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MONETARY FUND**

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The authors of the papers in this issue have received considerable assistance from their colleagues on the staff of the Fund. This general statement of indebtedness may be accepted in place of a detailed list of acknowledgments.

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Official Intervention on the Forward Exchange Market

A Simplified Analysis

J. Marcus Fleming and Robert A. Mundell*

INTEREST IN THE PROBLEMS of official intervention in forward exchange markets has received impetus from recent changes of practice on the part of the U.S. monetary authorities. In March 1961, the U.S. Treasury intervened for the first time on the exchange markets in support of the forward dollar; and since February 1962, the Federal Reserve System has concluded a number of swap arrangements with other central banks.¹ In view of these developments, it appears timely to consider what, in theory, are the short-run and long-run effects of official transactions in forward exchange, and under what circumstances such transactions are likely to serve a useful purpose. Tentative answers are given in this paper to such questions as the following: Should intervention be "limited" in extent and/or duration, and, if so, in what sense, and why? In what sort of payments situation is official support of the forward exchange appropriate? Need it be confined to meeting "speculative" attacks?

The approach in this paper is a simplified one.² The purpose is to provide a straightforward account of the theory of intervention and to use it to discuss the problems just raised. To do this, a new classification of the forces determining the forward rate is developed: the

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Mr. Mundell, Professor of Economics, McGill University, was formerly economist in the Special Studies Division of the Fund. He is the author of numerous articles on international trade and economic theory.

¹ Charles A. Coombs, "Treasury and Federal Reserve Foreign Exchange Operations," *Federal Reserve Bulletin*, September 1963, pp. 1216-23, and Board of Governors of the Federal Reserve System, Press Release, October 31, 1963.

² For a mathematical exposition of the interrelationships determining forward exchange rates under more general assumptions, see S. C. Tsiang, "The Theory of Forward Exchange and Effects of Government Intervention on the Forward Exchange Market," *Staff Papers*, Vol. VII (1959-60), pp. 75-106. See also, William H. White, "Interest Rate Differences, Forward Exchange Mechanism, and Scope for Short-Term Capital Movements," *Staff Papers*, Vol. X (1963), pp. 485-503.

rate must be such as to equalize the Net Speculative Position (defined as the sum of the net assets—spot or forward—of residents of country A in other currencies *less* the sum of the net assets—spot or forward—of residents of other countries in A's currency) and the Net Loan Position (defined as the sum of the net lending of residents of A to residents of other countries). This presentation is believed to have certain expositional merits.

Determination of Equilibrium

To simplify the analysis, complications arising from the multiplicity of foreign currencies are ignored; official intervention is thought of as taking place on the forward market for the domestic currency versus "foreign currencies in general," which, for convenience, will generally be referred to as though they constituted a single currency.

It is further assumed, initially, that spot rates are rigidly fixed. Finally, the complications arising from the variety of maturity dates of forward exchange contracts are left out of account; all forward contracts are treated as if they had the same maturity, and all forward rates as if there were only a single rate.

The forward exchange market may be conveniently treated in terms of stocks rather than of flows; that is, the forward exchange rate is taken as reconciling the desires of market participants with respect to the holding—rather than the changing—of forward exchange positions. In every forward exchange contract, each of the contracting parties holds a forward asset in one currency and a forward liability in another currency. Forward exchange positions are forward positions (assets or liabilities) in currencies other than that of the country of which the holder is a resident. Spot exchange positions are assets or liabilities, other than forward positions, in currencies other than that of the country of which the holder is a resident.

If a resident of country A lends to a resident of country non-A, either the A resident acquires an asset in non-A currency, or the non-A resident acquires a liability in A currency; in either case, there is an increase in the net exchange position of the A resident *less* the net exchange position of the non-A resident. On the other hand, if an A resident concludes a forward exchange contract with a non-A resident, there is no change in net lending between the residents of the two areas; the net forward exchange position (positive or negative) acquired by the A resident in non-A currency will be balanced by an equal net forward exchange position acquired by the non-A resident in A currency. It follows that the sum of the net assets (spot

or forward) of A residents in non-A currency less the sum of the net assets (spot or forward) of non-A residents in A currency, which may be termed the Net Speculative Position (NSP) of country A, is necessarily equal to the sum of the net lending of A residents to non-A residents, which may be termed the Net Loan Position (NLP) of country A.

While these Net Positions are necessarily equal *ex post*, they are not necessarily equal *ex ante*. The desire to lend abroad is not necessarily matched individually or collectively by the desire to hold a foreign currency. A decision to borrow or lend abroad is, in principle at least, different from a decision to undertake an exchange risk. Let us assume that, where neither the lender nor the borrower wishes to undertake the foreign exchange risk that is necessarily involved in the loan, the party that first takes the risk seeks to cover it by concluding a forward exchange contract. In this event, there will be a net demand in the forward market for A currency in terms of non-A currency, or vice versa, and the forward exchange rate will move until the equilibrium of the market is restored and the desired NSP equals the desired NLP.³

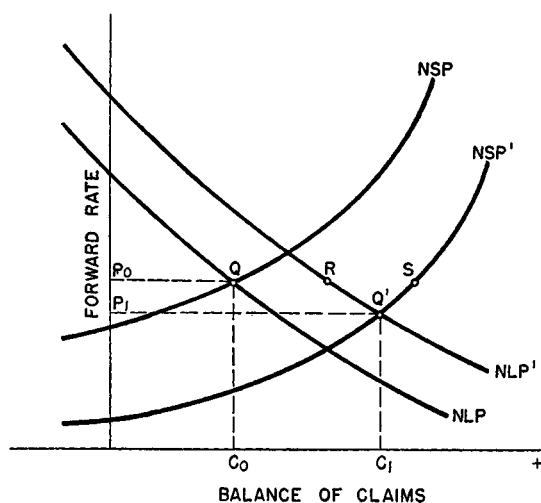
The manner in which, given the spot exchange rate, the forward exchange rate serves to bring about equality between the desired NSP and the desired NLP is illustrated in Diagram 1. In that diagram, the balance of claims (which can be regarded, *ex post*, either as the NLP or the NSP) is measured on the horizontal axis, while the forward exchange rate is measured on the vertical axis. Both NLP and NSP are considered from the standpoint of country A. The forward rate represents the forward price of A currency in terms of non-A currency. The curves are drawn on the assumption that the spot rate of exchange, the anticipated future spot rates of exchange, and the rates of interest in A and non-A are not affected by changes in the forward exchange rate.

As the diagram shows, country A's NLP slopes negatively, and its NSP positively, with respect to the forward price of its currency. (Strictly speaking, while the NSP varies directly with the outright forward rate, the NLP varies inversely with the forward premium, i.e., the excess of the forward value of A's currency over its spot value. But with the spot exchange rate fixed, this is equivalent to saying that it varies, inversely, with the forward rate.) It is easy to see why the

³ A change in the forward exchange rate is not, in fact, the only way in which an *ex ante* disequilibrium between NSP and NLP manifests itself. In the absence of a forward exchange market, such a disequilibrium would manifest itself in a change in the interest rate at which A residents lend to non-A residents (or vice versa) in A currency, compared with that at which they lend in non-A currency.

NLP schedule, as a function of the forward rate, slopes negatively. The higher the forward rate (and hence the greater the forward premium on A currency), the cheaper it is for non-A lenders or A borrowers (whoever is bearing the exchange risk) to cover that exchange risk by a forward contract. The higher the forward rate, the greater will be the incentive for non-A residents to lend to A residents on a covered basis, and the amount of such lending will tend to increase. For analogous reasons, the cost of covered lending from A residents to non-A residents will increase, and the amount of such lending will tend to diminish. Moreover, the changes in loan positions need not take the form of changes in covered exchange positions; they may take the form of switches between spot positions (positive or negative) and forward positions of the same sign. For example, a rise in the forward exchange rate will tend to induce A residents with positive spot positions in non-A currency to switch to forward positions, and non-A residents with positive forward positions in A currency to switch to spot positions.

DIAGRAM 1



There is another way in which a rise in the forward rate will reduce the NLP. Such a rise will lead to an increase in the cost of covering, and hedging, the foreign exchange risk involved in A's exports and a decline in the cost of covering, and hedging, the risk involved in A's imports. (We use the term "covering" to mean offsetting by a forward contract the exchange risk involved in any trade credit that extends over the period from the date when ownership passes to the date of

payment; we use "hedging" to mean a similar offsetting of the exchange risk involved in the export contract over the period from the date of contract to the date when ownership passes.) Insofar as this results in a decline in A's exports and a rise in A's imports, which in turn involves a decline in A's covered trade credit to non-A and a rise in non-A's covered trade credit to A, there will be a decline in the NLP other than that already taken into account.

The NSP schedule normally has a positive slope. On the assumption that changes in the forward rate have no effect on expectations regarding future spot rates, a rise in the forward rate (i.e., in the forward price of A currency in terms of non-A currency) will induce an increase in the net positions of A residents in non-A currency and a decline in the net positions of non-A residents in A currency. Residents of A will have an incentive to increase their forward positions in non-A currency whether or not they have negative spot positions in non-A currency which they can cover by so doing; analogously, non-A residents will reduce their forward holdings of A currency even though this may involve leaving spot positions uncovered or other risks unhedged. To some extent, as we have seen, these shifts in forward positions will be matched by corresponding shifts in the opposite direction in spot positions. Spot positions, however, involving as they do the opportunity cost of tying up funds in a particular use, are not perfect substitutes for forward positions, and a change in the forward rate, i.e., in the price of forward positions, will involve a net change in the sum of spot and forward positions taken together, i.e., a change in the NSP.

Insofar as the rise in the forward rate worsens the trade balance, it is likely not merely, as we have seen, to reduce the NLP by reducing the balance of covered trade credits but also to raise the NSP by reducing the hedging of the currency risks associated with export contracts (prior to the time of actual export) and increasing the hedging of currency risks associated with import contracts.

Equilibrium between the NSP and the NLP is determined at the point Q , common to both schedules, where the market is willing to maintain the Net Speculative Position implied by the desired Net Loan Position. The equilibrium point determines both the equilibrium forward rate, P_0 , and the equilibrium balance of claims, C_0 .

Suppose now that there is a rise in the expected exchange value of foreign currencies in terms of the domestic currency. This will lead to a tendency toward an uncovered capital movement, expressed in a shift of both the NSP and the NLP schedules to the right by an equal amount (assumed to be QR). But, in addition, there will be a tendency toward increased speculation in the forward market, expressed

in a further shift in the NSP schedule which has no counterpart in the NLP schedule. At the original forward rate, P_0 , the increase in spot speculation is QR and the increase in forward speculation RS . The NLP line, therefore, shifts to the right, by QR , to NLP' , while the NSP line shifts to the right, by $QR + RS = QS$, to NSP' . At the original forward rate, therefore, there is an excess of the NSP over the NLP, which is equivalent to an excess supply of the domestic currency for forward delivery. The forward exchange rate then falls until the NSP is reduced and the NLP is increased to the point where the two are again equal. The new equilibrium is at Q' , where the new schedules intersect. At Q' , the forward rate (P_1) is lower, and the balance of claims of residents on nonresidents (C_1) has increased.

The results of other changes are easily discovered. An increase of interest rates at home relative to those abroad will tend to stimulate an inward capital movement because of the higher return both on a covered and on an uncovered basis. The tendency toward an uncovered capital movement will be reflected in a shift of both the NLP and the NSP curves by equal amounts, but the tendency to a shift in covered arbitrage will involve a further shift of the NLP schedule to the left. The result will be a decline both in the forward exchange rate and in the balance of claims.

Counterpart of Intervention

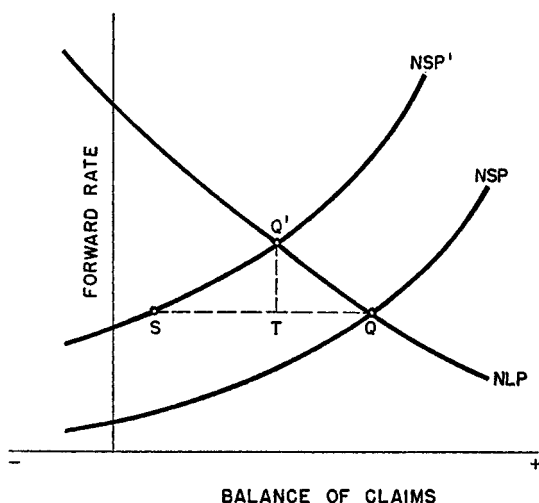
Official intervention in the forward exchange market can be analyzed by regarding the authorities either as part of the market or as distinct from it. If the NSP is defined exclusive of official intervention, then the new equilibrium requires not equality of the NSP and NLP but a difference between the two equal to the amount of the intervention itself. On the other hand, if the government position is included as part of the market, government purchases or sales of forward currency represent a change in speculation. We shall adopt the first alternative.

Let us continue to assume, initially, that neither the official intervention itself nor the associated change in the forward rate has any effect on expectations with regard to the future course of the exchange rate. Now consider the effect of forward intervention by A's Government in support of A's currency, i.e., a purchase of A's currency forward. The NSP schedule as a whole will move to the left by the amount of the official intervention; the slope of that schedule will not

alter, nor will the NLP schedule be affected in any way. The forward purchases of domestic currency by the authorities will create an excess demand for A's currency, i.e., a tendency for the NSP to fall short of the NLP, which can be relieved only by an increase in price. The forward rate will therefore rise until the NLP has fallen and the NSP has risen, along their respective schedules, sufficiently to restore equality between the two. To put it another way, the rate must rise until the private market is willing to supply (against foreign currency) the extra amount of forward domestic currency demanded by the authorities.

The effect of the intervention is illustrated by Diagram 2. Starting from an initial equilibrium at Q , government intervention to the amount $G = SQ$ (in the form of forward sales of foreign currency in exchange for domestic currency) gives rise to a new NSP curve, NSP' , which yields a new equilibrium at Q' . The counterpart of the official intervention can then be seen to be ST and TQ , the former repre-

DIAGRAM 2



senting an increase in unofficial net speculation against (or a reduction in unofficial net speculation in favor of) the domestic currency, and the latter a reduction in net claims (or an increase in net liabilities) of domestic residents vis-à-vis residents abroad.

It will be noticed that the inflow of funds arising from the intervention is necessarily less than the amount of the intervention. More-

over, the more inelastic is the NLP line (i.e., the less the international mobility of funds) and the more elastic the NSP line (i.e., the more assured are people's anticipations about future exchange rates and the greater is their willingness to speculate on them), the less will be the proportion of funds attracted to the amount of the intervention.⁴

“Swap” Transactions and Extramarket Transactions

We have dealt with official intervention in the forward exchange market as if it took the form exclusively of outright forward transactions unaccompanied by any spot transaction. In fact, forward intervention may take the form of “swap” transactions which involve simultaneous operation in the spot and forward markets such as to leave the Net Speculative Position of the authorities unchanged. Thus, a forward sale of foreign (and a forward purchase of domestic) currency would be accompanied by a spot purchase of foreign (and a spot sale of domestic) currency.

As long as we adhere to the assumption that spot exchange rates are rigidly fixed, the “spot” element of the swap will have no effect on the forward rate, which will be affected, in the manner described above, exclusively by the forward element in the transaction. The effect of the “spot” element will depend on the mechanism through which the spot rate is held constant. For example, assume that the spot rate for dollars in terms of foreign currencies is held constant by the action of the U.S. authorities. If these authorities were to undertake a swap transaction, selling foreign currencies forward and buying them spot, they would immediately be obliged, in order to stabilize the rate, to sell these currencies spot for dollars, thus rendering the spot element in the swap null and void. But a more realistic assumption is that the spot rate is held constant by the foreign authorities who, however, could call upon the U.S. authorities to convert

⁴ The ratio of the funds attracted to the amount of the intervention is uniquely determined by the elasticities of the NLP and NSP schedules. Specifically, the change in claims (C) as a fraction of a (small) government intervention (G) in support of the home currency is as follows:

$$\frac{C}{G} = \frac{-\eta_L}{\eta_L - \eta_S}$$

where η_L and η_S are, respectively, the elasticities of the NLP and NSP schedules. Since $\eta_S > 0$ and $\eta_L < 0$, an increase in G (intervention in support of the home currency) reduces C . But it is easily seen that the reduction in the balance of claims is always less than the amount of the intervention; $\frac{C}{G}$ is always a (negative) fraction.

dollars into gold at a fixed rate. The effect of the U.S. spot purchase of foreign currencies then would be partly to reduce U.S. official holdings of gold and partly to increase foreign official holdings of dollars. The latter effect could be represented by a shift to the left of both the NLP and NSP curves of the United States by the amount of the increased foreign official holdings, leaving the forward rate unchanged.

Official swap transactions are frequently undertaken not on the open market but by direct arrangement with foreign monetary authorities or with commercial banks. Such operations are likely to differ from swaps on the open market in that they exercise a greater influence on the Net Loan Position, and little, if any, influence on the forward rate and on the Net Speculative Position.

In the case of direct intercentral bank or intergovernmental transactions where the foreign authorities refrain from passing on the swap to commercial banks or other private parties, there is no reason why the forward rate or the private Net Loan and Net Speculative Positions should be influenced at all. Suppose that the authorities of country A sell foreign currencies forward and buy them spot through spot transactions with the authorities of other countries. The loan position of the foreign authorities will be affected directly by the transaction, and the NLP curve will shift to the left by an amount equal to the intervention by the authorities in country A. The speculative position of the foreign authorities will not be directly affected by the transaction itself, but the NSP curve will shift to the left by the same amount as the NLP curve because of the change in the speculative position of the authorities in A. Indirectly, however, a part of the inflow of funds brought about by the transaction may be offset if the foreign authorities are induced by the swap transaction to reduce their uncovered reserve holdings in A currency below the level at which they would otherwise have maintained them.

Even if the foreign authorities pass on the swap to their commercial banks by direct negotiation at a forward rate (and premium over spot) more favorable than the rate prevailing in the market, they may be able to ensure that the balances in A currency thus acquired by the commercial banks on a covered basis are largely additional to those they would otherwise have held and covered at the market rate. If they were completely "additional," there would be a leftward shift in the NLP curve precisely equal to the amount of the swaps. However, unless the foreign banks would otherwise have held no A currency on a covered basis, it is unlikely that this condition would be fulfilled and it would be difficult to avoid some decline in the amount of these holdings covered through the market.

Balance of Payments Effects

In considering the effects on the balance of payments of official intervention of the sort under discussion, we must distinguish non-recurrent ("stock") effects from continuous ("flow") effects. Both types take time—say, a number of months—to manifest themselves fully, a fact which tends to blur the distinction between them. For sharpness of analysis, however, we shall assume that the "stock" effects act almost instantaneously.

The principal kinds of "stock" effect arise from once-for-all readjustments of asset and liability positions:

(a) To the extent that the official sales of forward exchange evoke a fall in the NLP, i.e., an inflow of foreign funds or a repatriation of domestic funds on a covered basis, there will be, at fixed exchange rates, a corresponding rise in gross reserves.

(b) On the other hand, the forward exchange liabilities acquired by the authorities may themselves be regarded as weakening the external liquidity of the country, as would any other short-term liability to foreign holders.

