

U.S. TAX REFORM 1981 AND 1986: IMPACT ON INTERNATIONAL CAPITAL MARKETS AND CAPITAL FLOWS

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1. The Problem

SINCE about 1981, international capital markets have been subject to substantial fluctuations. By way of the high interest rates, the United States exported its recession to Europe and it exacerbated the international debt crisis. Real and nominal U.S. interest rates were extremely high and have only recently declined. The dollar first rose to a peak of DM 3.45 in February 1985, and now, three years later, only massive interventions have prevented it from falling below DM 1.60. The U.S. capital import rose to heights of \$144 billion in 1986 and \$157 billion in 1987, more than one third of which was officially financed by the central banks of U.S. trading partners.¹ Japan, Germany and other exporting countries experienced rapid growth in their export industries and stagnation in the domestic, interest-sensitive, sectors, a trend that has only recently been reversed as a result of the falling value of the dollar and the lower interest rates.²

Numerous explanations, including the computer boom, a tight monetary policy, and the persistent U.S. budget deficit have been offered for this development, and the last mentioned is clearly the most popular of all. This paper studies the influence exerted by the 1981 and 1986 U.S. tax reforms³ on international capital movements and it attempts to demonstrate that the economic fluctuations described may well have been reinforced, if not caused, by these reforms. The paper is a summary and extension of a number of previous studies on the subject that have been published in Europe.

In his introduction to the first volume of the new *Journal of Economic Perspectives* which contains a number of useful articles on the 1986 tax reform, Henry Aaron (1987, p.8) writes: "The tax reform

debate also highlighted gaps in economic knowledge that will almost certainly influence future research. Perhaps the most important gap concerns the failure of most current theory and empirical work on the incidence and effects of taxes to take into account the effects of world economic interdependence." This paper is a modest attempt to help close the gap.

2. The 1981 Reform and the U.S. Trade Deficit

The 1981 reform, amended by some minor adjustments in 1982, created a huge budget deficit primarily as the result of numerous tax exemptions, a personal income tax cut and the introduction of the Accelerated Cost Recovery System (ACRS). It had been estimated that the budget deficit would approach \$700 billion over a five-year period and, in retrospect, this figure turned out to be surprisingly correct.⁴ During the same period (1982-1986), the cumulative deficit in the U.S. balance on goods and services was \$358 billion.

A budget deficit is a demand for funds in the domestic capital market and a trade deficit is a supply. It therefore seems plausible that the budget deficit caused the trade deficit via a sufficient rise in interest rates and, perhaps, Keynesian multiplier effects. There are, however, problems with this explanation which suggest that the budget deficit cannot be the only explanation for the trade balance deficit.

First, a budget deficit resulting from tax cuts does not necessarily imply a net demand for funds in the capital market. Farsighted consumers will know that replacing taxes with government debt simply changes the time pattern of taxation without affecting the present value of the tax burden. They will save the increase in disposable income resulting from the tax cut, and this is just enough to compensate for the increase in government's credit

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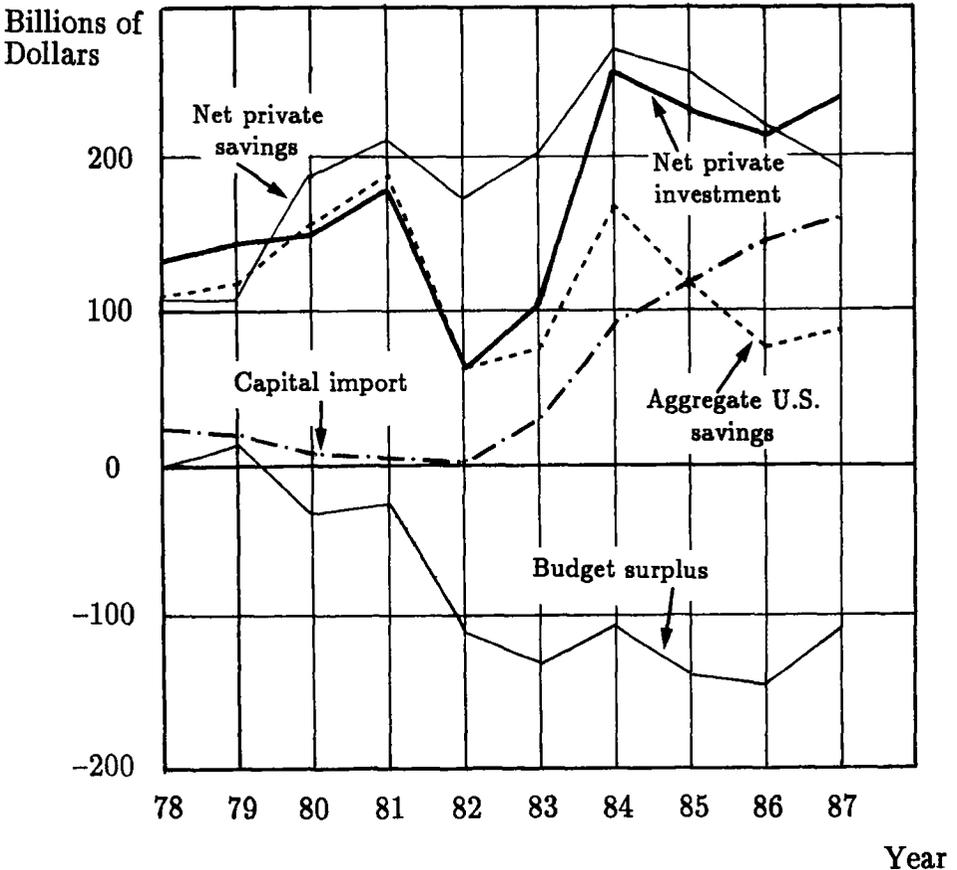
demand (Ricardian equivalence). There can be little doubt that many consumers are not far-sighted, but it is also clear that they cannot all be stupid. The argument suggests that only part of the increase in the budget deficit translates into a net demand for funds in the capital market. This interpretation is compatible with the fact that, despite a sharp increase in the U.S. budget deficit, the sum of private and government savings developed more steadily than each of its components (see Figure 1).

