.4	20.5	25.2	26.1
Europe								
Age 0-19	30.6	31.4	29.0	24.6	22.8	21.1	20.1	20.3
Age 20-64	58.3	55.9	56.5	60.6	61.0	61.0	59.6	55.5
Age 65+	11.1	12.7	14.6	14.8	16.1	17.9	20.3	24.2
Dependency Ratio:								
United States	54.5	54.6	47.8	45.9	45.3	44.5	50.6	54.3
Japan	48.7	39.0	40.4	41.0	43.0	51.6	63.2	65.8
Europe	45.2	50.8	51.4	44.8	45.2	46.6	50.9	61.8
Aged Ratio:								
United States	17.7	18.7	19.8	21.3	21.1	21.5	28.0	31.5
Japan	10.7	11.7	15.0	19.5	26.2	34.6	45.5	47.9
Europe	19.0	22.8	25.8	24.4	26.5	29.3	34.1	43.5

Source: United Nations (1994) and author's calculations. Europe is represented as the sum of France, Germany, Great Britain, and Italy. The dependency rate is computed as the ratio of those over age 65, plus one half of those under age 20, to the population of age 20 to 64. The aged rate is computed as the ratio of those over age 65 to the population aged 20 to 64.

Furthermore, an examination of survey data for individual households implies that the decline in saving is evident for all age groups, rather than being related to changes in the distribution among age groups.⁹ The survey data suggest that whatever was driving the private saving rate, it is something that altered saving within groups and was very widespread -- for example, income growth.

At present, explanations for the decline in private saving seem very unsatisfactory. The most promising line of research currently focuses on constraints that limit households' ability to borrow in ways that would smooth out their consumption in response to income changes. Thus, a significant amount of saving may be motivated by the need for a precautionary reserve, or in order to save in anticipation of a specific major purchase, such as a home. Within this framework, the expansion of household access to credit markets, through credit cards, mortgage lending and other financial innovations, is seen as reducing the need for precautionary balances, and thus rates of saving. Some support for this view is obtained by noting that there has been no erosion of saving through contractual retirement programs in the United States. Instead, the decline is concentrated in reduced net holdings of discretionary forms of savings.

The shift away from a pure life-cycle motivation for saving also leads to an introduction of a positive association between saving and the rate of growth of income. Thus, it may be that because changes in consumption lag well behind changes in income, it is easier to save during periods of rapid income growth, even if that growth is anticipated. In such a case, a portion of the explanation for the decline in the private saving would be the same as that for investment rate: a lower overall rate of growth in total factor productivity, and thus income.

Finally, it is often argued that the decline in private saving can be traced to the expansion of public transfer programs for the elderly. At least for the United States, however, it is difficult to relate the two in terms of timing. The largest expansion of the U.S. public retirement programs took place up to the early 1970s. Since that time, the magnitude of the promised retirement benefit has been cut back. Yet, the

⁹Bosworth, Burtless, and Sabelhaus (1991).

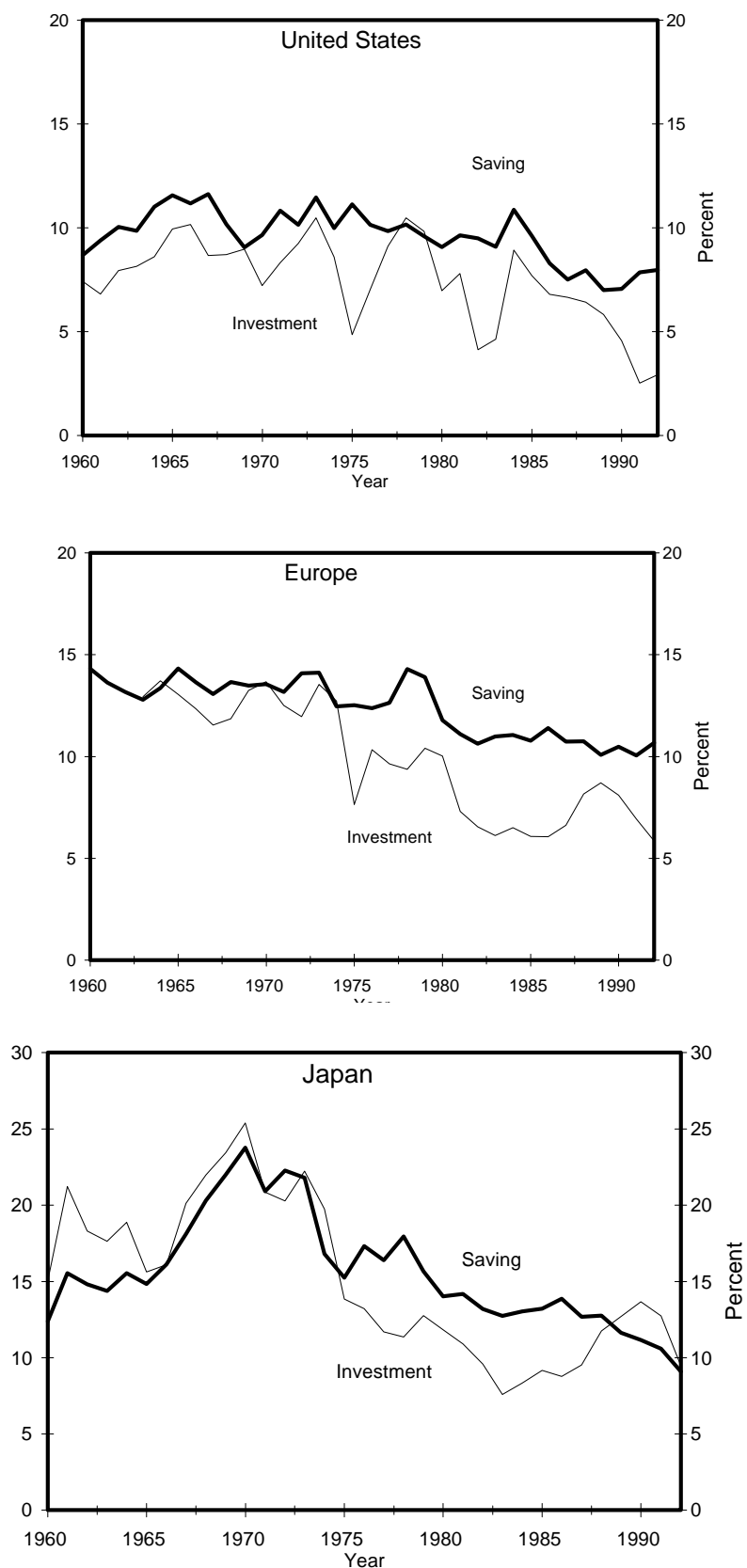
decline in the private saving rate is largely a phenomena of the 1980s. Public outlays on medical care for the elderly have continued to grow at a rapid pace, but the increased public payment has been a reflection of large increases in total costs, rather than a reduction in the out-of-pocket costs of retired persons. Still, others would argue that there are long lags in the response of private behavior to changes in public programs. This, is an area of continuing research, but not one of consensus.