Now, as we have seen, the increase in official forward exchange liabilities must always exceed the induced net inward capital movement by an amount equal to the induced increase in private (forward) exchange speculation. The increase in gross reserves will therefore fall short of the increase in official forward exchange liabilities. Under our present assumption of fixed speculative anticipation, however, this fact has no importance from the standpoint of external liquidity. There would be an enhanced danger of a future drain on reserves only to the extent that there was an enhanced danger of a future outflow of funds on a covered basis. This danger, in turn, would arise only with respect to that part of the counterpart of the official intervention which consisted in an influx of funds on a covered basis, i.e., a decline in the NLP; and that part of the counterpart has been fully matched by an increase in reserves.

Moreover, on the assumption that the authorities are willing to renew their forward liabilities on maturity, such a withdrawal of funds on a covered basis would be likely to occur only if there were a loss of confidence in the willingness or ability of the authorities to fulfill these renewed contracts—a situation that seems remote.

For the reasons mentioned above, the portion of the official forward exchange liabilities that serves as counterpart to the adverse forward speculation induced by the rise in the forward exchange value of the domestic currency gives rise to little or no objective liquidity risk. If the proportions in which the official intervention evoked an addi-

tion to the unofficial Net Speculative Position and a diminution in the Net Loan Position, respectively, were exactly known, the proportion of official forward liabilities taken up by adverse speculation could simply be ignored. Since, however, the proportion is not exactly known, the authorities are likely to regard their reserve needs as enhanced by some fraction of their forward liabilities, irrespective of whether these in fact correspond to additional unofficial speculation or to inward capital movements. It therefore becomes important that the proportion of induced capital movement to induced speculation should, in fact, be as large as possible.

The "recurrent" or "flow" effects on the balance of payments of official support of the domestic currency in the forward market fall into three main categories:

(1) To the extent that domestic and foreign merchants carrying on the foreign trade of the country concerned are accustomed to cover on the forward market the exchange risks incidental to such trade, the appreciation of the forward value of the currency resulting from official support will tend to raise the price of exports to the foreign importer and lower the price of imports to the domestic importer. This will bring about a fall in exports and a rise in imports which, with normal foreign trade elasticities, will involve a deterioration in the balance of payments on current account.

(2) To the extent that the support of the forward exchange rate involves a decline in the NLP—and on the assumption that interest rates at home and abroad are kept constant—there will be a decline in receipt of interest from abroad and/or an increase in payments of interest to foreigners.

(3) The fact that forward exchange rates diverge from the spot rates as they ultimately turn out to be at the date of maturity of the forward contracts gives rise to profits and losses, some of which may enter into the balance of payments. To the extent that the sale of forward exchange by the authorities evokes additional purchases—whether by way of speculation or covered interest arbitrage—on the part of foreigners, rather than residents, the balance of payments will show a gain or a loss, depending on whether the forward value of the domestic currency at the supported level is below or above the spot value. Again if, apart from the official purchases, residents have a positive (negative) net position in foreign currencies on forward account,⁵ the rise in the forward value of the domestic currency will bring about an improvement (deterioration) in the balance of pay-

⁵ This implies that foreign residents would have had a corresponding negative (positive) net position in domestic currency on forward account.

ments on current account equal to the extent of the appreciation times the net forward position.

Of the adverse effects on the current balance resulting from official support of the forward exchange value of the domestic currency, the effect on the balance of trade (category 1, above) is likely to be more important than the interest cost (category 2). Take the United States as an example: Suppose that an appreciation by 1 per cent a year of the forward dollar and forward dollar margin vis-à-vis all foreign currencies evokes a once-for-all inward flow of foreign and U.S. funds (decline in the NLP) of the order of \$500 million, and that an appreciation of spot and forward dollars by 1 per cent reduces exports by $2\frac{1}{2}$ per cent of \$20 billion, i.e., \$500 million a year, and increases imports by 1 per cent of \$15 billion, i.e., \$150 million a year, or \$650 million a year in all. However, since an appreciation of 1 per cent a year on a 3-month forward contract represents an absolute appreciation of only $\frac{1}{4}$ per cent, this figure is cut to \$160 million. Moreover, if we assume that only 60 per cent of U.S. trade is covered, the adverse effect on the U.S. balance of trade would be reduced to something like \$100 million.

Even \$100 million a year, however, is a considerable payments loss to incur in addition to the interest cost of, say, \$20 million on an inward movement of arbitrage funds of the order of \$500 million.⁶

Effect on Speculative Anticipations

We must now reconsider the assumption, earlier adopted, that official support of the forward exchange value of the currency has no effect on expectations as to the future course of the spot rate. The precise effect on such expectations is uncertain; there are possible effects in both directions. Much depends on the situation, and particularly on what is generally believed to be the extent of official intervention. Insofar as those participating in foreign exchange markets are ignorant of the fact or extent of official support opera-

⁶ From the standpoint of real national income, the two figures are on a very different footing. The loss of \$20 million in interest is a net loss to the country even if full employment is preserved—though it may be “worthwhile” if the \$500 million inflow of funds is added to the real capital of the country. The \$100 million loss on the trade balance may involve no loss at all in real income if employment is preserved by a corresponding addition to domestic expenditure. Indeed, there may be a net gain from the improved terms of trade. However, both the \$20 million and the \$100 million are apt to generate declines in income and employment which may intensify the real loss involved. In most cases in which official intervention on the forward market in support of the domestic currency arises, a decline in competitiveness on world markets would be unwelcome.

tions, the impression given by the appreciation of the forward rate itself that other people are feeling less bearish about the currency is likely to impose a more optimistic view about the future spot value of the supported currency. Knowledge by some of the potential operators that the authorities are supporting the forward market will likewise tend to encourage bullishness insofar as it is interpreted as evidence of official determination to defend the currency and of official willingness to continue to have resort to this particular technique of increasing reserves. On the other hand, knowledge of the past accumulation of official forward liabilities as such will have a bearish or pessimistic influence, and the intervention as such may be interpreted as a sign of weakness. In considering the relative strength of these influences, it should be borne in mind that many of those whose expectations concerning rates are important (i.e., many potential "speculators") are not market operators at all, but traders, who are likely to be more influenced by visible criteria, such as reserve movements, than by changes in official forward exchange liabilities, data on which are not published and the magnitude of which is unknown. Danger would arise only if the market were to assign an undeserved importance to that part of the official forward liabilities that corresponds to the induced adverse speculation, or if the total magnitude of forward liabilities were to be exaggerated by rumor.

On the whole, it appears that official support of the forward market is more likely to enhance than to reduce confidence in the future spot rate of the currency in question, particularly in the short run, and provided that the operations are not believed to be too large. The restoration of confidence will, of course, be merely temporary if the underlying deficit persists.

Insofar as official support of the forward market leads to more bullish expectations regarding the future spot rate, causing a shift in spot speculation, both the NLP and the NSP curves will lie further to the left than in Diagram 2; and insofar as official support affects forward speculation, it will result in a further shift to the left in the NSP' curve. The reduction in the balance of claims (the favorable capital movement) will thus be greater, and the forward rate higher, than in Diagram 2.

Insofar as the official support of the forward market leads to less bullish, or more bearish, anticipations about the spot rate, the NLP curve will lie to the right and the NSP' curve still further to the right, of the corresponding curves in Diagram 2. Even if the effect on forward speculation is insufficient to outweigh the initial official intervention, and the forward rate therefore rises above the initial position,

the effect on spot speculation may be such that the balance of claims actually increases (i.e., the net effect on capital is unfavorable).

Official Forward Support with Floating Spot Rates

We have thus far been assuming that spot exchange rates are fixed by official action. In the context of the sort of arrangements that prevail in the world for keeping exchange rates in the vicinity of par values, this is equivalent to assuming that the balance of spot market transactions is such as to hold the spot exchange value of the domestic currency at rates which evoke the stabilizing intervention of domestic or foreign monetary authorities. At any one time, this is likely to be true of the spot exchange rates relative to some foreign currencies but not relative to others.

If the spot value of the domestic currency is not at an official buying or selling point, the effect of official support of the currency on the forward market will be different from what has been described. The consequences of forward intervention under a floating spot rate system would take too long to describe fully here. The following summary treatment is impressionistic rather than precise. The tendency, which exists when the spot rate is fixed, for the rise in the forward value of the currency to evoke a decline in the NLP will operate, under a floating spot rate, to promote a rise in the spot value of the currency. Thus, the effect of supporting the forward rate will be to raise both forward and spot rates of exchange.

If it is assumed that any short-run effect of the rise in the spot rate on the balance of current payments is of negligible proportions, the rise in the spot rate must, in fact, be sufficient to choke off entirely the tendency toward a decline in the NLP that results from the rise in the forward rate. This is accomplished in two ways: the rise in the spot value of the currency (given that anticipations regarding future spot rates remain the same) evokes adverse spot speculation; and the inward shift in covered interest arbitrage is reduced because the forward discount on the currency declines less with a floating than with a fixed spot rate. This effect on covered interest arbitrage means that the forward rate will have to rise more with a floating than with a fixed spot rate in order to evoke the addition to forward speculation required to equilibrate the forward market. In the end, the entire negative official speculative position in forward exchange will be balanced by an increase in private forward speculation.

Even if the spot value of the currency is free to appreciate only over a narrow range, the effect of this freedom will be to reduce the benefit which the country's gross reserves will derive from the favor-

able effect on capital movements. Any inward arbitrage will be at least partially offset by outward uncovered capital movements, unless, indeed, the rise in the spot rate has the effect of raising the anticipated future level of the spot rate.

Conclusions

Official support of the foreign exchange value of a currency is in some respects analogous to official borrowing from abroad on a short-term but renewable basis, in foreign currency or accompanied by a foreign exchange guarantee. From the standpoint of the country that seeks to attract funds from abroad, such intervention in the forward exchange market differs from direct official borrowing chiefly in that it is less conspicuous, and engages less fully and less openly the credit of the authorities; on the other hand, it tends, in a way which may be unwelcome, to worsen the trade balance. From the standpoint of the lending countries, it has the characteristic, in contrast to inter-governmental or intercentral bank loans, of attracting private funds and thus reducing the liquidity of the commercial banking system. Quite apart from these comparative advantages or disadvantages of the technique, a country's readiness to have recourse to such operations makes available a source of external liquidity which, though not large, is for the most part additional to those otherwise available. From what has been said it is clear that the most appropriate use of the technique will be to meet a temporary deficit which, if successfully financed, would be likely to be followed, within a period of time measured in months rather than years, by a corresponding surplus.

A good example would be an outflow of funds caused by a temporary loss of confidence in a currency that was basically sound, in the sense that in the long run it could be satisfactorily maintained without devaluation, though there might be some temporary weakness in the basic balance of payments. Such an outflow of funds—provoked, say, by some political event or by a misunderstanding of the policy intentions of the government—would be not only temporary but inherently reversible. While it lasted, it would probably be associated with a discount in the forward exchange value of the currency, which would be giving a temporary stimulus to the balance of trade. In these circumstances, official support of the forward market would offset the effect on reserves of the outflow of funds; the eventual reflux of these funds would enable the authorities to shed their forward liabilities; in the meantime, a large part of the speculative outflow could be prevented without raising the forward rate above the spot rate, i.e., without exchange loss to the authorities or even, probably,

to the country. The stimulus to the balance of trade afforded by the forward discount would be removed; in certain circumstances, however, this may not be undesirable.

The next most promising occasion for applying the policy of forward support would be to deal with a short-term capital outflow stimulated by a relative decline in a country's interest rates, likely to be followed at some not too distant date by a reflux attributable to a relative increase in the interest rates. Such a situation might arise if a country whose balance of payments was in fundamental equilibrium was suffering from a recession when other countries were prosperous.

In this case, if there were no concurrent loss of confidence in the currency, the outflow of funds, though draining the country's reserves, would lead to an appreciation in the forward value of the currency, given the fact that at least part of the outflow was on a covered basis. Official support of the forward value of the currency, by reducing or even reversing the outflow of covered interest arbitrage, would reduce or check the over-all capital outflow. If, however, as might be the case, such support should create or accentuate a forward premium on the currency, the authorities would incur losses from their forward operations, partly to the benefit of foreign participants on the forward market. The substantial rise to be expected in the forward premium would, of course, have an adverse effect on the foreign balance, which might be unwelcome from a cyclical standpoint though it would probably merely involve a diminution in the improvement that would otherwise have occurred as a result of the recession.

Such use of forward support to counteract interest-motivated capital movements is unlikely to be as successful as in the case previously considered. In the first place, there will always be uncertainty concerning when the tide of capital movements will turn and whether it will turn to the full extent. The period over which intervention would have to be maintained might have to be long. Secondly, since no one would credit the possibility of revaluation in the circumstances envisaged, the rise in the forward premium would evoke a large amount of adverse forward speculation. This means that considerable intervention would have to be undertaken, and large losses incurred, in order to achieve a given effect on the movement of capital.

A temporary deficit in the current balance of payments that was due to some such event as a harvest failure would not constitute a good occasion for the application of the technique of forward support. The current account deficit resulting from this cause, while it would be temporary, would not be succeeded by any subsequent surplus in the balance of payments. The deficit in question could be offset, as

far as the effect on reserves is concerned, by an influx of capital brought about by forward exchange support; but since there would be no ensuing surplus, the official debit position on forward exchange would have to be renewed indefinitely. This, as we have seen, involves some deterioration in the current balance as a consequence of the appreciation of the forward exchange rate. In any event, a permanent debit position on forward exchange would constitute a permanent weakness in the reserve position, so that it would be preferable that such a contingency should be met by long-term borrowing.

The only situation in which a case might be made for forward exchange support operations to meet a current deficit would be one in which it appeared probable that the current deficit would, within a reasonable time, be replaced by a surplus without the necessity for resorting to devaluation. If the turnaround in the current balance could be achieved only by devaluation, it would be preferable that the forward support not be undertaken until after devaluation has taken place—otherwise the authorities would incur a loss as a result of their operations, part of which would accrue in the form of wind-fall gains to nonresidents.

Analyse simplifiée de l'intervention officielle sur le marché de change à terme

Résumé

L'intérêt porté aux problèmes que pose l'intervention officielle sur les marchés de change à terme, intérêt qui allait croissant depuis un certain nombre d'années, a été encore renforcé par la nouvelle ligne de conduite récemment adoptée par les autorités monétaires des Etats-Unis. En mars 1961, le Trésor américain est intervenu pour la première fois sur les marchés de change pour soutenir le dollar à terme. En outre, le *Federal Reserve System* a conclu, depuis février 1962, plusieurs accords concernant les opérations sur devises avec d'autres banques centrales. Il semble donc opportun de considérer quels sont, en théorie, les effets à court et à long terme des transactions officielles sur le change à terme, et dans quelles conditions ces transactions peuvent être efficaces et utiles. Le présent mémoire s'efforce de répondre, au moins à titre provisoire, à diverses questions telles que les suivantes. L'intervention doit-elle être "limitée" quant à sa portée et à sa durée, et, dans l'affirmative, dans quel sens et pour quelles raisons doit-elle l'être? Dans quelles situations de paiements le soutien

officiel du change à terme est-il opportun? Ce soutien doit-il se limiter à la défense de la monnaie contre les attaques "spéculatives"?

Ce mémoire envisage le sujet d'une façon simplifiée à dessein. Il a pour but d'exposer clairement et succinctement la théorie de l'intervention, et d'examiner à la lumière de cette théorie les problèmes qui viennent d'être évoqués. Dans ce but, une nouvelle classification des éléments qui déterminent le taux de change à terme est présentée; ce taux doit être tel qu'il assure l'équilibre entre d'une part la position spéculative nette (qui par définition est égale à la somme des avoirs nets, au comptant ou à terme, des résidents d'un pays A dans d'autres monnaies, *moins* la somme des avoirs nets, au comptant ou à terme, des résidents d'autres pays en monnaie du pays A) et d'autre part la position nette en matière de prêts (qui par définition est égale à la somme des prêts nets des résidents du pays A aux résidents d'autres pays). Il semble que cette manière d'envisager le sujet offre certains avantages du point de vue de la clarté de l'exposition.

Análisis simplificado de la intervención oficial en el mercado de cambio a término

Resumen

El interés que han suscitado los problemas relativos a la intervención oficial en los mercados de cambio a término, el cual viene aumentando desde hace varios años, ha recibido un nuevo impulso con motivo de las recientes alteraciones efectuadas en las prácticas seguidas por las autoridades monetarias estadounidenses. En marzo de 1961, por vez primera, la Tesorería de Estados Unidos intervino en los mercados cambiarios con el objeto de prestar apoyo al dólar a término. Además, desde febrero de 1962 el Sistema de Reserva Federal ha concertado con otros bancos centrales varios acuerdos "swap." Por lo tanto, parece oportuno reflexionar sobre cuales son, en teoría, los efectos a largo y a corto plazo de las transacciones del gobierno en divisas a término, y bajo qué circunstancias resulta probable que esas transacciones logren una finalidad útil. En este artículo se procura contestar tentativamente a preguntas como las siguientes: ¿Debe limitarse el alcance y/o la duración de la acción interventora y, de ser así, en qué sentido y por qué razón? ¿En qué género de situación de pagos resulta apropiado proporcionar apoyo oficial al cambio a término? ¿Debe la intervención limitarse a combatir los ataques de índole "especulativa"?

El enfoque empleado en este artículo es llano. Lo que se procura es presentar una exposición sin ambages de la teoría respecto a la intervención y aplicarla para examinar los problemas que acabamos de señalar. A ese efecto se elabora una nueva clasificación de aquellas fuerzas que determinan el tipo de cambio a término: es preciso que dicho tipo de cambio sea capaz de equilibrar la Posición Neta Especulativa (la cual se define como el total de los activos netos—ya sea al contado o a término—que posean los residentes del país A en otras monedas *menos* el total de los activos netos—al contado o a término—de los residentes de otros países en la moneda del país A) así como la Posición Neta de Préstamos Otorgados (que se define como el total de los préstamos netos concedidos por los residentes del país A a los residentes de otros países). Parece que dicho método de presentación reúne ciertas ventajas de carácter ilustrativo.

Economic Program and Recent Financial Policies in Belgium

Anne Romanis*

WHILE THE IMMEDIATE PROSPECTS for the Belgian economy appear rather favorable, there is a growing realization that integration into the European Economic Community (EEC) will pose the need for marked structural changes and adaptation over the next few years.¹

Section I of this paper discusses the development of the economy since 1950. It draws attention to the slight growth in the active population and small opportunities for shifts from agriculture as factors in the slower growth of total gross national product (GNP) and over-all output per head than in the other EEC countries, and points out the similarity of the Belgian and U.K. situation in these respects. Output per worker in manufacturing is also found to have increased less rapidly in these two countries; this is associated with a relatively low level of business investment, apparently connected with relatively lower borrowing by businesses. The vulnerability of the Belgian economy to cyclical fluctuations is suggested as a factor tending to reduce both the level of business investment and its productivity as indicated by the increment in GNP. The basic stimulus for increases in output in the 1950's was provided by the rapid but unstable growth of Belgian exports (see Table 6, p. 26). To achieve a faster rate of growth, it will be necessary to maintain an adequate expansion of exports and a satisfactory level of domestic demand without marked fluctuations, and to ensure a sufficient volume, and a desirable composition, of private investment.

Two important official documents bearing on these questions are discussed in the next two sections. Section II describes the scope and main features of the Program for Economic Expansion for 1962-65.²

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¹ The present paper describes developments in the Belgian economy up to October 1963.