The second problem with the popular view is the strength of U.S. private in-

vestment. If there had been only a net increase in the demand for funds by the U.S. government and American households, the resulting rise in interest rates would have crowded out private investment. However, such a crowding out did not take place. Investment not only failed to shrink in the years following the 1981 reform, it even rose and stayed high despite an excessively high level of U.S. interest rates.⁵ (Compare Figures 1 and 2).

These problems suggest that there may have been a second cause for the trade deficit that reinforced or even dominated the income effects of the budget deficit. A

FIGURE 1
A SUMMARY OF FLOW OF FUNDS STATISTICS

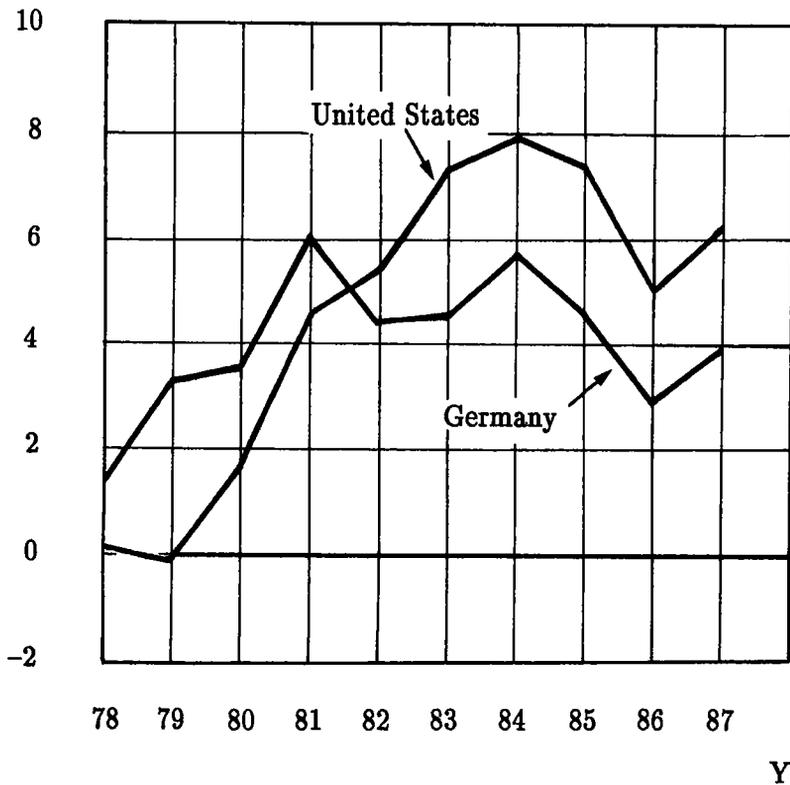


Source: Survey of Current Business January 1980, January 1982, July 1987, and January 1988.

FIGURE 2
THE DEVELOPMENT OF INTEREST RATES*

Real interest rate

[%]



*Real long term interest rates (nominal long term interest rate minus GDP inflation rate)
Source: OECD (1987), *OECD Main Economic Indicators*, April 1988, and *Survey of Current Business*, January 1988.

strong candidate is the incentive effect created by ACRS. Compared to the Asset Depreciation Range system (ADR) that was in operation before 1981, ACRS dramatically reduced the depreciation periods for most equipment and plant from about 8–12 years to 5 years and for construction from 36–54 years to 15 years. Combined with the investment tax credit (ITC), this resulted in investment incentives approximating and often even exceeding expensing.⁶ With a corporate tax rate of 46 percent, expensing meant that

the market rate of interest U.S. investment projects were able to bear was about twice that similar investment projects in countries without accelerated depreciation or an investment tax credit could bear. It seems that this dramatic increase in the ability to withstand high interest rates should have had some bearing on international capital movements.⁷

In principle, international capital movements can result from diverging national savings flows and/or from attempts to reshuffle existing stocks of as-

sets. Explaining the U.S. trade deficit in terms of the budget deficit is to see it as a flow phenomenon; explaining it in terms of the ACRS is to see it as a result of stock adjustments. There are at least two reasons for expecting stock adjustments to be more important than diverging savings flows as the source of international capital flows in the short and medium run.

The first is simply that it takes time for a flow to accumulate into a stock. There seems to be broad agreement in today's foreign trade literature that by far the largest part of international capital movements results from the attempt to restructure existing portfolios rather than from allocating their increments.