In summary, all of the industrial countries were impacted by a substantial negative productivity shock after 1973 that appears to have permanently lowered the growth of income. That shock provides a ready explanation for the decline in rates of private investment, but there is no sound theoretical basis for the parallel decline in the private saving rate. In terms of the present interest in the issue of balance between saving and investment, it is worth noting, however, that the decline in private saving rates has been less than that of investment. As shown in figure 4, there has been a marked shift in the private S-I balance within the OECD towards a saving surplus. If the balance between the demand and supply for capital depended only on the private sector, those pressures have actually eased over the past three decades. Thus, current concerns about a shortfall of saving must arise from the behavior of the public sector.

Public Sector Saving-Investment Balance

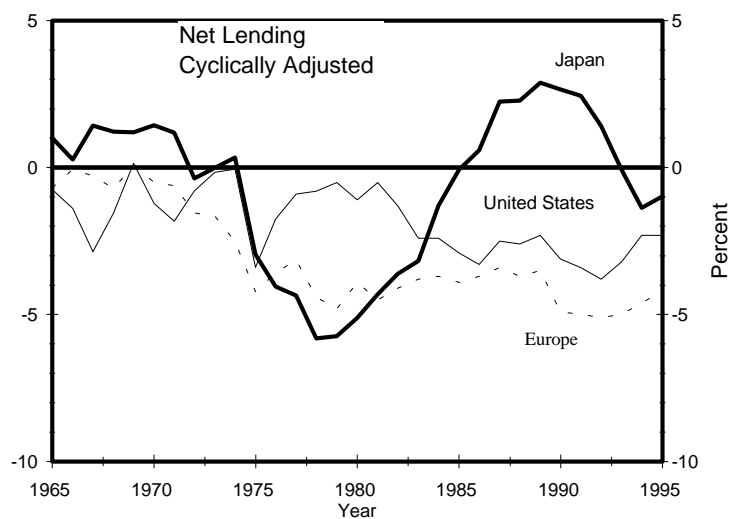
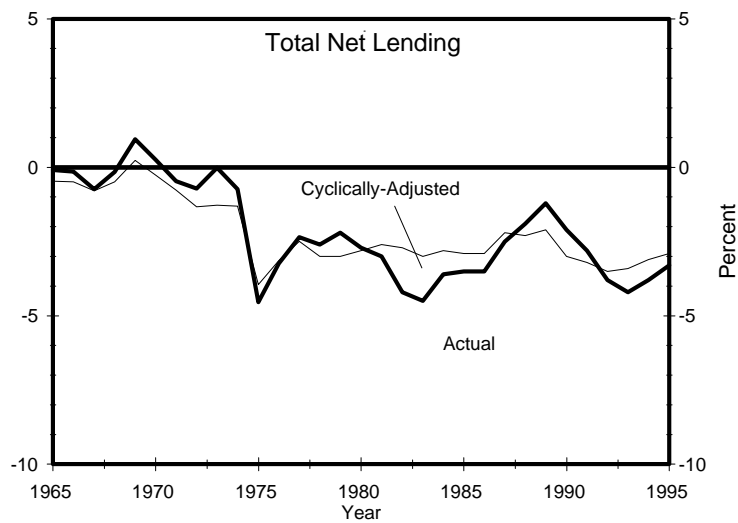
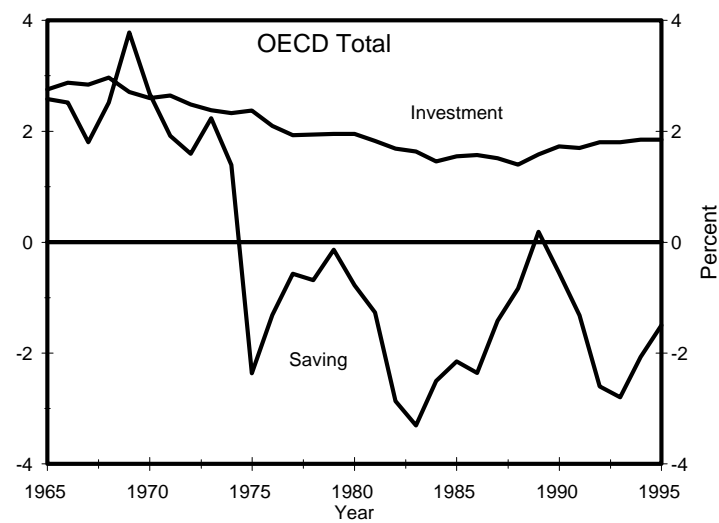
The behavior of public saving and investment has been quite different from that of the private sector. In most countries, there has been only a modest decline in public investment, whereas there has been a large falloff in the rate of public sector saving since the 1960s(panel A of figure 5). The result has been a shift toward larger public sector budget deficits that has been more than enough to offset the surplus of the private sector saving-investment balance, and the OECD as a whole has moved from a net surplus on the current account to a deficit. Thus, the public sector has been a major contributor to the fall in