² Sénat de Belgique, 1962-63 session, *Projet de loi portant approbation du premier programme d'expansion économique* (December 13, 1962); hereafter referred to as the Economic Program for 1962-65.

Section III outlines the principal recommendations of the Government Commission on the Problems of Financing Economic Expansion³ and describes recent major reforms in monetary and fiscal fields.

Section IV attempts to assess the prospects for the fulfillment of the Economic Program. It suggests that the factors which have tended to inhibit private investment in the past are not likely to disappear by 1965. Not too much should be hoped for from the recent financial measures in themselves, although the existence of a more flexible monetary system, the development of a broader market in industrial shares, and more favorable tax treatment of productive investments could be of importance in permitting higher investment demands to be unconstrained by financial rigidities. Good immediate prospects for profitable expansion of exports could provide the additional stimulus for investment, but this favorable situation is not certain to be realized. Since 1960 almost the entire growth of Belgian exports has occurred in trade with other Common Market (EEC) countries. It would be optimistic to assume that trade within the Common Market will continue to grow as rapidly as in the last few years, but Belgium could benefit substantially from a higher rate of growth in the United States and the United Kingdom. It does not appear that the cyclical vulnerability of Belgian exports can be greatly reduced in the short run even if the changes in their structure called for in the Economic Program (Table 14, p. 54 below) are achieved. For Belgium, the benefits of participation in the Common Market are particularly dependent on the maintenance of high demand within the area. Provided that this continues, and the favorable competitive position of Belgian exports is maintained, the further integration of the Common Market economies may provide circumstances favoring a high level of private investment in Belgium.

I. Development of the Belgian Economy Since 1950

The comparatively slow rate of growth of the Belgian economy since 1950, relative to that of other Common Market countries, has occasioned concern in recent years. During the later 1950's, Belgian real GNP rose by less than 2½ per cent per annum—only about 40 per cent as fast as that of the Federal Republic of Germany and Italy, and about 60 per cent as fast as that of France and the Netherlands. The rate of expansion was, however, about the same as that of the United Kingdom and the United States (Table 1).

³ Commission gouvernementale pour l'étude des problèmes de financement de l'expansion économique, *Rapport*, March 31, 1962 (Brussels). Generally referred to as the De Voghel Commission Report, after its chairman.

The desire to foster a higher rate of expansion led the Government to establish in 1959 the Programing Office, which proposed as a target the achievement of an annual growth rate of 3.9 per cent for the period 1959-65. This rate of growth is roughly the same as that proposed for the United Kingdom by the National Economic Development Council for 1961-66. Considerably faster rates of growth have been projected for Italy and France, and somewhat faster rates for Germany and the Netherlands.

The relatively slow growth of Belgian and British output in recent years is partly a reflection of the comparatively slight growth in population and hence in total employment in those countries. The influence

TABLE 1. SELECTED COUNTRIES, REAL GROSS NATIONAL PRODUCT (GNP):
AVERAGE ANNUAL RATES OF GROWTH, ACTUAL OR PROJECTED¹

(In per cent)

	1950-55 ²	1955-60 ²	1960-65	1965-70	1960-70
Germany	9.0	6.0	4.4	4.0	
Italy	6.0	5.9	...	...	5.0
Netherlands	5.7	4.2	...	...	4.4
France	4.5	4.2	5.2	4.8	
Belgium	3.3	2.4	3.9	3.9	
United Kingdom	2.6	2.7	...	...	3.3
United States	4.3	2.3	...	...	4.4

Source: Organization for Economic Cooperation and Development, *Policies for Economic Growth*, November 1962, pp. 16 and 28, for first two columns, and all figures for Italy, the United Kingdom, and the United States. Other figures for France, from the report to the European Economic Community of an independent group headed by M. Pierre Uri, as reported in *Le Monde*, November 18, 1962; for the Netherlands, from the *Industrial Policy Memorandum* presented to Parliament in May 1963; and for Belgium, from the Economic Program for 1962-65.

¹ The figures show the percentage increases which, when compounded from year to year, yield the total change in GNP which actually occurred (or which is projected to occur) from the first year to the last year shown in each column heading.

² Among the European countries covered, the divergence in the rate of growth of GNP per head during these periods was rather less marked than that in the growth of total GNP. In the United States, however, population grew more rapidly than in Europe, with the result, shown below, that the difference between the United States and the continental European countries was more marked in growth of output per head than in growth of total output. The approximate annual growth in GNP per head was as follows:

	1950-55	1955-60
Germany	8.0	4.7
Italy	5.3	5.4
Netherlands	4.4	2.9
France	3.7	3.2
Belgium	2.8	1.8
United Kingdom	2.3	2.1
United States	2.5	0.5

of demographic factors in restricting the growth of the Belgian economy is only fully apparent when it is realized that between 1950 and 1960 there was virtually no increase in the population aged 15-64, who comprise the bulk both of the active labor force and of the purchasing public. In effect, the whole increase in population between 1950 and 1960 arose from an increase of nearly 20 per cent in dependent children, and a rise of one seventh in persons past the normal age of retirement (Table 2).

TABLE 2. BELGIUM: CHANGES IN POPULATION FROM 1950 TO 1960

	1950	1960 (Thousands)	Increase	Percentage Increase
Population of working age	5,875	5,905	30	0.5
Children under 15	1,816	2,173	357	19.7
Aged (65 and over)	962	1,100	138	14.3
Total population	8,653	9,178	525	6.0

Source: Economic Program for 1962-65, Table 78.

While total employment was rising by about 1¼ per cent or more per annum in Germany, Italy, and the Netherlands between 1955 and 1960, there was virtually no increase in Belgium, and a rise of only about 0.3 per cent per annum in the United Kingdom (Table 3). As recorded, total employment in France also increased comparatively little, but the possibilities of increasing output through reducing underutilization of manpower in sectors such as agriculture and self-employed trades were very much greater than in Belgium or the United Kingdom.

Average output per head also rose considerably less fast in Belgium and the United Kingdom than in the other EEC countries shown in Table 3. Over-all productivity per head rose by less than 2½ per cent per annum in Belgium and the United Kingdom, compared with increases of 3½-4½ per cent per annum in Germany, Italy, and France, and of 2.8 per cent per annum in the Netherlands. This was partly a reflection of the comparatively low level of employment in agriculture, and consequently much smaller scope for reducing employment and for increasing average output per head both within agriculture and to the extent that workers shift to more productive sectors than agriculture. In 1955, agriculture accounted for less than 5 per cent of total civilian employment in the United Kingdom, and less than 10 per cent in Belgium, compared with nearly 19 per cent in Germany, 27 per cent in France, and 38 per cent in Italy. In the Netherlands, the

TABLE 3. SELECTED COUNTRIES, EMPLOYMENT AND PRODUCTIVITY: AVERAGE ANNUAL RATES OF GROWTH, ACTUAL OR PROJECTED¹

(In per cent)

	Employment			Output Per Head		
	1950-55	1955-60	1960-70	1950-55	1955-60	1960-70
Germany	2.6	1.7	0.3	6.2	4.3	3.7
Italy	1.2	1.9	0.9	4.7	3.9	4.1
Netherlands	1.5	1.3	1.2	4.1	2.8	2.8
France	0.3	0.6	0.8	4.2	3.6	4.1
Belgium	0.7	—	0.7	2.6	2.4	3.1
United Kingdom	0.9	0.3	0.5	1.7	2.3	2.8
United States	1.4	1.0	1.7	2.8	1.3	2.7

Sources: Organization for Economic Cooperation and Development (OECD), *Policies for Economic Growth* (November 1962), pp. 16 and 28. Netherlands projections for 1960-70 from OECD, *Manpower Statistics, 1950-60*; Belgian projections from Economic Program for 1962-65.

¹ The figures show the percentage increases which, when compounded from year to year, yield the total change which actually occurred (or which is projected to occur) from the first year to the last year shown in each column heading.

percentage was slightly higher than in Belgium (Table 4). Another factor which has probably tended to slow down the estimated growth of output per head in Belgium and the United Kingdom, compared with that of the other countries mentioned, is the much larger portion of their active population employed in service occupations. These sectors have shown only slight increases in productivity, which may be due in part to the difficulty of measuring output there.

However, even apart from these important structural differences, the fact remains that in manufacturing itself in recent years average

TABLE 4. SELECTED COUNTRIES: RELATIVE IMPORTANCE OF AGRICULTURE, INDUSTRY, AND SERVICES IN TOTAL CIVILIAN EMPLOYMENT, 1955

(In per cent)

	United Kingdom	Belgium	Netherlands	Germany	France	Italy
Agriculture ¹	5	9	12	18	27	38
Industry ²	52	48	42	47	42 ³	33
All other civilian employment	43	43	46	35	31 ³	29

Source: Organization for Economic Cooperation and Development, *Manpower Statistics, 1950-60*.

¹ Including forestry and fishing.

² Mining and quarrying, manufacturing, construction, electricity, gas and water supply.

³ Partly estimated.

productivity per worker has risen only about two thirds as fast in Belgium (and the United Kingdom) as in the other EEC countries. Table 1 of the Economic Program for 1962-65 shows that between 1957 and 1961 average hourly productivity in Belgium and in the United Kingdom rose by about 14 per cent, compared with increases of 20-22 per cent in Germany, France, and Italy, and of 27 per cent in the Netherlands.

An important factor in this connection appears to have been the relatively low investment by business enterprises in Belgium and the United Kingdom, associated partly with relatively smaller business saving and partly with lower borrowing (Table 5).

TABLE 5. SELECTED COUNTRIES: INVESTMENT, SAVING, AND BORROWING OF PUBLIC AND PRIVATE ENTERPRISES, 1950-59

(In per cent of gross domestic product)

	Investment	Saving	Borrowing
United Kingdom	14.1	11.4	2.7
Belgium	14.5	10.0	4.5
France ¹	16.6	11.1	5.5
Netherlands	20.2	14.6	5.6
Germany	21.3	10.5	10.8

Source: Bruce R. Williams, *International Report on Factors in Investment Behavior* (Organization for Economic Cooperation and Development, 1962), p. III 6.

¹ The percentage share of gross business investment in gross domestic product in France was more similar to that in the Netherlands and Germany during the later 1950's than over the decade as a whole.

The greater vulnerability of the Belgian economy has been an important influence tending to reduce both the level of business investment since 1950 and its productivity as indicated by the increment in gross national output.⁴ While all the other Common Market countries

⁴ A recently published study by A. Lamfalussy (*The United Kingdom and the Six*, London, 1963) lays stress on the fact that even more striking than the difference between the ratios of total gross fixed investment to GNP in the United Kingdom and Belgium, on the one hand, and in the remaining EEC countries as a group, on the other, was the much higher marginal gross capital/output ratio in the United Kingdom and Belgium than in the other EEC countries. However, in Belgium this high capital/output ratio seems to have been strongly influenced by cyclical factors affecting the ratio during the period that he chose, the ratio being considerably lower in preceding and subsequent periods. (The figures used by Lamfalussy relate gross fixed capital formation during 1955-59 to the increase in gross domestic product from 1955 to 1960.) It is clear that the marginal gross capital/output ratio in Belgium during the later 1950's was also inflated by the large proportion of total fixed investment devoted to residential construction (houses being a long-lived asset have a high cost relative to their annual output). It is noteworthy that during this period, the capital/output ratio in Belgium as defined was not dissimilar from that in the Netherlands.

either increased or maintained their industrial production in every year after 1950,⁵ industrial output in Belgium fell by more than 5 per cent both between 1951 and 1952 and between 1957 and 1958. Industrial investment also was cut back more sharply in Belgium at these times than at any time after 1950 in the other Common Market countries or in the United Kingdom.

The basic stimulus for increases in national production during the 1950's was provided by the rapid growth of Belgian exports, which represent more than one third of total output. Thus, when the volume of exports was rising by about 10 per cent per annum from 1952 to 1956, and from 1959 to 1961, total fixed investment rose by about

TABLE 6. BELGIUM, SUPPLY AND USE OF REAL RESOURCES: ANNUAL GROWTH DURING VARIOUS PERIODS SINCE 1950, AND PROJECTED FOR 1962-63 AND 1961-65¹

(Average annual changes, in per cent)

	1950-52 (2 yrs.)	1952-56 (4 yrs.)	1956-59 (3 yrs.)	1959-61 (2 yrs.)	1961-62 (1 yr.)	1962-63 ² (1 yr.)	1961-65 (4 yrs.)
Gross national product (GNP)	2.4	3.9	1.1	4.3	4.5	3.0	4.0
Exports	3.9	11.9	2.0	9.3	9.2	4.5	7.7
Gross private fixed investment	-5.7	6.7	0.2	8.1	-0.4	2.5	5.5
Gross public fixed investment	-9.4	6.7	5.3	-1.7	13.2	14.0	11.0
Private consumption	0.5	3.9	2.1	3.5	4.1	3.5	3.4
Public consumption	13.9	0.3	3.6	1.8	6.2	2.5	2.6
Imports	-0.1	10.1	3.5	9.2	8.9	4.5	7.7

Source: Based on national income estimates, at 1953 prices, of the National Institute of Statistics for the years 1953-62, and on estimates of Département d'Economie Appliquée de l'Université Libre de Bruxelles for earlier years (i.e., for first column, and for rates of increase from 1952-53 included in second column). Forecasts for 1963 are taken from the *Economic Budget* for 1963, published in National Bank of Belgium, *Bulletin d'Information et de Documentation*, November 1962. Projections for 1965 are derived from the Economic Program for 1962-65, Table 4.

¹ The figures show the percentage changes which, when compounded from year to year, yield the total change in GNP which actually occurred (or which is projected to occur) from the first year to the last year shown in each column heading.

² Preliminary.

7-8 per cent per annum, and a growth rate of about 4 per cent per annum in the national product was achieved. When the growth of exports slackened or faltered after 1950 and after 1956, fixed investment remained stationary or declined; and the growth in GNP averaged only a little more than 1 per cent per annum from 1956 to 1959 and less than 2½ per cent from 1950 to 1952. Table 6 suggests that

⁵ With the sole exception of France, where industrial production fell very slightly from 1951 to 1952.

during the 1950's changes in gross public fixed investment tended to reinforce, rather than to lessen, the impact of exogenous demand changes, but that a marked increase in public consumption was a contracyclical factor in 1951 and 1952.

After 1959, the rapid expansion of exports was renewed and GNP rose by somewhat more than the 4 per cent per annum called for in the Economic Program. However, in 1962, the expansion in private fixed investment apparently ceased,⁶ and the growth in total GNP was maintained by a faster rise in private and public consumption than was provided for in the Program. Since 1959, changes in gross public fixed investment have tended to offset changes in the rate of private fixed investment.

The recent trends revealed in Table 6 indicate that the major difficulties in achieving a faster growth rate in the future are likely to be the problems (1) of maintaining an adequate rate of export expansion and a satisfactory level of effective demand in general without the marked fluctuations of the past, and (2) of ensuring an adequate level and desirable composition of private investment. In the concluding section of this paper, these questions are discussed in the light of the proposals of the Economic Program and of recent financial policies, which are described below.

II. Program for Economic Expansion, 1962-65

The Economic Program represents essentially a model of the desirable development of the economy, indicating the objectives which it should be possible to realize, given the available resources of manpower. It is not, properly speaking, a plan, since it contains almost no indication of the methods to be followed and measures to be taken to assure the achievement of the proposed objectives. The Program was approved by the Senate in June 1963, but it is not yet clear what legislation will be needed or proposed to secure the achievement of the objectives set forth in it.

It has been strongly emphasized that the concept of programing would not deprive the managements of private enterprises of any power or responsibility. Government policy would have to operate through the forces of the market and seek to encourage psychological and technical conditions conducive to expansion. However, this gen-

⁶ The expansion in gross private fixed investment had slowed down to 3.7 per cent from 1960 to 1961, after a very sharp increase of 12.7 per cent from 1959 to 1960.

eral philosophy would not rule out public intervention in key sectors in order to promote or strengthen industrial initiative.

It is also stressed that the program is to be regarded less as a forecast than as a system of interdependent and mutually consistent targets. A series of basic equilibria has to be considered; employment opportunities should correspond to the full employment of the labor force; investment to be undertaken must be matched by a sufficient level of national saving; consumption has to rise in line with the increasing output of those sections which depend on demands for consumption; exports must suffice to pay for purchases abroad, which will increase more rapidly than national income.

Excessive attention should not be concentrated upon particular target figures. The realization of the Program is bound to be strongly influenced by events outside the scope of national policy, a fact which imposes the need for great flexibility in implementation of the Program and requires a continuing review of the broad objectives proposed. Nor should the projections made in the program be taken to imply that it will be possible to secure continuous full employment. The great dependence of Belgian industry upon exports makes it difficult for the public authorities to eliminate fluctuations in business employment. A higher growth rate could, however, help to reduce fluctuations and enable a higher level of employment to be regularly maintained.

The methods used by the Programing Office were inspired by both the Netherlands and the French plans. Like the Netherlands plan, the Belgian Program is based on an analysis of prospective trends. The Programing Office has also followed the system, applied by the French Commissariat du Plan, of associating representatives of the various sectors of the economy in the work of establishing the target objectives. However, a major difference between French and Belgian conditions, which makes it more difficult to implement any government-sponsored economic program, is the much more limited scale of the publicly owned sector in Belgium than in France. (The railways, national airlines, and water distribution are the only publicly owned industrial enterprises in Belgium.) Thus, the substantive work of programing really lies in the establishment of regular contacts and discussions between representatives of government, industrialists, and trade unions, preparatory to the adoption of the various targets. A key factor for the success of this type of program is the attitude of employers and labor toward the objectives proposed and the measures necessary for their realization. Their attitude may be influenced by their degree of participation in the preparation of the Program.

The majority of estimates for expansion in different sectors were discussed first with the industrial federations concerned, and then in

joint sessions of industrialists and trade unionists. The aim of these discussions was to verify the accuracy of forecasts of various trends (e.g., of prospective technical developments), to promote understanding of the objectives, and to determine the conditions under which they could be achieved. However, the procedure for such discussions did not prove entirely satisfactory. In particular, the trade unions stated that it was difficult for them to reach an opinion on various targets, since certain data were not made available to them and only a short time was provided for their comments. As far as the unions are concerned, the Program remains largely an abstract and theoretical conception, and their interest is likely to be aroused only when more definite decisions are needed. The Program has been approved by the National Committee for Economic Expansion, a representative body established in 1960. But it is not clear whether either industrialists or the trade unions feel committed to supporting the program as a result of this approval.

PRINCIPAL OBJECTIVES OF THE PROGRAM

The 4 per cent annual increase in GNP called for in the Program represents a not unoptimistic estimate of the growth rate which may be feasible with full employment, when account is taken of the fact that total employment is expected to rise by only about 0.5 per cent per annum, even if active steps are taken to encourage greater employment of women and older workers and immigration of foreign workers.

Since there is now no considerable unemployment even in depressed areas such as the Borinage, the prospects of increasing employment in expanding industries must depend on shifting manpower from agriculture and slower growing industries, on successfully encouraging immigration, and on increasing the number of women at work⁷ (Table 7). The recruitment of foreign workers is becoming increasingly difficult, and it may prove hard to achieve the high degree of labor mobility called for in the Program. The linguistic barrier between the French- and Flemish-speaking sections of the country constitutes a serious impediment to mobility, and up to the present, the main movement of population from depressed areas has been toward Brussels (which is officially established as a bilingual area); however, most of the increase in employment in this area has been in services, not in industry.