The second reason for the dominance of stock adjustments is that, in a non-specialized open economy, the marginal product of capital may be insensitive to changes in the stock of capital because such changes affect the economy's aggregate capital intensity via shifts in its sectoral structure rather than shifts in the capital intensities of the sectors themselves. Even small disturbances in capital arbitrage conditions may therefore require huge and long lasting international capital movements before a new equilibrium allocation of the world capital stock is reached.

To demonstrate the role of ACRS under such circumstances recall the properties of the textbook-type Heckscher-Ohlin model. In this model, commodity trade equalizes the marginal products of capital across borders even when there are no capital flows, provided only that the countries do not specialize (factor price equalization theorem). Suppose we extend the model by allowing for capital movements and taxation. Such capital movements would not take place with harmonized tax systems as an investor would not gain by transferring capital from one country to another. Things are different though if one country introduces unilateral investment incentives such as ACRS. There will be a capital import into this country that will continue until a wedge the size of the marginal investment incentive is driven between the marginal products of capital in the two

countries. However, in the Heckscher-Ohlin model, the marginal-product-of-capital curves of the two countries are horizontal and overlap when both countries produce both commodities. The divergence in the marginal products therefore cannot occur unless at least one country is driven into perfect specialization.⁸

To be sure, the Heckscher-Ohlin model is not reality. The presence of sector-specific fixed factors of production prevents the countries' capital demand curves from being perfectly elastic. However, the model clearly reveals the drastic implications for international capital markets that tax reforms may have when they affect the arbitrage conditions for an international capital market equilibrium.

To get an idea of what the *minimum* volume of capital imports induced by ACRS would be in a world where absorbing capital flows through changes in the sectoral structure of the economies is *not* possible, a one-sector Cobb-Douglas example was calculated in Sinn (1984, p. 564). The example was based on stylized figures characterizing the United States and the rest of the world and it assumed a cut in depreciation periods from 10 to 5 years. It implied that ACRS would have channelled about 7 percent of the world capital stock or an amount between \$1 billion and \$1.5 billion into the United States.

It is clear that such stock adjustments could not be carried out instantaneously but were being slowed down by the sluggishness of trade balance reactions. Given the current U.S. trade deficit it would have taken a decade or more before a new equilibrium compatible with the investment incentives created by ACRS could have been reached even if the budget deficit had not absorbed part of the funds foreign investors were willing to lend to the United States.

3. ACRS and National Advantage

Gravelle (1982) pointed out that ACRS implied very uneven investment incentives for different assets and therefore was likely to increase the Harberger type dis-

tortions in the allocation of capital to competing uses in America. On the other hand, ACRS reduced the overall wedge the tax system drove between the marginal product of capital and the consumer rate of time preference and created dynamic welfare gains that, according to a study by Fullerton and Henderson (1985), overcompensated the static welfare losses. ACRS may also have had important international welfare effects in addition to these closed economy effects.⁹

As is well known, world efficiency in the allocation of capital to the various countries requires equating the marginal products of capital, but it may be to a country's national advantage to deviate from this rule. Peggy Musgrave (1969) argued that it would be optimal for a capital exporting country to repatriate funds until the marginal domestic product of capital has fallen to the level of the foreign rate of return net of withholding taxes. This is correct if the country is small and faces a given net rate of return that it cannot change through its own actions. However, for a large country like the United States, which produces about one third of OECD output, this assumption does not seem plausible, for it certainly can affect the world interest rate level through its own actions. Maximizing the U.S. rent from lending capital abroad means reducing the capital supply not only below the point of world efficiency but even below the Musgrave optimum. The optimal supply from the point of view of national advantage is one that satisfies Cournot's monopoly conditions. The marginal cost is the marginal product of capital foregone by withdrawing capital from domestic uses. The marginal revenue is the foreign return to capital net of withholding taxes and net of the revenue loss that the intramarginal capital supply experiences when one additional unit of capital is offered to the world capital market.

Suppose, in line with empirical facts, that debt instruments are the dominant source of funds by which marginal international reallocations of capital are brought about. When there is a double taxation agreement, the interest income

generated by these funds is subject to income taxation in the country of residence, but the source country is allowed to charge a withholding tax of up to 10 percent for which the residence country gives a credit. In the presence of true economic depreciation and debt financing of marginal investment projects, or true economic depreciation and uniform taxes on interest income and retained profits within a country, the equilibrium in the world capital market will then be characterized by equality in the marginal products of capital regardless of whether the tax systems are harmonized or not. Thus, world efficiency will be the implication of a capital market equilibrium.

To steer a capital exporting country away from this equilibrium into the situation where it maximizes its national advantage, it would be necessary to introduce incentives to repatriate part of its capital operating abroad. A possible measure would be to impose a surtax on foreign investment income. Yet, a less obvious and much more elegant equivalent measure is to subsidize domestic investment. In this sense, although certainly not intended to have this result, ACRS can be seen as a means of helping the United States to exploit a monopoly position in world capital markets and to maximize its national advantage.

Unfortunately, however, there is some evidence that the U.S. national optimum was nowhere near being reached. According to official statistics, the United States turned from a net creditor to a net debtor position in 1985. This is clearly a sign of suboptimality, for a monopolist would never reduce his supply to zero, let alone make it negative.