Figure 4. Private Saving-Investment Balance
Percent of Net National Product



Source: OECD National Accounts and author's calculations.

Figure 5. Government Saving and Investment, OECD Total
Percent of Net National Product



Source: OECD National Accounts.

national saving, but the slowing of investment is concentrated in the private sector.

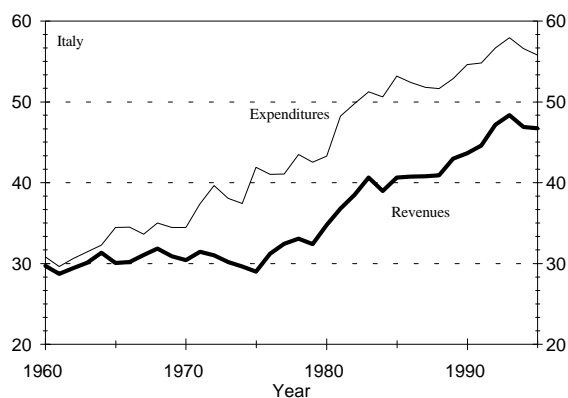
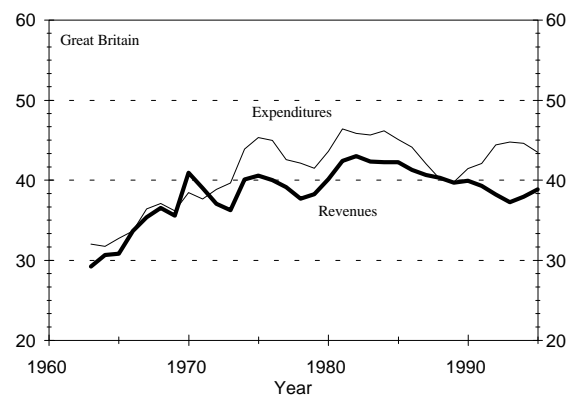
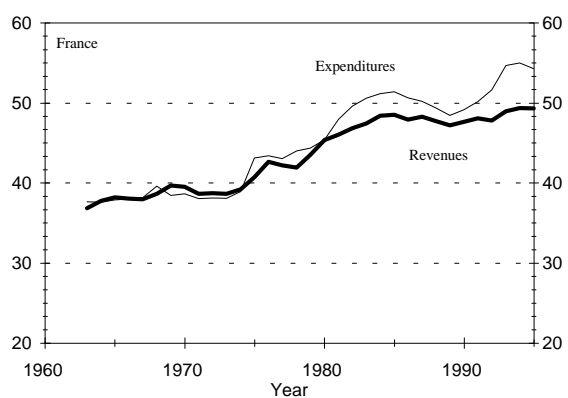
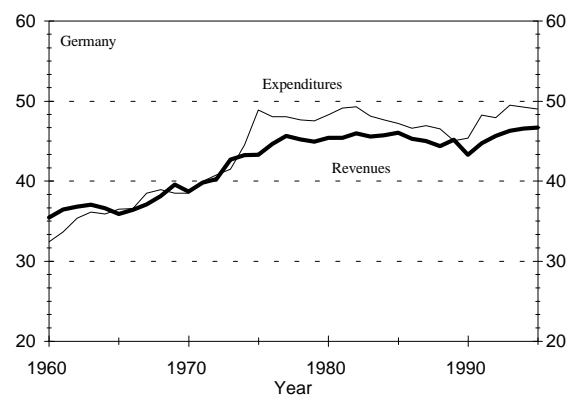
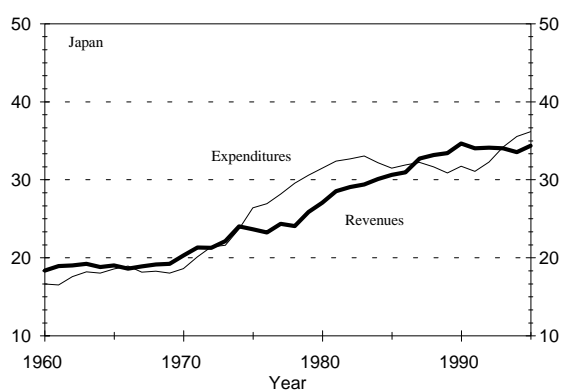
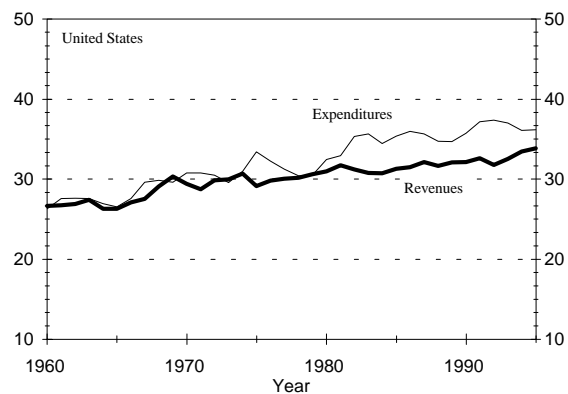
Somewhat surprisingly, however, the deterioration in the public sector balance occurred largely in the early 1970s, and since then there has been little evidence of a growing deficit for the OECD as a whole. This is shown in the middle of figure 5. Net lending of the government sector fell sharply in the 1974-75 recession and never recovered in subsequent years. The lack of a continuing deterioration is even more evident on a cyclically adjusted basis.