⁷ In 1960 the proportion of all women aged 15-64 gainfully occupied was 48 per cent in the United Kingdom, 45 per cent in France, and 42 per cent in Germany, but only 36 per cent in Belgium, and less in the Netherlands and Italy. Thus, it seems clear that the latter three countries still possessed potential reserves of women workers.

TABLE 7. BELGIUM, DEVELOPMENT OF EMPLOYMENT:
1957, 1960, AND PROJECTED FOR 1965 AND 1970*(Annual averages or changes, in thousands)*

	1957	1960	1965	1970
Total population	8,990	9,153	9,440	9,688
Total labor force	3,622	3,606	3,716	3,819
Total employment	3,569	3,516	3,677	3,779
	<i>1957-60</i>		<i>1960-65</i>	
Employment				<i>1965-70</i>
Increases as a result of				
Population growth	} -28 ¹	65 ²	44 ²	
Net immigration		33	40	
Increased employment of women		52	25	
Changes in unemployment		50 ³	0	
	-24	200	109	
Decreases as a result of				
Longer schooling	-24	-32	-8	
Retirement age	-5	-7	-1	

Source: Economic Program for 1962-65, Table 2.

¹ Also includes the effect of actual changes in the proportion of men in various age groups available for employment.² Estimated by assuming that the proportions of various age groups available for employment remain unchanged.³ The greater part of this change had been realized by the end of 1962.

There is a need to reduce employment in certain service occupations and to expedite the training of skilled workers for industry if the growth rates envisaged in the Program are to be achieved. Shortages of maintenance engineers have already been felt as a bottleneck hindering expansion in several industries.

Higher output would have to be achieved predominantly by increased productivity. Over-all, labor productivity would have to rise by about 3½ per cent per annum, compared with about 2½ per cent during the 1950's. Since productivity is expected to increase comparatively little in services, this average implies increases of 4-5 per cent per annum in most major manufacturing sectors and in agriculture, and of 7-8 per cent per annum in chemicals, petroleum refining, and electricity generating. The achievement of these increases in productivity must clearly depend on a large-scale rationalization and re-equipment of Belgian industry, increasingly effective management, and, not least important, the maintenance of a high degree of utilization of capacity.

A high level of private investment in productive capital is not only a necessary condition for the achievement of the productivity goals; it is also vital for the maintenance of a satisfactory balance of payments

in the long run, especially under the new conditions created by the coming into operation of the Common Market. A rapid expansion of exports is a basic condition for the successful realization of the Program. Accelerated economic expansion will give rise to a rapid growth of imports, especially of finished products and semimanufactures which have hitherto been subject to protective duties. Greater specialization in manufacturing resulting from the gradual integration of European industries will also tend to increase reciprocal international movements of only slightly differentiated products. The volume of imports is expected to rise by more than one third between 1961 and 1965, an increase of 7.7 per cent per annum, or almost twice that in GNP. Exports must rise sufficiently to avoid a deficit in the current balance (which could compromise the achievement of the desired rate of growth) and should also provide a surplus for net exports of capital and transfers by the public sector to countries in the process of development. To do this, and if the estimated growth in imports were not exceeded, the volume of exports would also need to rise by 7.7 per cent per annum over the next few years.

Belgian industrialists are faced with a major task of reorganization, modernization, and diversification in specific industrial sectors in order (1) to meet the increased competition which is likely to be encountered in the Belgian market from goods and services supplied by other EEC countries; (2) to overcome the inadequate scale of many enterprises hitherto selling in the very restricted Belgian home market, so as to enable them to compete with large foreign concerns in the integrated European market; and (3) to ensure that Belgium keeps up with other EEC countries in the general development of new products and processes in such dynamic fields as mechanical and electrical engineering, electronics, petrochemicals, plastics, and synthetic textiles.

In sum, the realization of the Program requires that a further marked increase in private investment and a sharp rise in supporting public investments in the infrastructure (notably ports and waterways and inland transport) be financed without creating inflationary pressures.

It is estimated that productive investment in private and publicly owned enterprises should rise by more than one third between 1961 and 1965 (compared with an increase of 23 per cent from 1957 to 1961) and that public investment, which accounted for less than 12 per cent of total gross investment in 1961, should increase by about 50 per cent. Total gross fixed investment would, however, have to increase less (by 27 per cent), as residential construction should not rise much above its present level.

This investment effort would necessitate a further rise in gross saving from just under 20 per cent of GNP in 1961 (compared with

18.1 per cent in 1959) to 21.5 per cent in 1965. It is suggested that the increase might be achieved in three directions (Table 8): by increased provisions for depreciation of industrial capital, reflecting both the expansion of capital stock and more favorable tax provisions; by the elimination of the net dissaving represented by the current deficit of the public sector, which amounted to BF 5.5 million in 1961; and by a rise in personal savings from about 8 per cent of net disposable income in 1959 and 1961 to 8.8 per cent in 1965.

TABLE 8. BELGIUM, CAPITAL ACCOUNTS: ACTUAL, 1959 AND 1961,
AND PROGRAMED, 1965

(In billions of Belgian francs at current prices)

	Actual		Program Figures	
	1959	1961	1965	Change, 1961 to 1965
Provisions for depreciation				
Companies ¹	50.5	...	78.4	...
Other	17.6	...	21.6	...
Total	68.1	77.0	100.0	23.0
Net savings by public sector	-15.2	-5.5	—	5.5
Net savings by private sector				
Companies ¹	11.9	13.0 ²	15.8	2.8 ²
Personal savings	37.7	41.0 ²	50.6	9.6 ²
Total	49.6	54.0	66.4	12.4
Total gross savings	102.5	125.5	166.4	40.9
To finance				
Gross fixed investment	98.6	119.1	157.9	38.8
Investment in stocks	—	1.9	6.1	4.2
Net lending to the rest of the world	3.9	4.5	2.4	-2.1

Source: Economic Program for 1962-65, Table 123.

¹ Including unincorporated companies.

² Estimate by author.

Despite the rise in the proportion of income to be saved, and the reduction in the share of consumption in gross national product, both public and private consumption would rise more rapidly from 1961 to 1965 than from 1957 to 1961 (Table 9). The total real wage bill is forecast to rise by just under 20.5 per cent; average real wages are shown as rising by 14.6 per cent (hourly earnings for similar work going up by 13 per cent). The average income of self-employed persons would rise slightly less. It is pointed out that, in the past, money wages and salaries have scarcely increased during recessions, but have

tended to rise rapidly as full employment was approached. The maintenance of a high level of employment requires that increases in productivity should be reflected in an orderly rise in incomes and the standard of living. Retail prices are assumed to rise by less than 4 per cent from 1961 to 1965.

TABLE 9. BELGIUM, REAL EXPENDITURE: DISTRIBUTION, 1957, 1961, AND 1965, AND GROWTH, 1957 TO 1961 AND 1961 TO 1965

	Distribution			Growth at 1961 prices	
	Per cent of gross national product at 1961 prices			Percentage increase	
	1957	1961	1965	1957 to 1961	1961 to 1965
Private consumption	68.7	68.7	67.0	10.6	14.2
Public consumption	11.5	11.4	10.8	9.2	10.7
Gross fixed investment	17.5	18.8	20.4	18.9	26.8
of which					
Investment of enterprises	10.5	11.7	13.4	23.0	34.0
Investment in stocks	1.1	0.3	0.8		
Exports	32.9	37.1	42.6	24.4	34.6
Imports	31.7	36.3	41.6	26.3	34.5

Source: Economic Program for 1962-65, Table 4.

After estimating the potential level of final expenditures in 1965, a second stage of the programing work consisted of estimating the level of activity called for in major sectors to meet the expected growth in demand for consumption, investment, exports, and intermediate products not entering into final demand.⁸

In estimating domestic demands for Belgian output, separate estimates were prepared of the expected changes, between 1959 and 1965, in the value at constant prices of sales to private consumers of domestic goods and imports for each of the major sectors. These indicate that, while sales of Belgian goods might increase by about 19 per cent by 1965, demand for imported goods would rise by more than 75 per cent. Imports of agricultural foodstuffs are shown as increasing to more than double those in 1959, and imports of processed foodstuffs as almost doubling. Consumer purchases of imported durable goods are also expected to almost double. As a result of greater reliance on imports, direct sales of Belgian agricultural products to consumers are expected to be somewhat lower in 1965 than in 1959.

⁸ A simple input-output matrix distinguishing the relations between 21 sectors in 1959 served as the starting point for estimating output by broad sectors in 1965, with modifications to take account of the most probable developments of industrial technique, changes in sources of supply, or in forms of energy consumed. A more complex matrix distinguishing 69 sectors, also for the year 1959, has recently been drawn up by experts of each of the EEC countries.

Table 10 shows the percentage increases in output above the 1961 actual levels that will be needed to meet the estimated total requirements for production by major sectors in 1965. It indicates that the acceleration in the growth of GNP, when compared with the period from 1957 to 1961, is expected to reflect a faster expansion of manufacturing output, and a quite marked expansion in the output of the fuel and power and agricultural sectors, both of which declined from 1957 to 1961, reflecting the reduction in coal output and a poor harvest in 1961. By 1965, the expansion of petroleum refining and of gas and electric power production is expected to more than offset a slight further reduction in coal production.

TABLE 10. BELGIUM, PRODUCTION: VALUE ADDED, 1961, ACTUAL CHANGES, 1957 TO 1961, AND PROJECTED CHANGES, 1961 TO 1965

	Value Added, in Billions of Belgian Francs	Percentage Changes in Value Added, at Constant Prices	
		Actual, 1957 to 1961	Projected, 1961 to 1965
Manufacturing	186.8	14	24.6
Construction	46.7	12.5	18.9
Services	167.8	12	17.3
Fuel and power	24.7	-4	13.1
Agriculture	34.9	-6	11.0
Public authorities	52.9	9	10.5
Housing	37.9	3	5.0
Total gross domestic product at factor cost	551.7	10	17.9
Indirect taxes ¹	73.1	18	16
Net receipts from abroad	8.6	13	-32
Gross national product at market prices	633.4	11	17

Source: Economic Program for 1962-65, Table 5.

¹ Taxes in 1957 and 1965 have been calculated at 1961 rates.

The Federation of Coal Mine Owners has criticized the estimates for coal production, which are based on consumption at about the level of 1961 (7 per cent below 1962), substantially higher imports than in recent years, and lower exports (as future European coal prices are expected to be such that most Belgian producers will have to be subsidized). The Federation has suggested that consumption might be 1-2 million tons higher than suggested in the Program, and that net imports could be nearly 2 million tons less than the 5.4 million tons suggested. The authors of the Program consider it unlikely that the output suggested by the Federation could be achieved. Departures of foreign miners after a few years entail a heavy labor turnover, and

the recent results of renewed recruitment of foreign workers have not been very satisfactory. Output per manshift in Belgian mines remains below that in other EEC countries, and the former rapid improvements in productivity have now slowed down. Although the output called for in the Program would require the employment of about 20,000 fewer workers than in 1962, reduced employment of foreign workers would account for only a small part of this decline.

The marked acceleration in the growth of manufacturing is foreseen mainly for sectors supplying investment goods, especially the machinery and equipment industries, which are required to increase more than twice as fast as from 1957 to 1961. The output of basic metals is also to increase much more rapidly than in the earlier period, largely as a result of heavy investment already completed or under way (Table 11). The recent rapid growth of the motor vehicle and chemical industries would also be accelerated. Comparatively slight increases are foreseen for consumer goods industries, such as textiles and food processing.

Steel production in Belgium has been maintained at rather more than 7 million tons during the last three years, about 1¼ million tons above the slump year 1958. Capacity also increased by about 1¼ million tons over the period. The average utilization of capacity declined from 93 per cent in 1961 to 85 per cent in 1962, and fell still further in the early months of 1963. The continued investment foreseen would increase steel capacity by more than 40 per cent (to exceed 11 million tons) by 1965, compared with a 32 per cent expansion foreseen for the whole European Coal and Steel Community (ECSC). The Program calls for the tonnage of exports to rise by about 20 per cent above that in 1962, but points out that it may be difficult to achieve this target. As a study by the ECSC has concluded that by 1965 ECSC exports to nonmember countries may hardly exceed the 1959 level, any further large expansion in Belgian steel exports would seem to entail a further rapid growth in exports to the Common Market countries. From 1959 to 1961 Belgian exports to nonmember countries failed to increase, and the 10 per cent rise in the total tonnage of exports was due wholly to a 30 per cent expansion in exports to EEC countries. Between 1959 and 1961 Belgium failed to maintain its share in the total exports to the Community in each of the main categories except thin sheets, but this was partly because Belgian steel exports in 1961 were curtailed by strikes. The target for steel exports implies about the same percentage growth in the three years from 1962 to 1965 as was achieved in the five years from 1957 to 1962. This may be considered somewhat optimistic in view of the great increases in steel capacity which have been taking place in other EEC countries and the possibility that the over-all rate of investment in these countries may tend

TABLE 11. BELGIUM, OUTPUT AND EXPORTS OF PARTICULAR INDUSTRIES: ACTUAL CHANGES, 1957 TO 1961, AND PROJECTED CHANGES, 1961 TO 1965

	Percentage Changes			
	Output		Exports	
	Actual, 1957 to 1961	Projected, 1961 to 1965	Actual, 1957 to 1961	Projected, 1961 to 1965
Most rapid projected increases in output				
Motor vehicles ¹	35	53	67	85
Petroleum refining	35	40	11	60
Chemicals	32	39	35	50
Electricity	15	37	..	..
Nonferrous metals	26	37	37	42
Consumer durable goods ¹	27	32	52	58
Machinery and other capital equipment ¹	15 ²	31	26	40
Median projected increases in output				
Wood and wooden goods	27	27	63	65
Steel	12	26	11 ³	27 ³
Semifinished metal products ¹	20	25	33	41
Building materials	20	25	38	21
Comparatively small projected increases				
Leather goods	20	18	..	..
Paper goods	11	17	..	..
Coke and gas	3	16	..	..
Food manufacturing	12	14	34	58
Textiles	8 ⁴	13	21	25
Declines				
Coal mining	-28	-8	29	-28

Source: Information in various tables and text of Economic Program for 1962-65, pp. 26-96.

¹ Component industries in the broad group of metal fabricating industries, the total output of which is projected to increase by 30 per cent from 1961 to 1965, compared with 19 per cent from 1957 to 1961.

² Within this grouping, the output of nonelectrical machinery rose by 40 per cent, and that of electrical machinery by 8 per cent, while the output of railway and shipping equipment declined by 1 per cent.

³ The expansion from 1957 to 1961 was limited by strikes, and the growth projected from 1961 to 1965 is consequently inflated.

⁴ The output of cotton textiles declined by 2 per cent and of jute goods by 10 per cent.

to slow down in the coming decade. A very considerable effort aimed at altering the types of products offered and an intensive sales drive will be needed if Belgium is to expand its steel exports more rapidly than neighboring countries.

The machinery sector accounts for a smaller share of industry in Belgium than in the other EEC countries, the United States, or the United Kingdom. Some observers have associated a lower rate of innovation in other Belgian industries with the relatively slight develop-

ment of the machinery sector and with the low level of expenditure on industrial research, much of which is normally undertaken by this sector. Since 1951, the metal fabricating industries as a group have expanded much less rapidly than those in other EEC countries.⁹

While Belgian enterprises supplied more than 80 per cent of all basic metal manufactures, constructional steel, and railway material sold in the country in 1961, they supplied one third or less of the nonelectrical machinery, motor vehicles and parts, and household equipment, and about 60 per cent of the electrical equipment.¹⁰ The total value of sales by producers in the three basic sectors mentioned above remained one third greater than that of producers in the more highly finished sectors in 1961. However, production of nonelectrical machinery and motor vehicles rose nearly twice as fast as the output of semifinished metal products between 1957 and 1961 (Table 11). There was no increase in the output of railway and shipping equipment in this period. The output of the electrical equipment industry, which had expanded very rapidly between 1950 and 1957, rose by only 8 per cent from 1957 to 1961.

Since 1959, the metal fabricating sector has made significant progress toward adapting itself to the new conditions of the Common Market and increasing its technical efficiency. Efforts to reorganize enterprises and orient production toward more highly finished goods with a higher unit value have most frequently taken the form of fusions to exploit agreements with foreign firms or to utilize foreign patents under license. In addition, many foreign firms have established plants in Belgium. The authors of the Program envisage the development of a certain number of specialized enterprises capable of exporting on a large scale. A start has been made in this direction, but it has not yet progressed very far, and a number of enterprises are faced with acute problems of rationalization. Imports of metal products are expected to rise by well over 80 per cent from 1959 to 1965, as a result of increasing specialization within the Common Market. This implies that firms

⁹ The average annual increases in the output of metal working industries in various countries, as given in the Economic Program for 1962-65, Table 29, were as follows:

	1951-57	1958-61
Belgium	3.9	4.5
France	8.9	4.5
Germany, Fed. Rep.	11.9	9.8
Italy	8.9	11.6
Netherlands	8.2	10.0
United Kingdom	3.9	3.4
United States	5.5	1.3

¹⁰ *Ibid.*, Table 31.

which are unable to compete in price or in the technical quality of their products will be subject to increasing difficulties.

The Economic Program emphasizes the need for continuous application of new techniques if the metal fabricating industries are to expand in new directions, and underlines the special importance to this sector of increased official support to scientific research. It also points out the need for firms to organize themselves to meet growing demands from less industrialized countries seeking to purchase complete manufacturing installations in comprehensive transactions, and draws attention to the need to improve medium-term and long-term export credit facilities.

The volume of productive investments in each sector required for fulfillment of the target increases in output was established on the basis of the increase in capacity required and the gross marginal capital/output ratios calculated from recent data. Originally, the Bureau of Economic Programing had increased the capital coefficients for 1965 above those of the recent past, to allow for the need to create new industrial complexes in place of the modernization and cost-reducing investments recently undertaken. However, with regard for the comparatively short period covered by the Program, the coefficients have since been reduced to about the same level as in the recent past. In most cases, the estimates have been adjusted to take account of the views of the representatives of the industry concerned. The estimates for productive investment (Table 12) imply a considerable shift away from the steel, nonferrous metal, construction, and building materials sectors (where investment rose much more rapidly from 1957 to 1961 than is projected from 1961 to 1965) in favor of the electricity, petroleum refining, food processing, and transportation sectors (where investment increased little, if at all, between 1957 and 1961) and the metal fabricating industries (where investment rose much less rapidly from 1957 to 1961 than is called for during the next four years).

The Economic Program draws attention to the problems arising from the small size of the typical Belgian concern¹¹ in many industries. A recent case study of investment in Belgium found this to be

¹¹ According to a study by the Twentsche Bank cited in *Cahiers Economiques*, October 1961, p. 505, both the proportion of industrial establishments employing less than 50 persons and the proportion of total industrial employment provided by plants employing less than 100 persons are higher in Belgium than in other industrial countries. According to the Economic Program, 50 per cent of all establishments in the metal fabricating industry, and more than 90 per cent of construction firms, employed less than 20 workers in 1959. Establishments employing more than 100 workers accounted for less than 15 per cent of all concerns in metal fabricating and 1 per cent of those in construction.

a serious obstacle to the introduction of modern production methods, since investment in up-to-date equipment often entailed a complete change in the nature of the operations of the business, by enormously increasing the scale of output and of the sales effort required and/or narrowing the range or greatly changing the quality of the product.¹² Fears about adjustment to new techniques or of early obsolescence were found to have impeded such investments.