On the other hand, it is clear that the official statistics are not very reliable since they include directly invested assets that are evaluated at nominal historical book values. A large fraction of U.S. direct investment abroad dates back to the post-war period when significant parts of European industry were bought under exceptionally favorable conditions. An attempt had been made to adjust the data for this distortion by weighting the annual gross direct investment flows be-

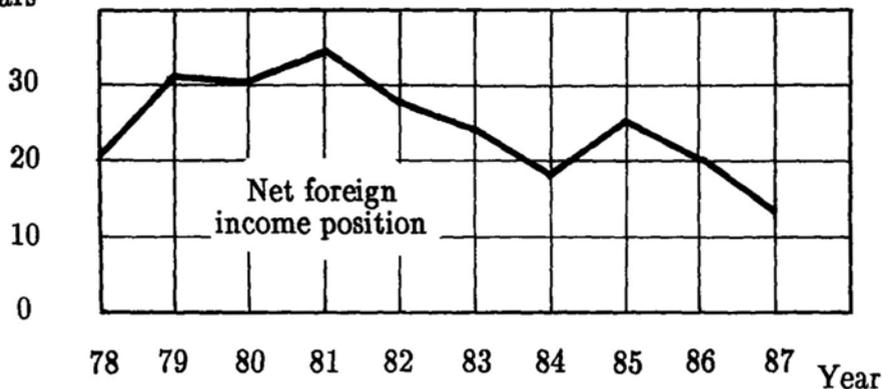
tween the United States and the rest of the world since 1948 with growth factors that were derived from American and European stock market indices. The result is a jump of the 1984 U.S. foreign net po-

sition from \$4 billion, the number published in the *Survey of Current Business*, to \$405 billion.¹⁰

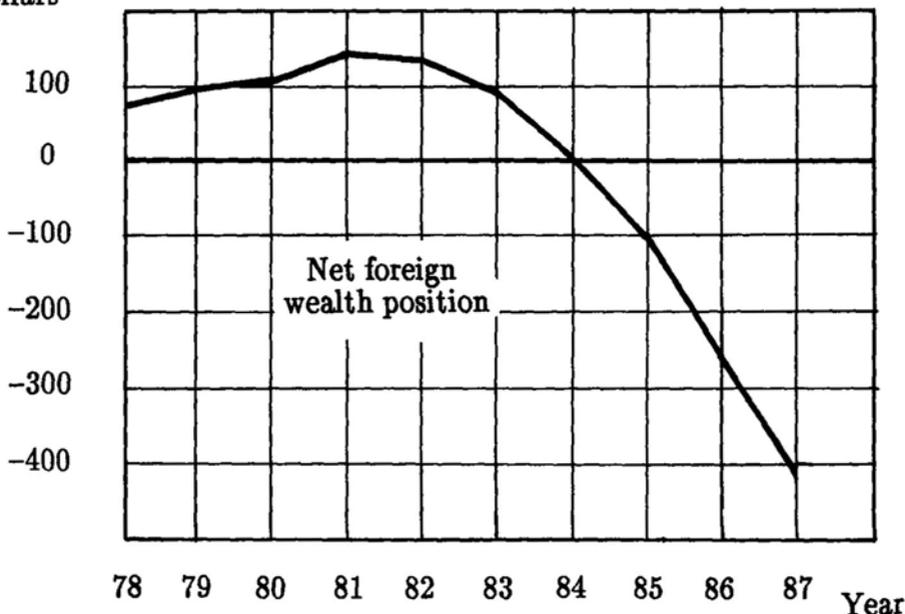
Even stronger evidence is provided in Figure 3 which exhibits the time paths of

FIGURE 3
IS THE UNITED STATES A NET DEBTOR NATION?

Billions of
Dollars



Billions of
Dollars



SOURCE *Business Conditions Digest*, July 1987, March 1988, and *Survey of Current Business*, June 1987, January 1988.

the U.S. net foreign wealth and income positions. In 1987, the income U.S. investment earned abroad exceeded the income foreigners earned in the United States by \$13.4 billion, but nevertheless the official U.S. net foreign position was \$420.5 billion. As the United States should apply the same discount rate when calculating its assets and liabilities and as the income measures are certainly more accurate than the wealth measures, this suggests that the United States is still a creditor country. With discount rates between 4 and 8 percent and even when capital gains are neglected, the U.S. net wealth invested abroad ranges between \$167 billion and \$335 billion in 1987, and in 1984, the year when the officially estimated net foreign wealth position approximated zero, the true net foreign wealth position must have been somewhere in the range between \$231 billion and \$462 billion, numbers that approximate the value of \$405 billion mentioned above.

This suggests that the United States may not yet have repatriated too much capital from the viewpoint of national advantage. Yet, the persistent trade deficit, currently about \$140 billion per year, may soon produce such a situation. Both in the interest of its own advantage and of world efficiency, it is wise for the United States to take measures to prevent this from happening. Perhaps the 1986 tax reform was such a measure. It was certainly not designed to optimize the U.S. net foreign position, but it may nevertheless have implications that help the U.S. economy to approach an optimum.