Furthermore, the behavior of the public sector balance is highly diverse across countries. Whereas there was a common pattern of declining rates of private saving and investment in nearly all industrial countries, that is not true of the public sector. The overall budget balance of the four large European economies deteriorated after 1974, but that result is heavily dominated by Italy. The budget deficit of the United States is a more recent phenomenon, emerging in the 1980s. And, Japan stands out with a still different pattern, running large deficits in the late 1970s, but moving back into substantial surplus in the 1980s.

The diversity of experience is even more evident in figure 6, which shows the trends in government outlays and revenues in all six economies. In the United States, the growth of revenues and expenditures have steadily exceeded the growth of GDP over the past three decades, and a sustained gap opened up in the 1980s. A similar pattern of steady growth in the government share of GDP is evident for Italy. In many other countries, however, the growth in the expenditure share came to an end around 1980. The share of GDP devoted to government outlays leveled out during the 1980s in Japan, Germany, and Great Britain.

Some details on the composition of government spending is provided in table 4. It is interesting to note that direct government purchases of goods and services have continued to rise relative to GDP only for Italy. Instead, the growth of government is concentrated in the transfer programs and interest payments on the government debt. In the case of the United States, the growth in program outlays can be traced even

Figure 6. Government Revenues and Expenditures, 1960-95
Percent of GDP



OECD. National Accounts.

more specifically to increased spending on medical care. Social security transfers had a more dominant influence on the Japanese budget, since nearly all other categories of spending were cut back relative to GDP. Japan also stands out for the extremely low level of current outlays. Germany and Great Britain cut back spending in a broad range of areas during the 1980s.¹⁰ In contrast, the expenditure share rose by 4 percent of GDP in France and an enormous 10 percentage points in Italy.

Today, government outlays are dominated by a wide array of social programs in the areas of health, education, unemployment, general assistance, and pensions. The costs of these programs are also very sensitive to differences in the age distribution of the population, suggesting that demographic factors should have a strong influence on cost trends. The importance of the age distribution is illustrated in table 5. Per capita outlay on those aged 65 and over are typically five times higher than those for individuals aged 15 to 64, and the costs for those under age 15 are about twice that of working-age adults. There is also a considerable variation among countries in the generosity of the social welfare programs. If the per capita costs are scaled by GDP per capita, Germany and France stand out with particularly high benefits. Government payments for individuals over age 65 are nearly 80 percent of GDP per capita. The costs are significantly lower in the United States at 60 percent of per capita GDP, and much less in Great Britain.

Similar to the previous results for private saving, demographic changes have not yet had a major influence on government program costs. While there has been a significant increase in the proportion of the population that is aged in Japan and Europe, it has been largely offset by a decline in the proportion that is young. Since the ratio of social costs for the aged is about twice that of the young, the dependency rates calculated in table 2 serve as reasonably accurate indexes of the past influence of demographic changes on public budgets. They have actually fallen over the period of 1960 to 1990.

A similar conclusion was obtained in an OECD study as reported in table 6. In that report, the expenditure weights of table 5 were used to calculate the effects of demographic changes on total

¹⁰Germany's situation would look different if the data were extended into the 1990s, when the costs of unification pushed outlays back up. Even then, however, total outlays are about the same share of GDP as in 1980.

Table 4. Components of Government Outlays, 1980-90

Percent of Gross Domestic Product

	Government consumption	Social Security	Social Assistance	Subsidies and other transfers	Interest payments	Current Outlays	Capital transactions	Total outlays	Net Lending
United States									
1980	17.6	6.7	3.3	1.5	3.2	32.2	0.3	32.5	-1.5
1990	17.8	7.2	3.3	1.7	5.1	35.0	0.7	35.7	-3.6
Japan									
1980	9.8	7.9	2.2	2.0	3.1	25.0	6.5	31.5	-4.4
1990	9.1	10.0	1.5	1.7	3.9	26.2	5.6	31.8	2.9
Germany									
1980	20.2	12.0	2.9	6.2	1.9	43.2	5.2	48.3	-2.9
1990	18.3	11.1	2.5	8.0	2.6	42.4	3.0	45.4	-2.1
France									
1980	18.1	15.7	1.6	5.5	1.5	42.4	3.1	45.4	-0.0
1990	17.9	17.0	2.3	5.5	2.9	45.8	3.4	49.2	-1.5
Great Britain									
1980	21.6	6.4	3.6	5.2	4.7	41.5	2.2	43.7	-3.5
1990	20.6	5.7	4.5	3.9	3.4	38.1	3.4	41.5	-1.5
Italy									
1980	14.7	14.1	n.a.	3.6	5.6	38.0	5.3	43.3	-8.5
1990	17.4	18.2	n.a.	3.6	9.6	48.8	6.2	55.0	-10.9