TABLE 12. BELGIUM, PRODUCTIVE INVESTMENTS: ACTUAL INCREASES IN VOLUME, 1957 TO 1961, AND PROJECTED INCREASES, 1961 TO 1965

(In per cent)

	Actual Increase, 1957 to 1961	Projected Increase, 1961 to 1965
Most rapid projected increases		
Electricity	-18	72
Steel	110	72
Metal fabricating industries	39	67
Food processing	—	60
Petroleum refining	—	50
Coke and gas	25	50
Median projected increases		
Chemicals	54	35
Transport	7	34
Nonferrous metals	114	33
Comparatively small projected increases		
Agriculture and fisheries	11	22
Textiles	21	21
Construction	36	18
Building materials	70	17
Paper and wood	29	11
Coal	-55	—
Total productive investment	23	34

Source: Economic Program for 1962-65, Table 94. The figures for metal fabricating and construction seem to have been transposed in Table 94 as printed.

There was also evidence of such a shortage of technicians in older industries that firms were often unable to adopt new processes. In addition, an unwillingness to employ sufficient qualified personnel at different levels, both in engineering and commercial staffs, was judged to be one of the main shortcomings of small and family concerns. The Economic Program stresses that the growing specialization of manu-

¹² *The Decisive Factors in Investment Decisions* by Professor M. Woitrin of the University of Louvain, summarized in Bruce R. Williams, *International Report on Factors in Investment Behavior* (Organization for Economic Cooperation and Development, 1962).

facturing plants and the need to face competition in a broader market will tend to raise the minimum technically efficient scale of operation in various industries. It states the Government's intention to take steps to make it easier for concerns wishing to exploit new inventions or processes to finance expansion to the optimum scale of operation.¹³ In other sectors, where the advantages of scale are realized at the industry rather than at the enterprise level, the need is to promote the rationalization and standardization of production by agreements providing for cooperation between small-scale concerns and by specialization, so as to enable them to take their place in modern, mass production industry.

The high level of investment called for in the Economic Program requires the application of financial policies calculated to encourage a high rate of business and private saving. The need to expand the scale of business operations, and for amalgamations to this end, will increase the need for external financing and will intensify the importance of strengthening the capital market. The Program therefore calls upon the Government to implement certain recommendations of the De Voghel Commission and exhorts the monetary authorities to maintain sufficient liquidity within the economy.¹⁴

III. Recommendations of De Voghel Commission, and Recent Monetary and Fiscal Reforms

The recommendations made by the De Voghel Commission in March 1962 fall under five main headings: (1) improving the finances of the public sector, (2) lowering interest rates and easing cover requirements for banks, (3) lessening the existing hindrances to the effective participation of banks and other financial intermediaries in financing industrial investment, (4) making it easier for small and medium-sized businesses to finance expansion, and (5) strengthening the capital markets, particularly the market for industrial shares.

PUBLIC FINANCES

The Commission concluded that, while it could not be said that the borrowing by the public sector had deprived industry of funds, the financial difficulties of the Government had provoked an upward movement of interest rates and, by providing the financial sector with

¹³ See pages 45-48 below.

¹⁴ Economic Program for 1962-65, p. 200.

a steady demand for funds at profitable rates with little risk, had diverted attention away from the financing of enterprise investment. The Commission considered that an improvement in the finances of the public sector would, in the context of the longer-term policies, contribute to an increase in the national rate of saving,¹⁵ lessen the upward pressures on interest rates, and enable the Government to pursue more flexible anticyclical policies.

The elimination of the deficit on the ordinary budget called for in the Economic Program¹⁶ was achieved in 1962, and the Government intended for the future to maintain a balanced budget for current transactions and to borrow at a rate of not more than BF 12 billion a year for capital expenditures. But, largely as a result of the severe winter, the Treasury deficit in the first six months of 1963 totaled more than BF 15 billion, compared with BF 10 billion in the same period of 1962.¹⁷ Renewed heavy borrowing by the Treasury caused strong upward pressure on interest rates, and this was reinforced by a decline in the public's willingness to take up government securities, which were subject to increased taxation under the fiscal reforms. This situation forced the Treasury to meet its needs predominantly by short-term borrowing from abroad and from the monetary institutions.¹⁸ Thus, the financing of the Treasury deficit became the principal factor in the continued growth in the money supply, while the foreign transactions of the private sector and banks had virtually ceased to be an expansionary factor by the early part of 1963.

The improvement in the budgetary position during 1961 and 1962 was principally a reflection of rising activity and incomes and of in-

¹⁵ The Commission recognized the possibility that, in the past, substantial borrowing by the public authorities might not have deprived private industry of funds but might have absorbed savings which otherwise would not have been utilized. Nevertheless, it concluded (Commission Report, p. 22) that by borrowing to support consumption the Government and the local authorities had reduced national savings by a corresponding amount—which, of course, would only be true if the sums borrowed would otherwise have been utilized for consumption or investment—so that the national income would not have been significantly lower. It is implicitly assumed both here and in the Economic Program that, in the future, effective investment demands will be at least equal to savings becoming available for investment.

¹⁶ See above, page 32.

¹⁷ *Agence Economique et Financière* (Brussels), July 14, 1963.

¹⁸ The Treasury's short-term debt in foreign currencies (including foreign currency borrowing from Belgian banks), which had been reduced from BF 22 billion at the end of December 1961 to BF 11.9 billion in November 1962, had once again risen to BF 17 billion at the end of June 1963; short-term debt denominated in Belgian francs, which had declined by BF 8.7 billion in the second half of 1962, rose by about BF 11 billion during the first half of 1963 (*Banque Nationale de Belgique, Bulletin d'Information et de Documentation*, June 1963, p. 564).

creases in indirect taxes, particularly the raising of turnover taxes from 5 per cent to 6 per cent under the *loi unique* of February 1961. When proposals for fiscal reform were first discussed, it was hoped that changes in the direct tax system would increase the total of government revenue and raise the ratio of government revenue to national income, which remains lower in Belgium than in neighboring countries. But the changes in direct taxation actually adopted are not expected to produce any marked increase in revenue. (The changes in company taxation went into effect in 1963.¹⁹ The new taxes on personal income will be implemented in 1964.²⁰) It is especially difficult to assess the possible impact on revenues of alterations in the rates of personal income tax, because a global tax is replacing several schedules for different types of income. Little information is available concerning income distribution, since such data are usually derived from global tax returns.

The most striking effects of the fiscal reforms during 1963 were the reduction in public subscriptions to government securities and to the issues of public credit institutions, and the decline in time deposits with the banks,²¹ which reflected the fact that interest on such holdings, which had in practice generally been tax exempt, now became subject to a uniform deduction of 15 per cent, withheld at the source against the tax liability to be determined in relation to total income. The counterpart of these changes was a marked increase in the liquidity of the economy. During the first four months of 1963, the total money supply was nearly 11 per cent (and the fiduciary issue was nearly 10 per cent) higher than in the same period of 1962, while the value of industrial production at current prices had risen by little more than 4 per cent. The public's increased preference for holding savings in a liquid form seems to have been in part inspired by speculation that the reduction in returns resulting from the 15 per cent withholding would eventually be offset by rising interest rates. It is not unlikely that increased efforts at tax evasion, both through increasing the proportion of transactions settled in cash, and through

¹⁹ Changes in company taxation are discussed below (pp. 47 and 48).

²⁰ The existing five taxes (four on different types of income and one on total income) are being replaced by a single progressive tax with an exemption that varies from BF 25,000 (\$500) for taxpayers without dependents to BF 60,000 (\$1,200) for taxpayers with four dependents, with an increase of BF 30,000 for each dependent beyond the fourth. The tax will be progressive up to 55 per cent for the tranche of income exceeding BF 5.0 million, but the total will never exceed 50 per cent of taxable income.

²¹ Time deposits, which had risen by nearly 15 per cent between December 1961 and June 1962, declined by nearly 9 per cent between September 1962 and September 1963 (Kredietbank, *Weekly Bulletin*, September 28, 1963).

increased investment in foreign securities held in neighboring countries,²² also contributed to swell the demand for cash.

INTEREST RATES AND COVER REQUIREMENTS FOR BANKS

The Commission considered that, although it might be argued that a policy of high rates of interest could stimulate savings, such a policy was likely to limit certain types of investment which it was desirable to encourage. It therefore recommended a policy of lowering interest rates to the fullest extent possible without creating the risk of a capital outflow, and of easing the cover requirements under which banks were obliged to hold certain amounts of government securities.

Under the monetary reform introduced on January 1, 1962, the banks were no longer required to increase their holdings of public securities as deposits increased, and a new weapon of monetary control—the power to impose variable reserve requirements—was placed at the disposal of the authorities. Until further notice, the commercial banks were required to maintain their portfolio of Tranche A Treasury certificates unchanged and to keep the total amount of cash reserves, call money loans, and public securities at 65 per cent of their average short-term liabilities in 1961. These requirements, in turn, were lifted by the Banking Commission as from January 1, 1963.²³

Monetary policy in 1962 was aimed at permitting a freer determination of interest rates and enhancing the supply of funds for medium and long-term purposes, with the object of lowering the cost of borrowing. The suppression of the cover requirement meant that the Fonds des Rentes²⁴ was no longer obliged to issue sufficient certificates

²² Since an important element in this investment seems to have been an increase in security holdings in Luxembourg, the balance of payments figures for Belgium-Luxembourg combined may understate its importance. As recorded there, the negative balance of transactions in securities increased sharply from BF 0.8 billion in the first half of 1962 to BF 1.4 billion in the second half and to BF 1.6 billion in the first quarter of 1963.

²³ The Tranche A certificates, yielding $1\frac{5}{16}$ per cent, are being converted by stages into a special nonmarketable loan yielding $3\frac{1}{2}$ per cent. This rate remains well below ruling long-term rates, but the banks will have the option of subscribing to future long-term government issues by converting the new securities. During 1962, the banks modified the composition of their holdings by replacing certificates of the Fonds des Rentes mainly by longer-term securities, thus contributing to ease long-term interest rates.

²⁴ The Fonds des Rentes was established in 1945 to smooth the market for government bonds, using for the purpose money borrowed in the short-term market, or as a last resort from the National Bank. A series of measures taken since 1957 has enlarged the scope of its activities to include purchases and sales of short-term Treasury bills, with the object of providing an instrument for open market operations. In fact, it has been an important supporter of the bond market in recent years. Borrowing by the Fonds from the National Bank is included under the ceiling of BF 10 billion on Treasury borrowing from the Bank.

to permit the banks to meet that requirement; this enabled it to terminate the issue of its certificates on tap at a fixed rate, and to force down interest rates by reducing the outstanding amount of its certificates.²⁵ Total liquid assets in the hands of the public rose more rapidly than in preceding years, and the rapid rise in bank deposits and easing of cover requirements enabled the banks to expand their credits to the private sector, while at the same time reducing their discounts. A rapid growth in credit to the private sector, based on increasing resort to rediscounting with the National Bank, continued in the first half of 1963. At the end of June 1963, credits to the private sector, totaling BF 81.2 billion, were 24 per cent higher than a year earlier. Credits to the public sector had risen by less than 8 per cent, to BF 97.8 billion.

The reduction in government borrowing was an important factor in bringing about a decline in interest rates during 1962. The average yield of long-term (10–20 year) government bonds, for example, declined from 5.5 per cent in December 1961 to 5.0 per cent in December 1962. A further fall, to 4.64 per cent, in February 1963 seems to have reflected a temporary effect of the fiscal reform, which made securities issued before the reform more attractive than new issues. Thereafter, the yield rose almost continuously to 5.25 per cent in September 1963.²⁶ The official discount rate, which had been reduced to 3.50 per cent in December 1962, was increased to 4.0 per cent in July and to 4.25 per cent in October 1963, as a response to rising interest rates both in Belgium and in the other EEC countries. At the same time, the especially favorable rediscount rates for export, and certain other, transactions were raised considerably more than the basic rate, in an attempt to curb the growth of credit other than that required to meet normal current business needs.

The conjuncture of a marked degree of liquidity in the private sector with relatively high and rising interest rates, which has arisen as a consequence of the problem of financing the Treasury deficit, poses a difficult situation for the monetary authorities. The potential danger of the present level of inactive balances also cannot be overlooked. Furthermore, as in other European countries, the effectiveness of monetary policies in general, including such weapons as the variable reserve requirement, has been weakened by the commercial banks' increasingly easy access to foreign funds, through the Euro-dollar market and other channels. Since the Treasury borrows on the foreign exchange market when it is unable to satisfy its requirements by long-

²⁵ The effective rate declined from a peak of 4.75 per cent in July 1961 to 3.30 per cent in December 1962, but increased slightly in the first half of 1963.

²⁶ Kredietbank, *Weekly Bulletin*, November 2, 1963.

term borrowing, short-term accommodation from the domestic market, or within the limit set on borrowing from the National Bank, the prospect of a continuing budget deficit imposes severe restraints on effective domestic monetary control.

ROLE OF FINANCIAL INSTITUTIONS IN FINANCING INDUSTRIAL INVESTMENT

The Commission considered that the regulations governing the operations of financial institutions had not always developed as required by changes in the economic and financial situation. In some cases, regulations had been maintained because they gave priority to particular forms of financing or because they permitted financial intermediaries to pursue risk-free investment policies. Certain demands for capital were not being satisfied, as was instanced by the abandonment of some investment schemes even without attempts to raise funds, owing to the lack of appropriate means of financing. On the other hand, there was a risk that less productive forms of investment were being encouraged by a superfluity of funds in certain sections of the capital market.

The basic statutes governing the operations of financial institutions in Belgium date from 1934 and 1935; they were designed to protect the interests of savers and to circumscribe the power of major financial groups following the depression of the 1930's. The Commission found that the regulation forbidding incorporated banks to hold shares in nonbanking organizations, with the sole exception of shares for sale to the public which may be held for not more than six months, was too restrictive. The six-month limit increased the risks and reduced the possible profits to be made from the issue of shares, and had limited this activity of the banks. The Commission proposed to extend the six-month limit to three years, and perhaps even longer.

The Commission also made three other related suggestions: (1) that banks play a larger role in financing industrial investment by means of medium-term credits, (2) that banks be permitted to invest part of their resources in shares, and (3) that banks and other financial intermediaries provide resources for industrial investment through the acquisition of bonds issued by specialized financial institutions, such as semipublic institutions furnishing credit to industry.

At present, private savings banks, mortgage institutions, and insurance companies are obliged to invest a large proportion of their funds in public securities. The Commission suggested changes in the maximum and minimum investment coefficients prescribed for such institutions, so as to enable them to play a larger role in financing economic

expansion by taking up industrial bonds and shares. Insurance companies, for example, would be permitted to hold up to 20 per cent (instead of 15 per cent) of their investments in the form of shares in Belgian companies.

The Commission advised the Government to revive the Conseil Supérieur des Finances, which was set up in 1936 to unite the various consultative bodies advising the Minister of Finance but which has not met since the war. Its functions should be modified so as to make it a forum where representatives of the Government and of private and public financial institutions could meet to formulate recommendations, particularly concerning the financial implications of the Economic Program and the financial measures necessary for its realization. It also recommended that the membership of the Conseil des Institutions Publiques de Crédit (the body set up in 1937 to coordinate the activities of public credit institutions) should be broadened and its responsibilities more precisely defined, and that the Banking Commission should be given general responsibility for coordinating the regulations governing all private financial institutions.

The Commission recognized that the separation of banks from financial holding companies, provided for in the 1934-35 banking legislation, was not always effective in practice. The banks were prevented from acquiring interests in industrial or commercial enterprises, but industrial concerns could acquire, and in a number of cases actually had acquired, control of a bank. Thus, several banks were integral parts of financial and industrial complexes. Among the possible results of this situation was the risk that certain concerns and industries might be unduly favored by easier access to credit; similarly, certain banks might benefit from a quasi-monopoly position, making it easier for them to gain deposits and to supply particular needs for credit or financial services. In the view of the Commission, the best solution might be to give the governing boards of the banks concerned constitutional independence from the shareholders, and to take steps to control the powers of the holding companies under the law governing their operations.

FINANCING EXPANSION OF SMALL BUSINESSES

Many witnesses before the Commission commented on the limited access of small-scale businesses to credit facilities. Some of the measures just discussed may contribute toward lessening this problem. Other measures to this end include more favorable provisions concerning depreciation allowances and capital gains taxes, the subsidization of interest charges under a law passed in 1959, and especially the

establishment, in 1962, of the Société Nationale d'Investissement. This body is intended to facilitate the expansion of existing firms, or the setting up of new concerns, by subscribing to the capital of incorporated companies under conditions that preclude the possibility of the existing owners losing control of the enterprise.

A powerful temporary stimulus to increased investment has been provided in recent years by the modification of the capital gains taxes under the 1959 law. This provided that only one fifth of capital gains realized during the years 1959–63 on buildings and equipment or on shares held by the enterprise for more than five years would be subject to the progressive tax on business earnings, provided that an equivalent sum was spent on productive investment in Belgium or the overseas territories. Another temporary tax change, with the objective of encouraging investment, was the provision of the July 1959 law that 30 per cent of the cost of investment over and above replacements (i.e., *investissement complémentaire*) undertaken between 1959 and 1962 may be deducted from taxable income in installments over three successive years.

As recommended by the Commission, the tax reform law passed in November 1962 permits enterprises to choose depreciation allowances calculated either as a fixed percentage of the value of the asset each year or on the diminishing balance method, which allows a larger proportion of the value of the asset to be written off early in its life.

The Commission recognized that the 1959 legislation providing for subsidized credits and credit guarantees had had important effects in stimulating investment, in particular by family businesses and foreign investors. But it pointed out that these measures were open to objection owing to the difficulty of selecting appropriate criteria so as to avoid distorting investment. If the duration of the law were to be prolonged, the Commission felt that the criteria for granting such credits and guarantees should be more precisely defined. Credits should be granted primarily in the light of the objectives of the Economic Program.

DEVELOPMENT OF THE CAPITAL MARKET

While the Commission emphasized that self-financing was an indispensable process in the expansion of smaller concerns, and concluded that, in general, self-financing should not be deliberately discouraged, it pointed out certain dangers of excessive reliance on this form of financing. It could give rise to insufficient diversification of investment if businessmen tended to limit investment to their existing field. By keeping down dividends, reliance on self-financing could reduce the

attractiveness and hinder the development of the share market. There was also a risk that self-financing might lead to less economic use of resources, insofar as the potential returns tended to be studied less carefully in the case of investments involving the use of the firm's own resources than in cases where a new liability was to be undertaken.

One of the main aims of the November 1962 tax reforms is to foster the development of a wider market in risk capital by reducing the fiscal discrimination against incomes from shares in industrial and commercial enterprises. This involves reducing the differences in tax rates, which in the past have favored undistributed as against distributed profits and income from interest as against profits—in particular by eliminating the special tax privileges accorded to income from public securities.²⁷ A reduction of the discrimination favoring earnings of financial institutions as against those of industrial and commercial concerns may lessen another influence which has tended to limit the direct flow of savings toward productive investment.²⁸

IV. Prospects for Fulfillment of the Economic Program

Both the De Voghel Report and the Economic Program have contributed much to the discussion of the problems facing the Belgian

²⁷ The reforms introduced in November 1962 provide for a slight reduction in the rate of tax on distributed profits, and a rather more marked increase in taxes on undistributed profits, arising in part from the fact that the possibility of deducting from taxable income direct taxes paid during the year is to be abolished. The revised system tends to discriminate somewhat in favor of self-financing by smaller firms.