4. The 1986 Reform

The 1986 U.S. tax reform was a reaction to the revenue implications of the 1981 reform. From 1980 to 1986, and primarily because of ACRS, the share of corporate taxes in the total tax revenue declined from 12.5 percent to 8.1 percent. One of the goals of the reform was to correct this outcome and to raise the corporate tax share to its original level. For this purpose, the ITC was abolished and the depreciation periods of ACRS were some-

what increased, without, however, reaching the pre-1981 levels as specified in the ADR system. Although the corporate tax rate has been reduced from 46 percent to 34 percent, the corporate tax revenue is expected to increase by about \$120 billion over a five-year period. This increase is not expected to reduce the budget deficit, but merely to compensate for a reduction in the personal income tax burden, the reduction being the net effect of a decline of marginal personal tax rates from a maximum of 50 percent to 33 percent or 28 percent and an increase in the capital gains tax base from formerly 40 percent to now 100 percent of realized capital gains. Overall, the reform can be described as a policy of tax-cut-cum-base-broadening, designed to be revenue neutral.¹¹

Whether the 1981 reform disturbed the world economy because of its income or its substitution effects is still subject to debate; nevertheless the intended revenue neutrality leaves little doubt that substitution effects dominate in the 1986 reform. This section briefly reviews the substitution effects that will have international repercussions.

4.1 *A Digression on the Use of Effective Tax Rates*

A priori, the implications of the 1986 tax reform for international capital movements seem ambiguous, as the base broadening and the tax cuts exert countervailing effects on the tax burden which is imposed on capital income earned in the United States. It is only the increase in the corporate tax burden that seems to indicate a possible discrimination against investment in America. There are, however, at least two problems with such a view.

First, it should be clear that it is not the size of a tax burden, but only its derivative with regard to private choice variables, that can create substitution effects. With well-functioning capital markets, lump-sum transfers between American wealth owners' left and right pockets would not affect investment demand.

Second, even the marginal tax burden

on capital as measured by "effective tax rates" on private investment does not reveal much about the direction of capital movements when these capital movements take the form of portfolio investment. Typically, effective tax rate formulae are based either on the approach of Hall and Jorgenson (1967) or on that of Fullerton and King (1984). The two approaches differ with regard to the underlying assumptions on the firms' marginal sources of funds, but they both define an effective tax rate as the overall wedge the tax system drives between the pre-tax return to real capital and the net-of-tax return received by savers. Thus defined, the effective tax rate is an important tool for predicting savings incentives in a closed economy. However, to predict the tax system's implications for international capital movements, it is necessary to split up the effective tax rate into two separate components, one that measures the wedge between the pre-tax return to real capital and the market rate of interest and one that measures the wedge between the latter and the net-of-tax rate of return received by savers. The two components have adverse implications for the direction of international capital movements. The first discriminates against domestic investment, reduces the market rate of interest, and induces a capital export. The second discriminates against domestic savings, raises the market rate of interest, and induces a capital import. Clearly, it does not make sense to focus on the sum of the two components to predict the direction of capital flows.

The reason for the irrelevance of the effective tax rate is the residence principle for the taxation of border-crossing interest-income flows which, as mentioned before, is typically applied by countries with double taxation agreements. Leaving aside the possibility of anticipated currency appreciation this principle makes investors indifferent between domestic and foreign assets when all national pre-tax interest rates are the same and it implies a tendency towards a uniform world interest rate. If, by way of contrast, the source principle were applied, then there would be a tendency to equate the national post-

tax interest rates and effective tax rates would indeed be relevant for the size of domestic investment and the direction of international capital flows.

4.2. The Policy of Tax-Cut-cum-Base-Broadening: Implications for International Capital Movements

Given the distinction between the two components of the effective tax rate, the international repercussions of the policy of tax-cut-cum-base-broadening can easily be analyzed.

By cutting the personal tax rates, the 1986 reform reduced the wedge between U.S. interest rates and U.S. savers' net rates of return. It thereby created savings incentives and increased the U.S. net supply of funds in the world capital market with any given market rate of interest. Taken by itself, this effect implies a decline in American interest rates and will thus induce capital exports.¹² However, it refers to a flow phenomenon and may be of minor importance.

The important effects of the 1986 reform result from the way this reform affects the wedge between the pre-tax rate of return to real capital and the pre-tax market rate of interest as a change in this wedge will result in international stock adjustments.

Not much needs to be said about the repeal of the ITC and the prolongation of depreciation periods. Both measures obviously increase this wedge, discriminate against American investment, and reduce the U.S. interest rate. The result is a capital export.

Somewhat less obvious are the implications of the new treatment of capital gains. As was the case before the reform, a substantial fraction of capital gains continues to escape taxation because they are not realized. The implicit tax rate on accrued capital gains had been estimated to be 1/4 of the personal tax rate when 50 percent of realized capital gains was being included in the personal income tax base (before 1981).¹³ Assuming a stable pattern of asset holding periods and a decline in shareholders' marginal personal tax rates from about 40 percent to 28 per

cent, the full taxation of realized capital gains which the 1986 reform implied results in a rise of the implicit tax rate on accrued capital gains from about 8 percent to 14 percent. The personal capital gains tax is a tax on profit financed real investment. The increase in the tax rate therefore can be expected to discriminate against U.S. investment with any given market rate of interest, and hence reduce this rate. It will induce capital exports just as the other base broadening effects do.