Components of government consumption, 1990:

	United States	Japan	Germany	France	Great Britain	Italy
General services	2.6	2.5	3.4	3.0	3.0	4.5
Defense	6.0	0.9	2.2	3.0	4.0	1.9
Education	5.1	3.2	3.5	4.6	4.2	4.9
Health	1.0	0.4	5.6	3.1	4.7	3.5
Housing and social services	1.0	1.1	2.5	2.5	2.1	1.2
Economic and other	2.1	1.0	1.2	1.8	2.5	1.3
Total	17.8	9.1	18.3	17.9	20.6	17.4

Source: OECD, National Accounts

expenditures and expenditures adjusted for changes in the size of the population of working age. Except for Japan, the demographic factors tended to reduce expenditures per person of working age. Instead the past growth is accounted for by an expansion of the basic programs and increased costs per beneficiary.

I believe that many of the fiscal problems of these countries can be traced to inertia and the political difficulties of adjusting expectations and program parameters to the slower rate of income growth that emerged after 1973. This is particularly evident for the United States. For many years, the annual budget deliberations have been based on a projection of the future costs of maintaining existing programs, allowing for growth in beneficiaries and inflation. Similarly, revenues are projected on the basis of existing tax rates. In the 1970s, those current services projections typically showed annual increases in real outlays of about 1.5 percent annually. On the other hand, revenues expanded in line with the growth of real incomes, about 4 percent annually; and, because the tax system was not indexed, inflation pushed taxpayers into higher tax brackets, yielding automatic gains in real revenues as high as 6 percent per year. Thus, if the Congress could not agree on positive legislation, there was a strong tendency for the budget to move toward surplus. Each year there was room for the Congress to enact popular measures, such as tax rate reductions or program expansions.

In contrast, the growing role of entitlement programs in the 1990s contributes to a situation where the built-in growth in existing programs gives rise to annual increases in outlays of 3-3.5 percent. On the other side, the tax system is indexed for inflation and the trend growth of the economy has slowed to about 2.5 percent annually. Thus, simply holding the budget deficit to a constant share of income requires a continual series of cuts in programs or increased tax rates, and congressional stalemate implies an increase in the deficit. While there is agreement that budget deficits are undesirable, the Congress has reached an impasse on the choice between expenditure cuts and tax increases to eliminate it.

The parliamentary system of other countries, with its emphasis on majority rule, seemingly has been more capable of making these choices. The obvious exception is Italy, which has had some of the

Table 5. Distribution of Social Expenditures by Age Group, 1980

Country	Age		
	0-14	15-64	65+
	Ratio to 15-64 group:		
United States	1.5	1.0	5.7
Japan	2.3	1.0	5.3
Germany	1.7	1.0	5.3
France	1.9	1.0	5.1
Great Britain	1.9	1.0	4.0
Italy	0.9	1.0	3.5
	Percent of GDP per capita:		
United States	15.8	10.5	60.0
Japan	21.2	9.3	49.7
Germany	24.4	14.5	77.0
France	29.8	15.3	78.5
Great Britain	22.4	11.9	47.6
Italy	14.9	16.4	56.8

Source: OECD (1988, p.34). Social expenditures include education, social assistance, pensions, and health.

Table 6. Implications of Demographic Chages for Social Expenditures
Index, 1980 =100

	1980	1990	2000	2010	2020	2030
	Total Expenditures					
United States	100	107	112	125	147	162
Japan	100	113	125	141	141	136
Germany	100	98	104	104	103	106
France	100	106	109	116	124	130
Great Britain	100	98	97	101	105	113
Italy	100	103	103	108	111	113
	Expenditures per capita of 15-65 age group					
United States	100	99	96	99	117	132
Japan	100	103	115	137	142	140
Germany	100	95	106	113	124	149
France	100	99	100	104	116	128
Great Britain	100	95	93	96	101	112
Italy	100	97	99	106	116	131

Source: OECD (1988). Indexes are computed using the relative expenditure weights of table 5.

same problems as the United States of establishing majority control and responsibility. It also seems evident that political opposition to budget deficits has remained stronger in some countries.

Some support for the role of income growth as a major determinant of the fiscal balance was obtained in an earlier study where the budget balance of thirteen industrial countries over the period of 1966-90 was related to the rate of income growth over the prior five years.¹¹ The coefficients were all highly significant statistically and totaled about 0.65, implying that a lower growth rate would result in a permanently higher public sector deficit. Thus, lower income growth can go a long way toward explaining the larger budget deficits of the United States and Europe; but it does not account for Japan, where the budget balance moved back into substantial surplus in the 1980s, despite a very pronounced slowing of growth.

In summary, sharply larger public budget deficits account for much of the decline in national saving since the early 1970s. However, to a large extent that appears to have been a one-time event related to the slowing of income growth after 1973. There is very little evidence that the problem is getting worse on a secular basis. Finally, unlike the situation for private saving and investment, there is a great deal of diversity across countries, both with respect to the growth in government expenditures and the budget balance. This suggests that future trends in budget imbalances are likely to depend upon political and economic events particular to individual countries, rather than any systemic pattern of change.