The basic rate of tax on corporate profits is 30 per cent; undistributed profits exceeding BF 5 million (\$100,000) are subject to an additional levy of 5 per cent, and undistributed profits below BF 1 million are taxed at 25 per cent. Thus, for companies with large profits, the taxation on the part of profits exceeding BF 5 million will be increased from about 28.6–29.6 per cent in the former regime to 35 per cent in the new; and for small and medium-sized enterprises earning less than BF 5 million, the new 25–29 per cent tax rate compares with 23–25 per cent under the former regime. On the other hand, the fiscal reform will result in a reduction of the rate of taxation on dividends paid to private persons (whose total incomes do not exceed a certain level) from about 45–47 per cent in the former regime to 42.75 per cent in the new. Taxation on capital gains is reduced as the progressive tax on business earnings applied in the former system is replaced by a 15 per cent tax.

Under the new regime, all interest income (apart from interest on very small savings deposits) is subject to a uniform tax of 15 per cent. Formerly, the tax on private bonds was generally 11 per cent, but interest on public securities and interest at the rate of less than 2 per cent per annum on bank deposits were in practice tax exempt.

²⁸ Taxes payable by private credit institutions (including banks) are substantially increased by the suppression of certain deductions from taxable income hitherto allowed. Public credit institutions which were formerly exempt from taxes now become subject to taxation.

economy. But it is too early to assess whether the policies which have been, or may be, implemented as a result of these studies will be adequate to encourage the diversification of the economy called for in the Program, so as to enable an adequate rate of export expansion and a satisfactory level of over-all effective demand to be maintained without the marked fluctuations of the past. The two greatest obstacles to achieving the objectives of the Economic Program may be that the incentives for private investment in Belgium will not prove strong enough to bring about the desired increase in total private investment, and that too large a share of productive investment will continue to take place in traditional basic industries and too little in newer, more dynamic, sectors.

The existence of a more flexible monetary system, the development of a broader market in industrial shares, and more favorable tax treatment for productive investment could be of great importance in permitting a more dynamic attitude toward investment to be unconstrained by financial rigidities. But, while the changes in the system of depreciation allowances may encourage increased expenditures on plant and equipment, the effectiveness of the measures taken to increase the facilities for the external financing of investment must depend on the willingness of entrepreneurs to make use of such facilities. The possibility, which the De Voghel Commission itself recognized could not be dismissed,²⁹ that the level of industrial investment in the past was not primarily determined by financial constraints, makes it questionable how far the financial policies proposed by the De Voghel Commission, even if successfully pursued, can provide a complete solution. Recent experience suggests that the problem of securing adequate fiscal receipts remains unsolved, and that, as a consequence, the financing of the public sector continues to hamper effective and flexible operation of the monetary system. The development of the capital market is essentially a long-term matter. While the Economic Program was approved by the Senate in June 1963, it is still not yet clear what additional legislation, if any, will be proposed to secure the fulfillment of the objectives set forth.

Successive explanations have been advanced for the comparatively low level of industrial investment in Belgium since the war. At first the high costs of obtaining capital were blamed. Attention then shifted to high labor costs as a factor which limited the profitability of Belgian concerns (Belgian wage rates rose sharply in relation to those of other Western European countries during and immediately after the war); this, it was alleged, served to encourage investment aimed

²⁹ *Op. cit.*, p. 30.

at increasing productivity rather than expanding total capacity.³⁰ It was often remarked that there had been no large-scale needs for reconstruction in Belgium after the war, such as had provided the occasion for modernization of plant capacity and a powerful stimulus to industrial initiative in many European countries; the attainment of a high standard of living in the immediate postwar period also resulted in a less dynamic growth of demand than was occurring in neighboring countries. More recently, the slower growth of population than in neighboring countries has been emphasized as the most important single explanation of the comparatively slow growth of the economy, and the difficulties of expanding industrial employment as a major factor limiting industrial investment. It is now also recognized that the Congo attracted a substantial volume of private capital and entrepreneurial initiative during the 1950's, when prospects for investment in Belgian industry did not appear very promising. The flow of private capital and manpower to the Congo is now greatly reduced, and the impact of the loss of markets there is said to have had an important effect in intensifying the search for new outlets and increasing business initiative generally.

The three basic factors tending to inhibit productive investment in Belgium during the 1950's seem to have been (1) the slow growth of home demand and the slight expansion of the labor force, (2) cyclical fluctuations arising from the unstable growth of exports, and (3) certain features of the socioeconomic structure of Belgian industry, some of which have been hinted at in the preceding section.

The case study of investment behavior referred to earlier³¹ emphasized the importance of the slow growth in demand for many products, and of cyclical fluctuations, in restricting the rate of productive investment. This suggested that the majority of concerns carried out replacement and modernization simultaneously with expansion of capacity, with the primary emphasis on expansion; although the firms concerned were conscious of the need to reduce costs, there were few examples of purely cost-reducing investments. Investment decisions were found to be highly sensitive to short-term fluctuations in demand, especially in the case of small firms, few of which had done much to establish the longer-run trend of demand for their products. Even in basic industrial sectors, such as metal working, nonferrous metals, and

³⁰ See in particular the discussion of "defensive" investment in A. Lamfalussy, *Investment and Growth in Mature Economies: The Case of Belgium* (London, 1961).

³¹ See page 39 (fn. 12).

chemicals, firms apparently decided to invest only when they could anticipate the use of new equipment to its full capacity.³²

The view that the level of industrial investment was not primarily determined by financial constraints is also confirmed by the study. The primary limits on the scale of investment were found to be either the desire to remain independent of outside capital or failure to look forward sufficiently to keep equipment up to date and/or to build up sufficient reserves for modernization.

The desire to rely on internal funds creates a tendency to cut conceptions of desirable investment rates down to the level of available internal resources even though a higher rate of growth could be financed and managed. . . . Growth in size of firm, together with amalgamations often brought about with the Common Market in view, frequently caused self-financing to be insufficient. But the desire to be financially independent was often abandoned only as an absolutely last resort.³³

None of the three basic factors inhibiting productive investment seems likely to disappear by 1965—or even to be greatly reduced, although the further integration of the economies of the six countries into a Common Market may have important effects in this direction.

The achievement of such faster and more stable growth in total effective demand during the 1960's than during the 1950's as to provide a greater stimulus to private investment in Belgium depends on the maintenance of a steady and marked expansion of exports. There may be a need for increased public investment in the social infrastructure, and for higher current expenditures on education and other services. But the possibilities of stimulating the economy by raising public investment are limited by the smallness of the public sector. Supporting over-all demand by financing current public expenditures by public dissaving—as in the recent past—hardly commends itself when the problem is to raise the rate of productive investment. There seems no reason to expect a considerably faster growth of private consumption and fall in the savings ratio unless there is a rapid rise in wage rates and real wages³⁴ which could compromise the growth of exports and of investment in export industries. In general, any measures to raise the level of internal demand unaccompanied by a commensurate increase in exports would be likely swiftly to spill over into a deficit on current account of the balance of payments, which could hinder the achievement of a higher growth rate. However, if investment prospects in Belgium appear less promising than those elsewhere, because

³² The inquiry did not cover any firms in the steel industry.

³³ Williams, *op. cit.*, Ch. IV, p. 13.

³⁴ The more rapid growth in private consumption from 1961 to 1962 than in recent years or than forecast in the Economic Program (shown in Table 6, above) was associated with an increase of nearly 9 per cent in average gross hourly earnings during 1962.

demand for the major Belgian industries, in the domestic market and for export, seems likely to expand comparatively slowly or to be highly unstable, the tendency may arise for heavy exports of capital, domestic investment falling below the rate of domestic saving. Alternatively, a high proportion of domestic saving may continue to be invested in less productive forms of investment, such as residential construction.

PROSPECTS FOR ACHIEVING THE DESIRED GROWTH OF EXPORTS

Provided that demand in the Common Market countries is well maintained, the best hope of achieving the high rates of investment called for in particular industries appears to lie in maintaining and exploiting, by a vigorous export drive, Belgium's now comparatively favorable competitive position.³⁵ Good immediate prospects for profitable export expansion, in particular to take advantage of new openings created by the lowering of tariff barriers within the Common Market, could provide the additional stimulus for investment, not only in existing lines of production but also in new fields, such as recently developed specialized branches of engineering and chemicals. Such prospects could also facilitate the diversification of Belgian industry by encouraging continuation of the trend for concerns outside the Common Market to establish branches, or to enter into arrangements for the manufacture of their products, in Belgium.

However, this favorable situation is by no means certain to be realized. Clearly, it depends on the maintenance of Belgium's favorable competitive position, implying that wage costs and prices should not rise faster than in competing centers. But the high degree of stability of Belgian wages and prices up to 1961 was associated with not inconsiderable unemployment over most of the period. It is not certain that wages will continue to rise so moderately if full employment is maintained over a number of years. Recent experience suggests otherwise. Moreover, even a comparatively slight easing of the

³⁵ Figures given by A. Lamfalussy in *The United Kingdom and the Six* (London, 1963), Tables 13 and 20, show that average unit labor costs, in dollars, in Belgian manufacturing industry remained unchanged from 1953 to 1960, whereas those of the United States, the United Kingdom, and other EEC countries (apart from France, which devalued considerably during the period) rose by about 10-25 per cent. Although wages have recently tended to rise more rapidly in Belgium, there has been further improvement in the position versus the major European countries (but not the United States) since 1960. Between 1960 and the latter part of 1962, average unit labor costs in Belgium probably increased by not more than 5 per cent, compared with increases of well over 10 per cent for the majority of other EEC countries and the United Kingdom, and of over 25 per cent for Germany.

pressure of demand in Western Europe could result in a marked stiffening of competition in sectors where capacity has recently been increased, and rule out the stimulus for greater investment in Belgium.

Since 1960, almost the entire growth in Belgian exports has occurred in trade with the other Common Market countries (Table 13).³⁶ The value of Belgian exports to these countries rose by about one third from 1960 to 1962, while exports to all other areas scarcely increased. However, despite favorable cyclical factors during this period, Belgium did not succeed in increasing its share of intra-Common Market trade: its exports to other Common Market countries rose almost in line with their imports from each other (i.e., about two and a half times as fast as their purchases from other industrial countries).

TABLE 13. BELGIUM-LUXEMBOURG: GROWTH OF EXPORTS, 1960 TO 1962

	Exports, Monthly Averages (million U.S. dollars)			Percentage Increase, 1960 to 1962
	1960	1961	1962	
Exports to non-EEC destinations from Belgium-Luxembourg	154	151	157	2
Exports to other EEC countries ¹				
From Belgium-Luxembourg	158	174	207	31
From other EEC countries ¹	697	811	937	34
From other industrial countries ²	613	664	698	14

Source: Organization for Economic Cooperation and Development, *Over-All Trade by Countries*, April 1963.

¹ France, Germany, Italy, Netherlands.

² United States and countries in the European Free Trade Association.

The Economic Program calls for a somewhat lower rate of export expansion than has been achieved over the last four years. However, it would be optimistic to assume that trade within the Common Market will continue to grow as rapidly as over the last few years.³⁷ Even if the growth in demand should be maintained by a faster rise in consumption offsetting a slowing down in investment, it would be optimistic to expect that Belgian exports (with their heavy component of metals and semimanufactures) would continue to increase in line with total trade within the Common Market. On the other hand, Belgium could benefit substantially from a higher rate of investment and economic growth in the United States and the United Kingdom,

³⁶ Belgian exports and imports cannot feasibly be separated from those of Belgium-Luxembourg shown in Table 13.

³⁷ The value of intra-EEC countries' trade rose by 25 per cent from 1959 to 1960, by 16 per cent from 1960 to 1961, and by 14 per cent from 1961 to 1962.

which, together with the other countries of the European Free Trade Association, take about one fourth of its exports.

CHANGES IN THE STRUCTURE OF EXPORTS

While the Economic Program calls for some striking shifts in the composition of Belgian exports, it is not to be hoped that their vulnerability to cyclical variations can be greatly reduced over a period as short as four years. As Table 14 shows, the export targets imply that the share of the traditional basic industries (coal, steel, and nonferrous metals) in exports would be reduced from about 31.5 per cent of the total in 1957 to about 27 per cent in 1965. Most of the countervailing increase would occur in more highly manufactured and specialized engineering and petrochemical products. The share of consumer goods industries would remain at rather more than one third of

TABLE 14. BELGIUM: CHANGES IN THE STRUCTURE OF MERCHANDISE EXPORTS
(Per cent of total at constant prices)

	1957	1961	1965
Coal	3.1	1.6	0.9
Steel	15.7	13.7	12.5
Nonferrous metals	4.9	5.1	5.3
Semifinished metal products	7.8	8.1	8.2
Total basic metal industries	28.4	26.9	26.0
Consumer durable goods	1.7	2.0	2.3
Machinery and equipment	11.6	11.5	11.6
Motor vehicles	3.2	4.1	5.5
Total engineering	16.5	17.6	19.4
Chemicals	8.4	8.9	9.6
Petroleum products	1.3	1.4	1.6
Building materials (glass, cement, etc.)	5.3	5.8	5.0
Textiles	19.3	18.3	16.6
Food processing	4.0	5.0	6.0
Agriculture	2.9	2.7	2.6
Wood and paper	2.8	3.3	3.3
Miscellaneous (including diamonds)	8.0	8.5	9.0
Total merchandise exports	100.0	100.0	100.0

Sources: Economic Program for 1962-65, Table 89, and Table 11 of this paper.

the total.³⁸ When the fact is taken into account that exports of industrial plant, intermediate chemical products, and building materials are also vulnerable to cyclical fluctuations, it can probably only be assumed that the share of "vulnerable" exports will be reduced from about 45 per cent of the total value of exports in 1957 to about 40 per cent in 1965 (at 1961 prices). As Table 14 shows, a considerably greater reduction in the share of the basic sectors, and increase in the share of chemical and engineering products, than actually occurred from 1957 to 1961 is called for from 1961 to 1965.

PROSPECTS FOR PRIVATE INVESTMENT

It is most difficult to assess how far the attitude of industrialists toward investment in Belgium may be favorably affected by the important reforms in the financial structure already carried out or under way, by the institution of a system of national economic planning, and by the further development of the Common Market.

The coming into operation of the Common Market has recently been a powerful factor in encouraging Belgian managements to modernize their enterprises and expand capacity. Access to a wider market is of great significance to a relatively small country like Belgium. It is valuable that an Economic Program has been drawn up at this time to point out the possibilities of sustained growth and economic diversification within the Common Market. The existence of targets proposed by the Government and studied and accepted by the various industrial associations may exert an important influence on the investment planning of industrialists.

The study on investment decisions referred to earlier³⁹ suggests that the Common Market arrangements may produce marked changes in conceptions concerning desirable investment rates and the rate of external financing. A difference in this respect was remarked between the rate of investment in competitive industrial sectors, such as paper

³⁸ The decline in the export share of basic industries would fall on coal and crude steel exports; nonferrous metals and semifinished products are expected to maintain their share in the value of merchandise exports (at constant prices), i.e., to rise by about 40 per cent in volume (Table 11, p. 36).

Considerable shifts have already taken place in the composition of exports of machinery and transport equipment (for example, a decline in the export of railway equipment); a remarkable provision in this field is the sharp increase called for in exports of motor vehicles.

The maintenance of the share of consumer goods industries in exports appears to depend on a further rise in the share of food processing industries and diamonds, offsetting a further decline in the share of textiles (which reflects a continued reduction in the share of the cotton and jute industries).

³⁹ See page 39 (fn. 12), above.

and electrical machinery, where firms were conscious of a need to capture or to keep a share of the market, and other sectors where investment tended to be determined primarily by the growth of demand. However, increasing pressures did not always have a stimulating effect. Faced with growing problems of maintaining their competitiveness, small firms did not always explore the full range of financing available to them.

For Belgium, the benefits of participation in the Common Market are particularly dependent on the continuance of high economic activity and demand within the Market area. Unless these conditions hold, Belgium's participation in the Common Market is unlikely to stimulate a higher rate of private investment; it may even cause the rate to be reduced. But provided that demand continues high in Western Europe, Belgium enters the crucial initial years of the formation of an integrated European market with the advantages of a favorable competitive position, and with the benefits of recent measures to improve the fiscal and monetary system. These factors may enable its industrialists to seize the opportunity to modify the industrial structure of the country by expanding those sectors in which modern technology is producing the greatest advantages so as to reduce the dependence on the traditional basic industries whose long-run prospects for growth seem less promising.

Le programme économique et les politiques financières récentes de la Belgique

Résumé

La Section I est consacrée à l'examen du développement de l'économie belge depuis 1950. Elle souligne l'importance de la faible augmentation de la population active et l'effet de la proportion relativement réduite de cette population active dans le secteur agricole comme causes du fait que le produit national brut (PNB) et le rendement global par habitant ont progressé moins rapidement en Belgique que dans les autres pays du Marché Commun. L'auteur note l'analogie qui existe à cet égard entre la situation de la Belgique et celle du Royaume-Uni. Dans les industries manufacturières, la productivité de la main-d'oeuvre a elle aussi augmenté plus lentement dans ces deux pays; ce fait est lié au niveau relativement faible

des investissements et des emprunts des sociétés industrielles. Un autre élément qui a contribué à réduire à la fois le niveau des investissements et leur productivité—telle qu'elle se reflète dans l'accroissement du PNB—est la vulnérabilité de l'économie belge aux fluctuations cycliques. Dans les années 1950-60, les augmentations de rendement ont été amenées surtout par la progression rapide mais instable des exportations.

Pour relever le taux de croissance, il faudra accroître les exportations, maintenir la demande intérieure à un niveau satisfaisant, en évitant les fluctuations, et encourager un volume suffisant des investissements privés et une répartition convenable de ceux-ci. La Section II décrit le Programme Economique du gouvernement pour les années 1962-65; la Section III examine les recommandations de la Commission chargée des problèmes de financement de l'expansion économique et passe en revue les importantes réformes monétaires et fiscales récemment adoptées.

Dans la Section IV, l'auteur cherche à évaluer les perspectives de réalisation du programme économique. Les possibilités actuelles favorables à un accroissement avantageux des exportations pourraient encourager l'expansion recherchée des investissements privés, mais il n'est pas certain que ces espoirs se réalisent. Depuis 1960, l'augmentation des exportations belges a porté presque entièrement sur les pays du Marché Commun. Il serait imprudent de tenir pour acquis que les échanges commerciaux entre la Belgique et ses partenaires de la CEE continueront à se développer aussi rapidement qu'au cours des récentes années, mais les exportations belges pourraient bénéficier considérablement d'un relèvement de l'activité des Etats-Unis et du Royaume-Uni.