Consider now the effects on U.S. investment resulting from the cuts in personal and corporate tax rates. To understand these effects it is useful to assume for a moment that tax depreciation rules for real investment coincide with true economic depreciation. Under this assumption, a balanced general tax cut would not affect American firms' investment demand with any given market rate of interest because it would favor shareholders' financial investment to the same extent as real investment within the firms would.¹⁴ The wedge between the pre-tax rate of return to real capital and the market rate of interest would not be affected.

In fact, however, the assumption of true economic depreciation is not justified, not even when the lengthening of depreciation periods the 1986 reform brought about is taken into account. It follows from estimates of Fullerton, Gilette, and Mackie (1987, Table 5.4, columns 2 and 4) that the majority of American assets still enjoys the privilege of accelerated depreciation. In comparison to true economic depreciation, accelerated depreciation means that real investment is subsidized at a rate that equals the corporate tax rate. A general tax cut reduces this subsidy and therefore favors domestic and foreign financial investment relatively more than domestic real investment. The result is an increase of the difference between the pre-tax rate of return to capital and the market rate of interest, and not a decline as one might be tempted to suspect. Somewhat paradoxically, even the tax cuts lower the American interest rates and induce a capital export.¹⁵

The result must be qualified insofar as it refers to portfolio investment and is

based on the assumption that firms finance their investment projects primarily with retained profits and debt. When new shares are used as a marginal source of finance, the double taxation of dividends matters and the cut in corporate and personal tax rates favors U.S. real investment more than foreign financial investment. The tax cut then induces a rise in American interest rates and a capital import. Similarly, when direct rather than portfolio investment is the channel through which international capital movements are brought about, the U.S. tax cuts in themselves would attract capital from abroad because the returns from direct investment are essentially taxed according to the source principle. Effective tax rates would then be a good indicator of the international repercussions of a tax reform.

In the present case of the American tax reform, an emphasis of direct investment would not change the qualitative conclusions on the direction of international capital flows. As estimated by Fullerton, Gilette, and Mackie (1987), the base broadening effects just overcompensated the tax cuts in terms of the effective tax rate. With minor modifications for the taxation of border crossing dividend flows, this result can be taken to imply that direct investment in America has been somewhat discriminated against. Thus, the reform will not only induce an outflow of portfolio investment, but even a modest outflow of direct investment.

From an empirical point of view, the roles of direct investment and new share issues should not be overly emphasized though. There can be little doubt that, at least in the short and medium run, portfolio investment is by far the most important channel of international capital movements and that new share issues are only a minor source of finance for American firms.¹⁶ Under these circumstances, the tax cuts will not counteract but reinforce the base broadening effects and capital exports can be expected to be much larger than a focus on effective tax rates would predict.

This result was formally derived in analytical models of Sinn (1987a, ch. 7;

1987b) which include portfolio and direct investment and which are based on intertemporal optimization approaches to explaining the financial and real investment decisions of a firm. It seems to contradict the findings of Grubert and Mutti (1987) based on a differently designed, but certainly no less sophisticated numerical equilibrium model with four commodities and two countries. Grubert and Mutti do not distinguish between portfolio and direct investment and they do not allow for stock adjustments. They explain capital movements exclusively by diverging national savings flows concentrating on the steady state implications of their model. Their main result is that the reform implies a trade balance deficit in the long run.¹⁷

Contrary to first appearances, this result is compatible with the one predicted here. The resolution of the puzzle lies in the definition of the trade balance and the concentration on steady states. If the reform induces a capital export as predicted, then it also generates an inflow of foreign earned capital income. This income produces a surplus in the invisibles balance which requires a deficit in the trade balance if the current account is to be in balance and further capital movements are to be excluded. The steady state result of Grubert and Mutti supports rather than contradicts the conclusion that the 1986 U.S. tax reform will reduce the current level of capital imports and improve the trade balance for a considerable period of time.

Another implication of the model of Mutti and Grubert is that the international repercussions of the 1986 reform seem to be small by all standards. This result may not be well-founded though. It is an obvious implication of the neglect of stock adjustments, of the Heckscher-Ohlin effect described in Section 2, and, in particular, of the perverse reactions the tax cuts create when portfolio investment is the dominant channel of international capital flows and accelerated depreciation is allowed.