II. Globalization of Capital Markets

Before we go too far in examining the outlook for capital formation from an international perspective, we should offer some evidence that there are global dimensions to changes in national patterns of saving and investment. This is a discussion that has been marked by a great deal of confusion. First, beginning with a well-known paper by Feldstein and Horioka, some observers have challenged the whole

¹¹Bosworth (1993, pp. 97-102).

notion that capital is mobile internationally by pointing to the high degree of correlation between domestic rates of saving and investment.¹² If capital was in fact perfectly mobile, would not a shortfall of national saving in one country be easily made up by borrowing from others, with no implications for domestic interest rates? While the correlation has weakened during the 1980s, the Feldstein-Horioka finding still remains as a major challenge to the view of a fully-integrated global market.

On the other side, some observers have argued that they can perceive a tendency for interest rates to equalize across countries in recent years, and use that as evidence that we are moving toward a single global rate of interest. As emphasized by Frankel, however, it is important to distinguish clearly between different concepts of interest rate parity.¹³ Even in fully integrated markets, interest rates on assets of equivalent risk, but denominated in different currencies, will equalize only to the extent of expected change in the exchange rate:

$$(4) \quad i - i^* - (\Delta s^e) = 0.$$

Covered interest rate parity would imply an equalization of interest rates contracted in a common currency, such as U.S. bonds issued domestically and in the Eurodollar market, or equivalence of rates after adjusting for the cost of hedging in the forward market. Uncovered parity is a much stronger condition, and it implies an equalization of rates on bonds negotiated in different currencies, a zero exchange rate premium. Most studies find that covered interest rate parity holds for very short maturities where the existence of forward rate markets allows investors to hedge the risk of exchange rate changes, but it is important to note that efficient forward markets do not exist over longer periods of time. Furthermore, interest rates on U.S. bonds issued in the Eurodollar market differ only marginally from those issued within the United States, implying the elimination of a geographical premium; but not uncovered interest rate parity.

Some studies have tried to reduce the role of the exchange rate by decomposing it into a real and

¹²Feldstein and Horioka (1980).

¹³Frankel (1992).

nominal component. Thus, real interest rates would differ only by the amount of expected change in real exchange rates. They go on to assume that Purchasing Power Parity (PPP) holds over long periods of time in order to argue that the long-run expected exchange rate should be constant, and use the real interest rate differential as a measure of capital market integration. In invoking the PPP condition, however, they are implicitly assuming a full integration of goods markets. Yet, that condition may not hold for two reasons. First, many goods and services do not trade internationally, implying the price index used to compute real interest rates should be restricted to the prices of tradable goods. Second, even within the category of tradable goods, the expansion and contraction of international trade flows still requires relatively large changes in relative prices and involves substantial lags of adjustment. Thus, the potential for change in real exchange rates remains large; and real interest rates, when measured over a shorter period than the adjustment lag in goods trade, will differ even if capital markets were completely free of frictions.

Thus, the saving-investment correlations reported by Feldstein and Horioka, which involve the transfer of real resources, incorporate the frictions in goods markets, which remain considerable, and not just the extent of integration of financial markets. In addition, their correlations relate only to the net balance in financial transactions, because only the net flow of financial claims gives rise to real sector consequences. Thus, continuation of a close link between domestic saving and investment and limited current account imbalances can exist against a backdrop of an enormous expansion of gross cross-border financial transactions.

As long as there are risks of currency revaluations, the potential for re-imposition of capital controls when countries get in trouble, or the possibility that even governments may not meet their commitments, international interest rates will not fully equilibrate. The risk of changes in currency values, however, is little different than other forms of risk involved with holding the financial claims of different categories of borrowers; and uncovered interest-rate differentials should not be interpreted as evidence of the degree of capital market integration. Given continued frictions in goods trade, as measured by the low

response of trade flows to changes in real exchange rates, and interventions by governments to limit movements in the exchange rate, shocks to a nation's saving-investment balance are likely to continue to rebound most heavily on domestic markets with only a growing magnitude of spillover abroad. The removal of government imposed barriers to international financial transactions expands the options for diversifying investment portfolios and implies a degree of linkage between national financial markets that did not previously exist; but we are far from the condition of a single global interest rate. That would require the elimination of all currency risk.

Throughout much of the 1980s, the growth of an international financial market appeared as a phenomena limited largely to the industrial countries. Memories of the debt crisis of the early years of the decade served to exclude most developing countries from a large scale participation. In recent years, the situation has changed significantly. The World Bank reports that net private long-term capital flows to developing countries rose from \$45 billion in 1990 to \$173 billion in 1994. The composition of those flows have also changed, moving away from reliance on bank loans to the direct market. On the basis of data from the IMF, developing countries increased their issues in international bond markets from \$5 billion in 1990 to \$43 billion in 1993. Net bank claims on developing countries declined throughout the last half of the 1980s, and rose by an average of only \$13 billion in 1991-93. Furthermore, between 1990 and 1994, annual foreign direct investment flows to the developing countries increased from \$27 billion to \$78 billion, and equity investment rose from \$4 billion to \$40 billion.

Yet, it is striking how small the net capital flows to developing countries are relative to the total volume of saving and investment in the industrial countries. After deduction of interest payments, the net resource transfer to developing countries has averaged less than \$100 billion annually in recent years. This is relative to a total volume of investment within the OECD of about \$3 trillion. Furthermore, the data of the OECD countries actually show a net current account deficit with the rest of the world since the early

1980s.¹⁴ This is quite surprising in view of the common view of wealthy countries as net creditors, supplying capital to poorer economies with greater unexploited investment opportunities. Instead, it appears that the future costs of capital within the industrial economies will be determined largely by trends in their own rates of saving and investment, not by the magnitude of external capital flows. For the foreseeable future, net capital transfers to developing countries are likely to be limited to a few percent of their GDP because of doubts about the sustainability of large inflows and the ability of large debtor countries to meet future repayments.