El programa económico y las políticas financieras recientes de Bélgica

Resumen

La Sección I de este artículo trata del desarrollo de la economía belga a partir de 1950. Pone de relieve la importancia que tienen el ligero aumento de la población activa y el efecto surtido por la proporción relativamente reducida de la población dedicada a la agricultura, como causantes del hecho de que el producto nacional bruto (PNB) así como el rendimiento global por habitante hayan

aumentado menos rápidamente en Bélgica que en los demás países del Mercado Común, y señala la analogía existente entre la situación de Bélgica y la del Reino Unido en cuanto a estos aspectos. También halla que el rendimiento individual del trabajador industrial ha aumentado a un ritmo menor en esos dos países, circunstancia que está vinculada al nivel relativamente bajo de las inversiones en empresas de negocios, el cual aparentemente tiene en sí relación con la menor demanda de crédito por parte de las empresas. Otro factor que ha propendido a reducir tanto el nivel de las inversiones así como su productividad, según puede colegirse por el incremento del PNB, ha sido la susceptibilidad de la economía belga a las fluctuaciones cíclicas. El incentivo primordial para el aumento de la producción durante la década a partir de 1950 provino del rápido aunque inestable aumento de las exportaciones.

Para lograr una tasa de crecimiento más acelerada será preciso aumentar las exportaciones, mantener la demanda interna a un nivel adecuado, evitando las fluctuaciones, y estimular la obtención de un volumen suficiente y una conformación adecuada de las inversiones privadas. La Sección II describe el Programa Económico gubernamental para el periodo 1962-1965; la Sección III versa sobre las recomendaciones formuladas por la Comisión encargada de los Problemas del Financiamiento de la Expansión Económica así como sobre las importantes reformas monetarias y fiscales recientemente adoptadas.

La Sección IV ensaya hacer un cálculo de las probabilidades de realización del Programa Económico. La existencia de favorables oportunidades inmediatas para alcanzar una expansión provechosa de las exportaciones podría ofrecer el estímulo que la inversión privada requiere, pero no existe seguridad de que esa situación se produzca. A partir de 1960 casi la totalidad del aumento de las exportaciones de Bélgica ha sido en su comercio con los países del Mercado Común. Sería pecar de optimista suponer que el intercambio comercial con dichos países habrá de seguir aumentando con igual celeridad que en los años recientes; sin embargo, las exportaciones de Bélgica podrían verse considerablemente favorecidas por una expansión en Estados Unidos y en el Reino Unido.

Effects of Income and Price Changes on the U.S. Balance of Payments

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This paper was given at the Winter Meeting of the Econometric Society, Boston, Massachusetts, December 29, 1963. Earlier versions of the paper were presented at Rice University (Houston, Texas), the University of Texas (Austin, Texas), and the Board of Governors of the Federal Reserve System (Washington, D.C.). The opinions expressed are entirely those of the authors.

DURING THE LAST TWO YEARS, attention has been drawn to the likelihood, or at least the possibility, that the rate of growth of economic activity in the United States will rise, both absolutely and relative to the rate of growth in Western Europe, and that price developments may follow a somewhat different course in these two areas. While the average rate of growth of real gross national product (GNP) during the five years 1956–61 was 2.2 per cent in the United States and 4.3 per cent in the European countries in the Organization for Economic Cooperation and Development (OECD) taken as a group, present forecasts envisage growth at a rate of 4–5 per cent in both regions. A comparison of price movements shows that there has been a tendency in recent years for prices to rise more rapidly in continental Western Europe than in the United States.¹

In view of the balance of payments problems of the United States, it is important to assess the probable impact of these tendencies on the U.S. external accounts. Differential rates of economic expansion and of price movements in various parts of the world are likely to affect not only the current account balances but also the capital accounts of the regions in question. The present paper confines itself to the first part of this problem, considering chiefly the influence of income and price changes on trade in goods and services.

It is plausible to expect that an increase in the rate of growth of economic activity in the United States will, by itself, tend to worsen the current account of the U.S. balance of payments, and that a rate

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¹ See International Monetary Fund, *Annual Report, 1962*, p. 75, and *Annual Report, 1963*, p. 97.

of increase in prices in Western Europe which exceeds that in the United States will tend to improve it. But it is difficult to estimate the probable net impact of simultaneous changes in economic activity and in prices in these two regions, with allowance made not only for direct effects but also for a number of roundabout, or "feedback," relations. Such a task could hardly be undertaken without the help of some formal economic model, used partly as an aid in checking the logical consistency of the specified relations, and partly as a framework within which the numerical assumptions can be manipulated. A model of this sort consists of a number of equations, some of which may be identities stating accounting definitions and other known or assumed equalities, while others express economic "behavior," that is, the reaction of members of various sectors of the economy to changes in incomes, prices, and other specified variables. The numerical values of the parameters of these behavior equations (that is, the magnitudes of the various marginal propensities and elasticities) may be derived in a more or less informal way from theoretical and empirical considerations, or estimated from past data through formal statistical analysis. The latter method has been adopted in this study. Sections I and II describe the logic and the statistical bases of the model.

Once the values of the parameters are obtained through statistical analysis, it is possible to make projections on the basis of assumed values of certain explanatory variables which are taken to be determined outside the model. Projections of this type are not unconditional "predictions" or "forecasts"; they are merely quantitative evaluations, on the basis of past experience, of the implications of certain assumptions about the future course of those magnitudes which are included in the model as autonomous, or "exogenous," variables. Projections made from an earlier version² of the present model are described in a report³ to the Joint Economic Committee of the Congress of the United States published by the Brookings Institution (hereinafter referred to as Brookings Report). Section III presents

² This model was first described in general terms in J. J. Polak and R. R. Rhomberg, "Economic Instability in an International Setting," *American Economic Review*, May 1962, and in greater detail in R. R. Rhomberg, "A Three-Region World Trade and Income Model, 1948-60," a paper presented at the Ann Arbor Meeting of the Econometric Society, September 1962.

³ Walter S. Salant et al., *The United States Balance of Payments in 1963* (The Brookings Institution, Washington, D.C., 1963); also published under the same title by the U.S. Congress (88th Congress, 1st Session), Joint Economic Committee (Washington, D.C., 1963). References in this paper will be to the Brookings Report, in which errors occurring in the Joint Economic Committee printing have been corrected. The authors of the present paper are grateful to Mr. Walter S. Salant of the Brookings Institution for comments on an earlier draft of this paper; he is, of course, not responsible for any errors herein.

projections for 1964 and 1968 from the revised model—with certain assumptions being made about the growth of U.S. and Western European economic activity and about the behavior of prices in the two areas—and compares the projections for 1968 with those made in the Brookings Report.

I. Nature of the Model

The model⁴ divides the trading world into three regions: (1) the United States, (2) Western Europe, and (3) the Rest of the World.⁵ Exports from one of these regions to another are, in principle, identical with the latter region's imports from the former, though in practice there is ordinarily some accounting discrepancy between corresponding entries in partner countries' balance of payments records.⁶ By accounting for the systematic influences of income and price changes on each region's imports of goods and services during a particular period, the model at the same time "explains" the observed variations in each region's exports of goods and services.

The two sectors of the model treating imports of goods and services of the United States and Western Europe (for short, the two "industrial regions") are of similar design. The demand for merchandise imports (in 1954 prices) is taken to depend on real GNP and inventory investment, and on the ratio of domestic prices (GNP prices⁷) to the export prices of the region in which the imports originate. Payments for services, treated separately by category (transportation

⁴ In the design of the model, the authors have greatly benefited from three studies: L. A. Metzler, "A Multiple-Region Theory of Income and Trade," *Econometrica*, Vol. 18 (1950), pp. 329-54; J. J. Polak, *An International Economic System* (London, 1954); and H. Neisser and F. Modigliani, *National Incomes and International Trade: A Quantitative Analysis* (Urbana, Illinois, 1953).

⁵ In this paper "Western Europe" means the continental OECD countries excluding Spain (a list of these countries is given in footnote 1 to Table 17, page 116); however, the U.S. balance of payments data published by the U.S. Department of Commerce include three additional countries—Finland, Spain, and Yugoslavia—under the heading "Western Europe." The region designated "Rest of the World" consists of all countries other than the United States and Western Europe; it includes the countries of the Soviet area. In the model referred to above (Polak and Rhomberg, *op. cit.*), the United States and Canada were combined into one region, Western Europe and Japan formed the second region, and the Rest of the World consequently excluded Canada and Japan. The regional classification was changed at the request of the Brookings group to make the model fit into the plan of their study.

⁶ Such accounting discrepancies are due chiefly to problems of valuation and to time differences between the departure and arrival of commodity shipments.

⁷ The term "GNP prices" is used for the implicit GNP price deflator, i.e., the ratio of GNP in current prices to GNP in constant (1954) prices.

services, travel, interest and dividend payments, and other private services), are related to what was thought to be in each instance the most appropriate single variable.⁸

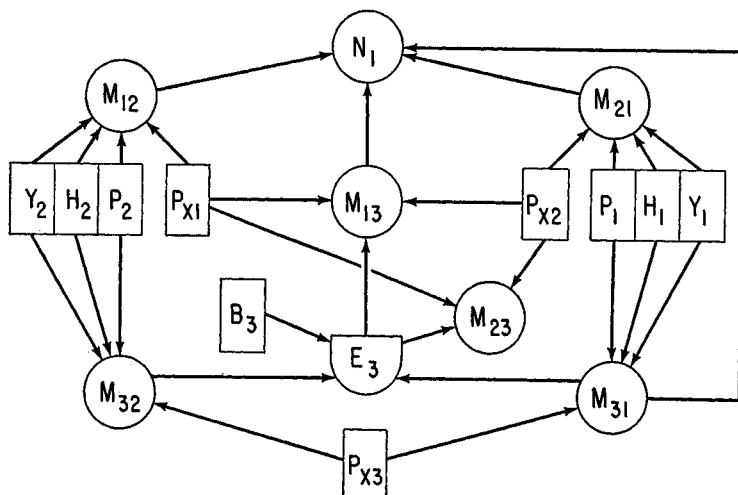
Imports of goods and services by the Rest of the World from the two industrial regions are treated in a different manner. In many of the countries in the Rest of the World group, variations in imports are determined not so much by changes in national income as by changes in the amount of foreign exchange receipts. As a first approximation, it may be assumed that these countries, as a group, use the total of their foreign exchange receipts from exports of goods and services to the two other regions and from net capital inflows and foreign aid to purchase imports from, or make payments for services to, the United States and Western Europe.⁹ The model does not, however, rely on the validity of this assumption. Increases (or decreases) in the Rest of the World's exchange reserves can be treated as autonomous magnitudes and subtracted from (or added to) this region's exchange receipts from exports, net capital inflows, and aid, to arrive at the amount spent for imports of goods and services. Apart from this accounting relation, the Rest of the World sector of the model is designed to make it possible to estimate the share which the United States receives of the Rest of the World's expenditure on imports of goods and services. The principal behavior equation in this sector relates this share to the ratio of U.S. export prices to those of Western Europe.

The main relations of the model are shown schematically in Chart 1. In this chart, variables which are explained in the model (dependent, or "endogenous," variables) are shown in circles, while variables whose magnitudes are determined outside of the model ("exogenous" variables) are shown in squares. The arrows indicate the lines of direct influence assumed in the model.¹⁰ The chart focuses on the U.S. current account balance, N_1 , which is the sum of U.S. exports to the two

⁸ Payments for transportation services are related to imports; travel payments to consumption; interest and dividend payments to the region's liabilities to the receiving region; and payments for other private services to GNP. Data on service transactions between Western Europe and the Rest of the World are not available; these transactions are therefore not explained by the model, but their balance is netted against the Rest of the World's foreign exchange receipts through capital movements and foreign aid.

⁹ There was some justification for this assumption in the original version of the model, in which Canada and Japan were not included in the sector "Rest of the World" (see Polak and Rhomberg, *op. cit.*). When these two countries are part of the "Rest of the World," the case for maintaining the assumption of constant reserves seems much weaker.

¹⁰ The values of all endogenous variables are, of course, jointly and simultaneously determined by the values of all exogenous variables. The phrase "direct influence" in the text is used to describe the arrangement of individual equations of the model.

CHART 1. SCHEME OF A SIMPLIFIED VERSION OF THE WORLD TRADE MODEL¹

¹ In order to simplify the presentation, service receipts and payments are not shown separately; they may be thought of as included in the respective import variables. Circles indicate variables that are "explained" in the model; squares denote variables whose magnitudes are taken to be determined outside the model. The container-shaped symbol, marked E_3 , is not one of the variables used in the model but is used here for expository purposes. Arrows show the lines of direct influence of one variable on another. The values of all the dependent variables (those in circles) are, of course, jointly and simultaneously determined by the independent variables (those in squares). (W.E. = Western Europe, R.O.W. = Rest of the World.)

N_1 = U.S. current account balance
 M_{12} = U.S. exports to W.E.
 M_{13} = U.S. exports to R.O.W.
 M_{21} = U.S. imports from W.E.
 M_{31} = U.S. imports from R.O.W.
 M_{32} = W.E. imports from R.O.W.
 M_{23} = R.O.W. imports from W.E.
 B_3 = R.O.W. current account balance not otherwise accounted for in the model plus R.O.W. receipts of capital and aid.

P_{x1} = U.S. export prices
 P_{x2} = W.E. export prices
 P_{x3} = R.O.W. export prices
 Y_1 = U.S. GNP
 Y_2 = W.E. GNP
 H_1 = U.S. inventory investment
 H_2 = W.E. inventory investment
 P_1 = U.S. GNP prices
 P_2 = W.E. GNP prices
 E_3 = R.O.W. foreign exchange earnings from exports plus receipts of capital and aid.

other regions (M_{12} and M_{13}) less the sum of U.S. imports from these two regions (M_{21} and M_{31}). (In order to simplify the chart, payments for services have not been shown separately.) Imports into the United States and Western Europe are affected by GNP, inventory investment, and GNP prices of the importing region, as well as by export prices in the region of origin. All payments to the Rest of the World are shown as being collected in the receptacle marked E_3 (foreign exchange receipts of the Rest of the World) to be used as payment for the Rest of the World's imports from the two other regions (M_{13} and M_{23}).

Chart 1 thus indicates the mechanism by which an autonomous change in one of the variables in square boxes will affect some or all of the variables shown in circles. An increase in the U.S. GNP, for instance, will in the first place tend to raise U.S. imports from Western Europe and from the Rest of the World. It will thus lead to an increase in the Rest of the World's foreign exchange earnings, and this region will in turn spend part of this increase on imports from the United States, and the other part on imports from Western Europe. The rise in U.S. imports will, therefore, be offset in part by an increase in U.S. exports to the Rest of the World.

It is indeed possible to go beyond this scheme in making allowance for roundabout, or feedback, effects. A more complete version of the model (which is described in the Appendix) allows for the effects of changes in the trade balance on GNP, and for the further repercussions of these effects on imports, in the two industrial regions. Furthermore, the effects of changes in domestic prices and in the export volume on export prices are made part of the mechanism of the larger model. The improvement, judged by statistical criteria, resulting from such an expansion of the model is, however, slight. For reasons discussed in the following section, the results presented in the text will, unless otherwise specified, be those obtained from the more limited version of the model, hereinafter called "Model 3" (see Appendix II, p. 106).

The econometric approach chosen in this study has inherent limitations. The parameters of the model, i.e., the marginal propensities to import, the coefficients showing the effects of price changes, etc., have been estimated from data over a period (generally 1948-62) which could hardly be called "normal." This era includes the early phase of reconstruction in Europe—with limitations on the supply of European goods, extraordinary demands for imports (partly restrained by direct controls), and the financing of European imports by Marshall Plan aid—the Korean war, and the Suez crisis, to name but the most important of a number of special circumstances. However, disturbances of this sort neither make the task of statistical estimation of economic relationships impossible nor necessarily always work against the statistician. Some of them provide the sort of variation in the data which the econometrician must have in order to be able to estimate the individual effects of variables that exercise their influences jointly. Nevertheless, it is clear that tendencies which may not continue were present in the world economy during the 1950's—tendencies such as the progressive liberalization of Europe's trade, Europe's improved position as a supplier to world markets, and the gradual discovery by consumers and businessmen in the United States of European sources of supply of industrial products. To the extent that such longer-run

tendencies were present in the "sample period," that is, the period used in the statistical estimation (1948-62), their effect is likely to have been ascribed to other variables moving in a trendlike fashion, most probably to GNP. Such statistical misrepresentation would cause no problem in the use of the model for projections, if these tendencies were to continue; but if they were to cease, or to continue at a reduced rate, the application of coefficients estimated from historical data would lead to error.¹¹

Apart from this difficulty, there can be no assurance that the structure of the world economy as represented in the numerical values of the parameters of the model will remain unchanged in the future. All that can be said is that, in the absence of specific information to the contrary, nothing better can be done than to assume that the past is a reasonably good guide for the future. But even if little credence is given to projections from such a model, its construction may still have served a useful function in the same sense in which any historical information is useful. By leading to a better understanding of the past, the model cannot fail to improve, at least in some measure, our ability to assess the forces which shape the present and the future.

II. Statistical Results

The equations of the model have been fitted by ordinary least-squares regression methods to annual data, generally for the period 1948-62. This period was chosen because of the desirability of basing the statistical analysis on as many observations as possible. For a number of key relations, however, one or several of the early years have ultimately been omitted from the regression equations because inspection of the initial results indicated that the values of the variables in question during these early years were not in accordance with the regularities observed for a somewhat shorter and more recent period. In particular, the equation for U.S. merchandise imports from Western Europe has been fitted for the period 1951-62, and that for Western European imports from the United States for the period 1950-61.¹² Although the supply shortages in Western Europe had not been completely overcome at the beginning of the 1950's, the omission of earlier years in fitting these two import functions substantially reduces the disturbance of the import relations from this source.

¹¹ More specific comments on this topic are made in Appendix I.

¹² Data on aggregate GNP of Western Europe were not available for 1962 at the time this study was undertaken.

The statistical results summarized in this section are presented in greater detail in Appendix I.

The computed income and price elasticities of the two industrial regions' demand for imports are shown in Table 1.¹³ The magnitudes

TABLE 1. COMPUTED INCOME AND PRICE ELASTICITIES OF DEMAND FOR MERCHANDISE IMPORTS¹

	Income Elasticity of Demand for Merchandise Imports by		Price Elasticities of Demand for Merchandise Imports by	
	United States	Western Europe	United States	Western Europe
Imports from				
United States	—	0.9	—	-1.0*
Western Europe	2.0	—	-1.3*	—
Rest of World	0.8	0.9	-0.6	-0.4

¹ Based on Appendix I (pp. 85-105). An asterisk indicates that the estimated coefficient is not statistically significant at the 95 per cent confidence level. The income elasticities of demand for imports (measured in 1954 prices) are taken with respect to real GNP excluding inventory changes (also measured in 1954 prices); the price elasticities of import demand are taken with respect to the ratio of export prices in the region of origin to domestic GNP prices.

of these elasticities are on the whole in accordance with a priori expectations and with the results of other empirical studies. In the two industrial regions, the price elasticities of demand for imports from the Rest of the World are about $-1\frac{1}{2}$. The price elasticity of demand for U.S. imports from Western Europe was estimated as -1.3 , and that for Western Europe's imports from the United States as -1 . Both values appear somewhat lower¹⁴ than might have been expected. How-

¹³ Actual and computed values of U.S. and Western European imports are shown in Charts 3-6 (pp. 95, 97, 98, 101).

The coefficients of the equations have not been estimated as constant elasticities but as constant "slopes." The elasticities shown in Table 1 are computed at the means of the respective variables for the sample period. For instance, the income elasticity of demand for imports is computed as the ratio of the estimated marginal propensity to import to the average propensity during the period for which the equation has been fitted.