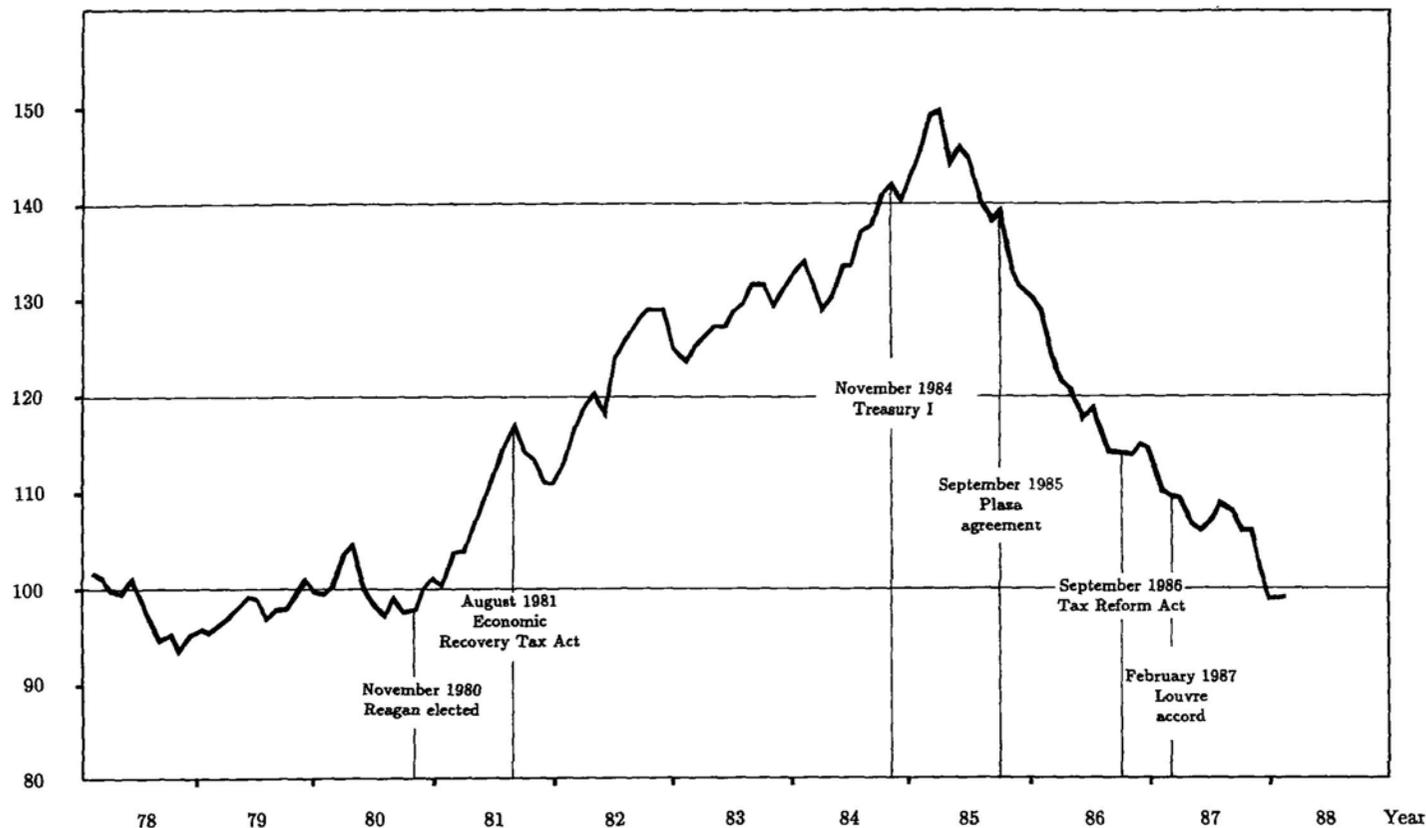
5. The Tax Reforms and the Dollar

The previous sections have shown how the 1981 and 1986 U.S. tax reforms may

have affected the direction of international capital movements but they have not clarified the mechanism through which these movements could have occurred. A convincing mechanism is described by the monetary theory of foreign trade. When combined with the tax effects discussed above, this theory yields predictions that are fully compatible with the fluctuations in international capital markets that were described in the introduction.

The rise of the dollar and the U.S. interest level began about the time President Reagan was elected and announced his investment-oriented tax reform which was then enacted less than a year later. At the time, a tight monetary policy was operating to eliminate inflation and this policy certainly contributed to the high level of interest rates. However, ACRS weakened the effect of the high interest rates on American investment and even helped to create an investment boom. The high U.S. interest rates induced international portfolio holders, primarily banking institutions, to reshuffle their portfolios in favor of U.S. assets. For this purpose, portfolio managers had tried to sell their foreign assets for foreign currencies and then sell these currencies in the foreign exchange markets to get dollars for the intended purchase of American assets. However, in the short run and in the aggregate, they were not successful. The trade balance did not deteriorate sufficiently to produce the supply of dollars that was needed to actually carry out the desired volume of portfolio restructuring. The result was an excessive rise in the value of the dollar, strong enough to offset the attraction the high American interest rates had created for a growing number of investors. Gradually, however, with the passage of time the trade balance reacted more and more strongly and released a growing flow of dollars to the foreign exchange markets which allowed a growing flow of capital imports into the United States. (Compare Figures 1 and 4.) In theory, there is a turning point for the value of the dollar where the growing public interest in American assets is being overcompensated by the trade balance reaction. After this point, continuing devaluations are necessary to make asset

FIGURE 4
THE DEVELOPMENT OF THE DOLLAR*



*Real effective exchange rate (Trade weighted exchange rate, adjusted for relative inflation rates. 1980 annual average = 100)
Source: International Monetary Fund, unpublished data provided to World Bank.

holders want to invest a steadily increasing proportion of their portfolios in American assets, sufficient to create a continuing flow demand for the dollars supplied by traders in the foreign exchange markets.