III. The Future Outlook.

What can an examination of the prior behavior of saving and investment tell us about the future? First, there are strong forces tying saving and investment rates together. Thus, despite some of the implications of standard models of saving and investment behavior, shocks to the system in the form of changes in the underlying determinants of income growth seem to drive saving and investment rates in the same direction. Thus, the post-1973 decline in total factor productivity growth lowered both rates of saving and investment. While the positive link between income growth and rates of saving is obviously weaker than that of investment, it is reinforced by a tendency for income growth rates to have a positive effect on net saving of the public sector. Furthermore, despite the increased mobility of financial capital, the frictions to the free flow of real resources across national borders remains substantial. There is, for example, little evidence of a systematic increase in the price elasticity of either exports or imports. The rigidities of the trading system implies that much of any domestic disturbance to a country's saving-investment balance will continue to be absorbed domestically through adjustments of interest rates and real

¹⁴The apparent inconsistency between a current account deficit for the industrial countries and a net resource transfer to the developing economies reflects the large residual in the global summation of reported balances. that is largely due to an under-reporting of capital income receipts.

exchange rates. We should not expect future rates of saving and investment in industrial countries to fly away in opposite directions.

Second, the two major potential shocks that stand out for their potential to alter the balance between the demand and supply of capital are changes in income growth and demographics. In the case of income growth, a higher rate of technological change will raise private investment more than private saving, implying a tightening of capital markets. This outcome can be easily altered, however, by the induced response of the public sector, where higher rates of revenue growth will relieve much of the pressures on budgets. Thus, between the 1960s and the 1980s, the rise in the private sector saving-investment balance was more than offset by a deterioration within the public sector, and the OECD countries moved into a net deficit position with the rest of the world.

While there has been a significant rise in the proportion of the population over aged 65, the industrial countries have not yet truly faced the implications for saving or public budgets because, to date, the increase in the number of aged persons has been largely offset by a decline in the number of children. Thus, past changes do not provide good evidence as to the impact of demographic change in the future.

The remainder of this section, therefore, examine the outlook for income growth and demographic change in greater detail.

Income Growth

A simple perspective on future growth prospects can be obtained within the framework used to derive the components of past growth in table 2. If we begin with the assumption of balanced growth in which the capital stock expands in line with output, the growth rate is determined by the growth of total factor productivity (λ), growth in the labor supply(n), and labor's share of income(α):

$$(5) \ g = \lambda/\alpha + n.$$

As shown in table 7, all of the industrial countries will be experiencing a significant slowing of

Table 7. Labor Force Growth

Annual percentage rate

Country	1960-70	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30
United States	1.7	2.6	1.6	1.2	1.0	0.4	0.3
Japan	1.3	0.9	1.2	0.8	-0.3	-0.9	-0.6
Germany	0.1	0.4	0.9	0.3	-0.3	-0.4	-1.0
France	0.7	0.9	0.5	0.6	0.4	-0.3	-0.5
Great Britain	0.3	0.5	0.7	0.4	0.3	0.2	-0.7
Italy	-0.4	0.8	0.9	0.3	-0.4	-0.7	-1.3
Europe	0.2	0.6	0.8	0.3	-0.0	-0.3	-0.9

Source: United Nations (1994) and author's calculations. The estimates for Germany do not incorporate the effects of unification.

labor force growth in the 1990s and the early part of the next century. The slowdown is particularly pronounced for Japan, taking a full percentage point off the growth rate by the early part of the next decade. Reunification has resulted in a substantial one shot rise in the German labor force; but since the age structure of East Germany was older than that of the West, the growth rate will also decline sharply. Germany's effective labor supply should continue to rise, however, as the productivity of workers in the eastern portion rises over the remainder of this decade. That increment to the labor force should keep investment at a very high level for a decade or more. Still for Europe as a whole, the slowing of labor force growth will deduct nearly a percentage point from the growth rate. The United States is also in the midst of a substantial slowing of growth in the work-force.

Any projection of the future growth of TFP is highly problematic. The technological changes in the computer and communications industries are having large effects of the structure of the economy, but it is not clear that they will result in substantial gains in productivity. One recent article has concluded that the effects on productivity growth are likely to continue to be small.¹⁵ There may be some positive improvement in productivity growth within the United States because the lower growth of the labor force from the previous rapid expansion may put a greater premium on labor saving measures. Still, it seems most reasonable to project TFP growth to continue at the rate of the last decade.

The overall result is likely to be a small, but significant, slowing of output growth within the OECD countries over the next two decades. Such an outcome would imply a further decline in rates of private investment, apart from the near-term cyclical recovery. Furthermore, the rate of private sector investment in Japan in the late 1980s appears to have been unsustainable, as measured by the substantial increase in the capital-output ratio and the decline in the return on capital. If past patterns hold true, the decline in private saving rates would be less, so that the private sector is likely to continue to generate a significant net surplus of saving.

¹⁵Oliner and Sichel (1994).

On the other hand, there is little reason to anticipate that the slowing of income growth will lead to commensurate increases in public sector dissaving. Germany has already taken significant actions to reduce its budget deficit following the sharp increases in public sector expenditures associated with reunification. Those costs also ought to decline in future years. Efforts to move toward monetary union also appear to exerting pressure on the large European deficit countries, such as Italy, to reduce their public sector imbalances.

The largest question mark is Japan. Its efforts to move from a large deficit position at the end of the 1970s to substantial surpluses in the late 1980s was an important offset to the general pattern of declining rates of national saving. Such a major rise in public sector saving will not be repeated in the future.

Demographic Change

In the short run, a slowing of population change has two important effects. First, it reduces the need for investment in housing and business capital because of a slower rate of growth of the labor force. That is the effect discussed above in terms of output growth. Second, the reduced population growth rate initially lowers the dependency rate, largely as a result of a reduced number of children. That process has been evident in the industrial countries for the past decade or more. As long as the analysis is conducted within the framework of a closed economy, where saving is determined by the investment need, rates of both saving and investment should decline.¹⁶

On the other hand, an additional feature of demographic change within the industrial countries is a lengthening of life expectancy and a longer period of retirement. This feature should lead to a rise in saving rates during the working years, and within a global economy it can occur without depressing the rate of return on domestic capital. This pattern also seems evident in that private saving rates have

¹⁶Cutler and others (1990).

declined less than investment. Those potential gains in national wealth accumulation prior to the rise in retirement, however, have been wiped out by the offsetting increase in public sector deficits.

With the exception of Japan, the industrial countries are still in the early stage in which the declining number of children reduces the dependency rate (table 3). In fact, it is not expected to rise significantly in the United States until about 2020. The rise will occur sooner, but more gradually, in Europe. Japan, and to a lesser extent Germany, will be the first to deal with a large sustained rise in the dependency rate.

The effects of aging on the future trend of the private saving rate remain highly debatable. Horioka in his examination of Japanese saving focuses on the proportion of the population that is aged and argues that it has and will continue to reduce the household saving rate.¹⁷ On the other hand, if one emphasizes the dependency rate, it has not increased in Japan (see table 2) and cannot explain the past fall in the saving rate. It will, however, rise dramatically within the next two decades. Thus, a true test of the relationship between saving and demographics remains in the future.

The study by Cutler and others also concluded that an anticipated aging of the population provided no reason for higher saving. Their analysis, however, was dominated by the decline in required investment, and the link between saving and investment in a closed economy. Within an open economy, current workers can accumulate wealth, without depressing the return to capital, as a means of reducing the burden of their consumption on future workers. Concerns about increased inter-generational transfers might make higher saving a superior policy.

The implications of an aging population for public expenditures seem less ambiguous; but the surprising result of the analysis of table 6 is how far in the future those costs are for most economies. Demographic factors will have a dramatic effect on public spending in Japan in the very near future and a smaller effect in Germany. For most countries, however, the major effects will not be felt for twenty or

¹⁷Horioka (1992).

more years. Even then, it is not evident that increases in public outlays will lead to larger budget deficits.

In summary, I see little reason to expect a deterioration of the saving-investment balance within the OECD economies. A declining rate of labor force growth will, apart from the current cyclical recovery, reduce the private rate of investment. Past experience, however, suggest that the response of private saving to lower rates of income growth will be less than that for investment. Furthermore, except for Japan, a large increase in the dependency rate, which should reduce private saving, lies about 20 years in the future.

The sharp rise in public sector dissaving appears to be a one-shot response to the reduction in income growth, rather than representing a continuing trend. To a surprising extent, many countries have succeeded in slowing the growth of public spending during the 1980s, and the currently large deficits in Europe seem to have a large cyclical component.

The greatest uncertainties lie first with the resolution of budget problems in the United States, where the built-in growth of public programs continues to exceed income growth in an atmosphere of extreme resistance to tax increases. And second, Japan will be the first country to feel the effects of a large-scale aging of the population. At present, we are highly uncertain as to the effect of aging on private saving and the public sector budget balance. In that sense, Japan will serve as an early case study of the problems that other countries will face later in the next century.

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Appendix Table 1. National Saving and Investment, 1960-93

Percent of net national product

Category	1960-69	1970-79	1980-89	1990-92
United States				
National saving	11.0	9.1	5.2	3.0
General government	0.7	-1.2	-3.7	-4.7
Private	10.3	10.3	8.9	7.6
Households	6.2	7.5	7.0	5.5
Domestic investment	10.1	9.2	7.0	4.1
General government	1.6	0.7	0.4	0.7
Private	8.5	8.5	6.6	3.3
Current account	0.7	0.2	-1.9	-0.9
Statistical discrepancy	-0.2	0.3	-0.1	0.3
Europe				
National saving	17.3	14.2	9.3	8.3
General government	3.7	0.9	-1.6	-2.1
Private	13.5	13.3	10.9	10.4
Households	11.8	12.2	9.4	9.0
Domestic investment	16.6	14.3	9.3	9.0
General government	3.7	3.1	2.1	2.0
Private	12.7	11.2	7.2	7.0
Current account	0.7	0.3	0.1	-0.7
Statistical discrepancy	-0.0	0.4	0.1	0.0
Japan				
National saving	22.0	22.5	16.2	18.5
General government	5.6	3.6	3.1	8.2
Private	16.4	18.8	13.1	10.3
Households	11.5	15.8	11.8	10.5
Domestic investment	22.3	21.5	13.6	15.6
General government	3.7	4.4	3.6	3.6
Private	19.1	17.1	10.0	12.0
Current account	0.2	0.9	2.5	2.8
Statistical discrepancy	0.5	-0.0	-0.1	-0.0

Source: OECD National Accounts, and author's calculations