The dollar did indeed reach a turning point in February 1985, but it is unclear whether this was the natural result of the trade balance deficit which presumably was caused by the 1981 reform or whether it resulted from new policy measures taken in the meantime. Bankers tend to argue that the Plaza agreement of 1985 was the reason for the subsequent sharp fall in the dollar value. However, the Plaza agreement came 7 months after the dollar's peak and did not produce significant changes in the time path of the exchange rate. (See Figure 4.) A more plausible candidate is the publication of the Treasury I proposal¹⁸ in November 1984 for this was three months *before* the dollar's peak. The Treasury I proposal was the first step towards the 1986 reform and it proclaimed an even more radical removal of investment incentives than was in the event actually carried out. Clearly, it was a signal for far-sighted investors to expect lower interest rates in the United States and a lower value of the dollar in the long run. Anticipating exchange rate losses on dollar denominated assets, or gains on assets denominated in foreign currencies, these investors became increasingly reluctant to continue their portfolio restructuring in favor of American assets and thus caused the dollar to fall. The planned reform was carried out in 1986, and there was indeed a decline in the interest rates as would have been expected.

The low value of the dollar, far below purchasing power parities, will certainly reduce the U.S. trade deficit and hence reduce the U.S. capital imports. Again, however, the trade balance cannot be expected to react quickly since it takes time for the American export industry to expand and for foreign exporters to realize that they cannot keep on offsetting the low dollar by accepting negative profit margins. It is true that the first signals for an improvement of the trade balance in quantitative terms have appeared. How-

ever, the high dollar prices of American imports are still preventing the trade balance deficit from shrinking in value terms. The turning point must be near though.

The turning point of the trade balance is not necessarily the turning point of the dollar. As long as a trade deficit persists that exceeds the level sustainable in a long-run steady-state growth situation, there is a flow supply of dollars in the foreign exchange markets that asset holders are not willing to absorb with given interest rates and exchange rate expectations. Despite short-run waves of optimism the dollar may therefore remain under pressure for a while.

As mentioned in the introduction, during the last two years at least one third of the U.S. trade deficit was being financed by foreign central banks. This policy is in line with the Louvre accord of February 1987 and it is strongly supported by foreign export lobbies. It remains to be seen whether central banks will prove to have enough strength to continue and even expand their policy until a significant improvement in the trade balance occurs.

Altogether, the 1981 and 1986 U.S. tax reforms were gigantic economic experiments turning the steering wheel into opposite directions. These experiments gave useful insights into the way a world economy with highly integrated capital markets operates. They may also have helped to improve the U.S. net advantage from lending its capital abroad. Whether the world as a whole should have applauded the experiments is, to say the least, open to doubt.

NOTES

¹See *IWD* 17, 28 April 1988. The exact percentages are 30 for 1986 and 41 for 1987. On top of the official interventions, there were extensive purchases of dollar denominated debt instruments in the Euromarket which, in the statistics, are counted as private capital exports into the United States.

²Because of the revaluation of German exports and sluggish demand reactions, West Germany was the world's largest exporting country in 1986 and 1987.

³See Joint Committee on Taxation (1981, 1986).

⁴Cf. U.S. Joint Committee on Taxation (1981, Tab. 2, p. 58) and *Business Conditions Digest*, July 1987.

⁵Bosworth (1985) showed that the first two years

after the recession of 1982 were characterized by an investment boom that was significantly different from, and about twice as strong as, those in previous upswings following a recession. The author criticized the view that the investment boom was the result of the 1981 and 1982 tax reforms, but a comment by Lawrence Summers made it clear that Bosworth's paper suffered from serious shortcomings in the way tax effects were measured.

⁶See Gravelle (1982), U.S. Department of the Treasury (1984, pp. 106, 107, and 112; and 1985, p. 135), and Fullerton, Gilette, and Mackie (1987, p. 144, table 5.4).

⁷See Sinn (1984 and 1985) for a discussion of the international repercussions of ACRS.

⁸See Sinn (1984) for a formal analysis of ACRS in a Heckscher-Ohlin model.

⁹See Sinn (1987a, pp. 224-231) for an extensive discussion of the problem.

¹⁰Sinn (1987a, p. 230).

¹¹Cf. Sinn (1987a, pp. 221-224; 1987b, c; 1988).

¹²As will be reported below, the reform increased the wedge between the pre-tax rate of return to capital and the market rate of interest more than it reduced the wedge between the latter and the savers' net rate of interest. This makes it possible that, in equilibrium, the market rate of interest drops far enough to reduce the savers' net rate of interest and with it the volume of savings itself. This possibility clearly does not invalidate any of the conclusions of this section.

¹³Cf. Fullerton, King, Shoven, and Whalley (1981, p. 684).

¹⁴In taxation theory, this result is known as the Johansson-Samuelson theorem. See Sinn (1987a, pp. 119-123).

¹⁵In Sinn (1987b and 1988) precise results for the effects of isolated cuts in the corporate and personal tax rates were derived and it was shown that, depending on the size of the minimum marginal equity asset ratio, either a cut in the corporate tax rate or a cut in the personal tax rate will induce a capital export. When both tax rates are cut simultaneously, as happened with the 1986 reform, the capital export appears independently of the size of the minimum marginal equity asset ratio.

¹⁶From 1960 to 1985, on average 67.8% of gross investment by U.S. non-financial corporations was internally financed and 31.0% was debt financed. Only 1.2% was financed by new share issues. See Sinn (1987a, p. 92).

¹⁷The short-run result of Grubert and Mutti (see p. 245) is somewhat confusing since the authors simultaneously predict a "reduced saving outflow" and an "improvement of the trade balance."

¹⁸U.S. Department of the Treasury (1984).

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