¹⁴ When price elasticities of demand are estimated for broad aggregates of commodities, there is a systematic tendency toward underestimation. The various reasons for this systematic bias are discussed by G. Orcutt, "Measurement of Price Elasticities in International Trade," *Review of Economics and Statistics*, Vol. XXXII (1950), pp. 117-32, and S. J. Prais, "Econometric Research in International Trade: A Review," *Kyklos*, Vol. XV (1962), pp. 560-79. It should also be noted that neither of the two price elasticities of U.S.-Western European trade is statistically significant. No great confidence can, therefore, be attached to the numerical values of these coefficients.

ever, two points should be noted in this connection:¹⁵ First, Western Europe's imports from the United States contain a considerable proportion of agricultural commodities, the demand for which is likely to be price-inelastic; the implied price elasticity of demand for U.S. manufactured products is, therefore, higher than -1 , perhaps about -1.5 . Second, calculated demand elasticities with respect to the ratios of import prices to GNP prices¹⁶ will tend to be lower than elasticities involving the ratios of import prices to the prices of import-competing goods.¹⁷ For these reasons, the calculated elasticities should not be considered unduly low. The findings do, at any rate, confirm the widely held view that the demand for primary products in industrial countries is rather price-inelastic, compared with the demand for industrial products.

Three of the four estimated income elasticities are slightly less than 1, a theoretically quite acceptable value. The income elasticity of U.S. demand for imports from Western Europe is found to have a value of 2, which is surprisingly high. This would mean that U.S. imports from Western Europe would tend to grow twice as fast as the U.S. GNP. Such a relation does indeed seem to have held for the past decade, even after a number of corrections have been made in the data for certain extraordinary influences, such as the boom in U.S. automobile imports during the late 1950's. While U.S. real GNP rose by about 50 per cent from the beginning of the 1950's to the beginning of the 1960's, U.S. imports from Western Europe in constant prices increased during the same period by more than 100 per cent. If the principal factor causing such a rapid expansion had been the elimination of supply shortages in Western Europe, the growth of imports

¹⁵ See also the contribution by Bela Balassa to *The United States Balance of Payments: Statements by Economists, Bankers, and Others on the Brookings Institution Study*, "The United States Balance of Payments in 1968" (materials submitted to the Joint Economic Committee, 88th U.S. Congress, 1st Session, Washington, D.C., 1963), pp. 577-87, especially pp. 580-81.

¹⁶ The model does not use import prices but uses the export prices of the region of origin; also, in the calculated equations, the price ratios are inverted, compared with the usual presentation, so that the domestic "deflators" appear in the numerators and the foreign prices in the denominators (see Appendix I).

¹⁷ The question has been raised whether wholesale prices would be more suitable "price deflators" of import prices in these equations, since GNP prices include the prices of domestic services which cannot be considered substitutes for imported commodities. (See Balassa, *op. cit.*, p. 580, and E. M. Bernstein's contribution to the same volume, p. 64.) In view of this question, the calculations were repeated, with GNP prices replaced by wholesale prices in the numerators of the price ratios. The results (discussed in Appendix I) were not materially different from those reported in the text. Since it would be practically impossible to make projections of wholesale prices without having first projected GNP prices on the basis of assumptions about future demand, growth of the labor force, expected productivity developments, etc., it was thought best to continue to use GNP prices in the import equations.

would have been expected to be greater in the early part of the decade than in the later part; but this was not true. Therefore, one is inclined to conclude that there is a longer-run tendency on the part of U.S. producers and consumers to "discover" European sources of supply of industrial products. Nobody can now say whether or not this tendency will continue.¹⁸ If it were to continue, it would be appropriate to use the income elasticity found for the recent past; but if this trend were to cease, a lower value would have to be substituted for the statistically estimated coefficient. For purposes of the computations reported in this paper, no such adjustment has been made.

The equation explaining the share of U.S. goods in total merchandise imports (in constant prices) by the Rest of the World indicates an elasticity of substitution between U.S. and Western European goods, with respect to the ratio of U.S. to Western European export prices, of -1.2 . This means that a rise of 1 per cent in the ratio of export prices has tended to lower by 1.2 per cent the proportion of the Rest of the World's imports originating in the United States; since this proportion has been about 40 per cent in recent years, the reduction would amount to about one half of one percentage point, or, expressed in absolute terms, to about \$150 million.¹⁹

Acceptable statistical estimates have been obtained for the relations between various service categories and the factors presumed to be their principal determinants; they are discussed in Appendix I. For export prices in the three regions, satisfactory statistical explanations have been found for the sample period, but it is unlikely that these relations are suitable for longer-run projections. In the two industrial regions, export prices are affected slightly by the volume of exports, and they also fluctuate with, and more than in proportion to, domestic GNP prices; but their smaller long-run increase, in comparison with GNP prices,²⁰ is reflected in a trend factor with a negative sign. Since it is uncertain how long export prices can continue to increase more slowly than domestic prices, there is no assurance that reasonable long-run projections can be obtained from these relations.

¹⁸ Insofar as U.S. imports of automobiles are concerned, a sharp rise in U.S. purchases of foreign cars from 1956 to 1959 (see Chart 2, p. 94) brought forth a "dynamic response" by U.S. manufacturers in the form of production of compact cars. As the proportion of compact cars in total domestic production increased, imports of foreign cars declined. It is not possible to foresee now whether similar dynamic responses will be sufficiently widespread to alter present trends in U.S. demand for foreign industrial products.

¹⁹ Actual and computed values of the ratio of U.S. to Western European goods in the Rest of the World's imports are shown in Chart 7 (p. 103).

²⁰ See Bela Balassa, "Patterns of Industrial Growth: Comment," *American Economic Review*, Vol. LI (1961), p. 395, and his contribution to the Joint Economic Committee volume cited above (p. 67, fn. 15), pp. 581-84. Balassa presents interesting material on the relation between GNP prices, productivity, and export prices.

A similar problem arises with respect to the domestic consumption functions included in the complete model, though not in the limited version. For both the United States and Western Europe, the estimates indicate a marginal consumption/GNP ratio of slightly more than $\frac{1}{2}$, compared with an average consumption/GNP ratio of slightly less than $\frac{1}{2}$. This difference reflects the fact that the response of consumption to year-to-year changes in GNP is smaller than the corresponding long-run response. For long-run projections, it may be more appropriate to use the average consumption/GNP ratio instead of the estimated short-run "marginal propensity to consume out of GNP."

For reasons given in the last two paragraphs, several versions of the model have been processed, some of which may be suitable for short-run forecasting and others for longer-run projections. These alternative versions differ with respect to the treatment of export prices and consumption.²¹ It is reassuring that these different versions of the model do not lead to substantial differences in the computed values of the dependent variables during the sample period, and, in particular, that the variable on which this study focuses, namely the U.S. balance on current account, is computed with roughly the same accuracy in all the alternative versions. As stated in the preceding section, the results given in the text will be those from the simplest form of the model (Model 3).

Before presenting the conclusions of this study as to the influence of income and price changes on the U.S. current account balance, it will be interesting to obtain an impression of the extent to which the model as a whole, as distinct from individual equations,²² fits the data for some recent years. The actual and computed values of the U.S. current account balance for the years 1958-62²³ are given in columns 1 and 2 of Table 2; the error of estimate for the year in question is shown in column 3; and this error as a percentage of the actual value is given in column 4. Estimation of a net balance from separate calculations of its components is typically not very successful, since relatively small errors in the estimates of the gross components lead to much larger percentage errors in the estimate of the balance. Therefore, a probable

²¹ See Appendix II. In the most complete variant of the model, export prices are computed in the model and the consumption/GNP relation is retained; in the most limited variant (Model 3), export prices are determined outside the model and the consumption/GNP relation is suppressed.

²² In Tables 2 and 3, the computed values of the dependent variables have been calculated directly from the actual values of the exogenous variables, without reference to the actual values of any of the other endogenous variables.

²³ More precisely, that part of the U.S. current account balance which is explained by the equations of the model, namely, the current account balance as published by the U.S. Department of Commerce, excluding exports under military grants, military expenditures, and "miscellaneous government services."

TABLE 2. U.S. CURRENT ACCOUNT BALANCE,¹ 1958-62: ACTUAL AND COMPUTED VALUES

	Actual Value (1)	Computed Value ² (Billion current U.S. dollars) (2)	Error in Computation (Col. 1 - Col. 2) (3)	Error as Per Cent of Actual [(Col. 3 ÷ Col. 1) × 100] (4)
1958	5.48	6.41	-0.93	-17
1959	3.10	3.65	-0.56	-18
1960	6.64	8.05	-1.41	-22
1961	8.23	8.27	-0.05	-1
1962	7.41	6.65 ³	0.76	10

¹ Balance of merchandise trade (excluding exports under military grants) and private services (transportation, travel, investment income, and other private services).

² Column 2 is computed, not from the individual equations but from the independent variables of Model 3 and the "multipliers" given in Table 12 (p. 109).

³ Figures for Western European GNP, inventory investment, and GNP price deflator have been estimated, since actual data are not yet available for 1962.

error of about \$1 billion or slightly less—that is, some 3 per cent of current gross receipts or about 15 per cent of the current balance—is not surprising. Although the model correctly reflects the sharp reduction in the surplus from 1958 to 1959, the increase from 1959 to 1961, and the renewed decline from 1961 to 1962, Table 2 may serve as a warning that great accuracy in projections of the current account balance cannot be expected if an error of 20 per cent or more can occur even within the sample period.

Similar information on both the current account balance and its components is given in Table 3 for annual averages of the years 1958-59 and 1961-62. This comparison constitutes an interesting test of the performance of the model because of the substantial improvement in the U.S. current account from the first to the second of these two-year periods. With the exception of the fairly large error in the computed value for merchandise exports in 1958-59, which is of course carried into the merchandise trade balance and the over-all current account balance, the model fits the data of these recent subperiods quite well. The fit of the model is improved if the computation is made for the average of two years rather than for a single year. If the model is used to project general tendencies of the current account balance, rather than its value in a particular future year, there is thus some hope, though there can never be any assurance, that the projection error, to the extent that it stems from imperfections of the model rather than from invalid assumptions about the values of the exogenous variables, may remain within acceptable limits.

TABLE 3. U.S. CURRENT ACCOUNT BALANCE AND ITS COMPONENTS: ACTUAL AND COMPUTED VALUES, ANNUAL AVERAGES, 1958-59 AND 1961-62

(In billions of current U.S. dollars)

	Average, 1958-59			Average, 1961-62		
	Actual value (1)	Computed value (2)	Residual (Col. 1 - Col. 2) (3)	Actual value (4)	Computed value (5)	Residual (Col. 4 - Col. 5) (6)
Balance of goods and services (excluding transfers under military grants)	1.17	—	—	5.14	—	—
Less Balance of items not computed ¹	-3.12	—	—	-2.68	—	—
<i>Equals</i> Balance of goods and services computed in the model	4.29	5.03	-0.74	7.82	7.46	+0.36
Merchandise trade						
Exports						
To Western Europe	4.70	5.04	-0.34	6.95	6.44	+0.51
To Rest of World	11.58	11.86	-0.28	13.24	13.53	-0.29
Total exports	16.28	16.90	-0.62	20.19	19.97	+0.22
Imports						
From Western Europe	3.91	3.88	+0.03	4.29	4.17	+0.12
From Rest of World	10.22	10.09	+0.13	11.03	11.21	-0.18
Total imports	14.13	13.97	+0.16	15.32	15.38	-0.06
Trade balance	2.15	2.93	-0.78	4.87	4.59	+0.28
Services						
Receipts						
From Western Europe	1.85	1.78	+0.07	2.35	2.24	+0.11
From Rest of World	4.71	4.71	—	5.80	5.82	-0.02
Total service receipts	6.56	6.49	+0.07	8.15	8.06	+0.09
Payments						
To Western Europe	2.03	2.12	-0.09	2.53	2.45	+0.08
To Rest of World	2.38	2.25	+0.13	2.68	2.74	-0.06
Total service payments	4.41	4.37	+0.04	5.21	5.19	+0.02
Service balance	2.15	2.12	+0.03	2.94	2.87	+0.07

EFFECTS OF INCOME AND PRICE CHANGES

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¹ Military transactions and expenditures, and miscellaneous government services.

PRICE AND INCOME EFFECTS

From the estimated equations described in this section it is possible to compute the separate effects of changes in incomes, prices, and other exogenous variables on any of the variables explained in the model.²⁴ These effects are conveniently recorded by giving in each case the number by which a change in one of the exogenous variables must be multiplied in order to arrive at the induced change of the endogenous variable in question, after all the repercussions throughout the system have worked themselves out. A table of the multipliers computed from Model 3 is presented in Appendix II (p. 109). In the text, only a selection of multiplier effects on the U.S. current account balance and on U.S. current gross receipts and payments is given.

In Table 4, column 1 indicates that a rise in U.S. real GNP by \$1 billion, with all other exogenous variables remaining unchanged, would tend to worsen the U.S. current account balance by \$34 million, that is, by 3.4 per cent of the increase in GNP. A similar increase in Western Europe's real GNP²⁵ would improve the U.S. current account balance by \$55 million. Since the multiplier effects shown in Table 4 are additive, a simultaneous increase in both U.S. and Western European real GNP by the same absolute amount would, other things being equal, lead to an improvement in the U.S. current account. Since the U.S. GNP exceeds Western Europe's GNP approximately in the same proportion in which the magnitude (disregarding the sign) of the Western European GNP multiplier on the U.S. current account balance exceeds the corresponding U.S. GNP multiplier, an equal percentage growth of GNP in the two regions would tend to leave the U.S. current account balance approximately unchanged.

This conclusion must, however, be qualified with respect to the effect of changes in inventories. Whereas a rise in U.S. inventory investment leads to a relatively small worsening of the U.S. current account balance, an increase in Western Europe's inventory investment induces a pronounced improvement. This asymmetry is due to the relatively strong effects of inventory changes on imports found in the estimated import equations of Western Europe, compared with the corresponding effects in the U.S. import equations.

Price changes in the United States and in Western Europe affect the U.S. current account in a roughly symmetrical manner. A 1 per cent

²⁴ To make these calculations possible, products or ratios of variables appearing in various equations have been replaced by linear approximations (see Appendix II, pp. 106-7).

²⁵ Western Europe's GNP and its components are expressed in terms of U.S. dollars.

TABLE 4. ESTIMATED EFFECTS OF CHANGES IN INCOMES AND PRICES
ON THE U.S. CURRENT ACCOUNT BALANCE

	Estimated Effect, in Millions of Current U.S. Dollars, on ¹		
	U.S. current account balance ² (1)	U.S. exports of goods and services (2)	U.S. imports of goods and services (3)
Effect of a rise by \$1 billion in			
GNP (<i>in 1954 prices</i>)			
United States	-34	+13	+46
Western Europe	+55	+55	0
Inventory investment (<i>in 1954 prices</i>)			
United States	-81	+50	+130
Western Europe	+600	+600	0
"Autonomous foreign exchange receipts" of Rest of World ³	+450	+450	0
Effect of a rise by 1 percentage point in			
GNP prices (<i>1954 = 1</i>)			
United States	-91	+36	+127
Western Europe	+85	+85	0
Export prices (<i>1954 = 1</i>)			
United States	-55	-68	-14
Western Europe	+64	+65	+1
Rest of World	+27	+72	+45

Source: Table 12 (p. 109).

¹ The estimated effects shown in this table are (1) proportional to the magnitudes of the "causal" changes, and (2) additive; the joint effect of simultaneous changes in several of the magnitudes listed in the stubs are obtained by adding their separate effects.

² Column 2 minus column 3.

³ This item is the sum of net foreign exchange receipts by the Rest of the World on accounts not estimated in the model; it consists chiefly of (1) net receipts from the United States arising out of U.S. military expenditures and miscellaneous government services, (2) net payments (a negative item) to Western Europe on service account, (3) net receipts from the United States and Western Europe on capital account, including foreign aid, and (4) any reduction (*minus*, if increase) of the Rest of the World's foreign exchange reserves. (See also p. 74, fn. 29.)

rise in U.S. GNP prices results in a deterioration of the U.S. current balance by about \$90 million; and a 1 per cent rise in Western European GNP prices results in an improvement by about \$90 million in the U.S. balance. The corresponding effects of export price changes are somewhat smaller. An increase in export prices of the Rest of the World leads to a small improvement in the U.S. current account since it induces a somewhat larger rise in the value of U.S.

exports, as a result of improved foreign exchange earnings of the Rest of the World, than in the value of U.S. imports.²⁶

Of particular interest is the net effect of a change in the Rest of the World's "autonomous foreign exchange receipts"²⁷ on the U.S. current account balance. The relevant multiplier in Table 4 indicates that 45 per cent of any increase in the Rest of the World's capital and aid receipts would be used to purchase exports from the United States and would, therefore, benefit the U.S. current account balance.²⁸ Some qualifications are necessary, however. First, it is in the nature of the model that the multiplicand in question is composed of a number of different items. From net capital and aid receipts by the Rest of the World (regularly a positive item) there must be subtracted the Rest of the World's net payments to the two industrial regions on all those accounts not separately estimated in the model; in view of the Rest of the World's large deficit in service transactions with Western Europe, this item is ordinarily a substantial offset to the Rest of the World's capital and aid receipts. In addition, the multiplicand must be reduced by the amount of any increase, or increased by the amount of any reduction, in foreign exchange reserves held by the Rest of the World.²⁹ With allowance for this qualification, the multiplier must therefore be interpreted as follows: U.S. exports will tend to increase by 45 per cent of the amount of any increase in U.S. and Western European foreign aid and net capital payments to the Rest of the World, but only to the extent that such payments are not offset by a worsening of the Rest of the World's current account deficit with the two industrial regions on various military expenditure and service accounts not separately estimated in the model or by an increase in the Rest of the World's foreign exchange holdings. In this connection it is worth pointing out that the sum of net capital and aid receipts (which include short-term capital movements) by the Rest of the World shows considerable variability and may well be the item principally responsible for year-to-year changes in the U.S. current account balance.

²⁶ It will be remembered that the U.S. demand for imports from the Rest of the World was estimated to be price-inelastic, so that a price increase entails an increase in the dollar value of these imports.

²⁷ The adjective "autonomous" is used to distinguish these exchange receipts from those derived from exports of goods and services explained in the model. (See also fn. 29.)

²⁸ To the extent that this improvement in the U.S. current account arises from increased U.S. aid expenditure, it is, in its effect on the U.S. balance of payments, merely a (partial) offset to the expenditure itself, which is recorded as a capital outflow under the heading of "Government capital and unilateral transfers."

²⁹ The designation "autonomous foreign exchange receipts" is, therefore, somewhat of a misnomer; we shall, however, use it as a shorthand expression for the more cumbersome "autonomous foreign exchange receipts minus increase (or, plus decrease) in reserves."

For instance, from 1961 to 1962 the estimated decline in net capital and aid receipts by the Rest of the World is \$1-2 billion; moreover, the Rest of the World increased its reserves by \$0.6 billion.³⁰ In terms of the mechanism of the model, these two changes would, by themselves, account for the worsening of the U.S. current balance from 1961 to 1962.

A second qualification concerns the effect of certain restrictions on the expenditure of foreign aid funds, commonly referred to as "tying" of aid. No separate allowance has been made in the model for the possibility that increased resort to tying of aid funds will raise the fraction by which U.S. exports will increase as a result of additional U.S. aid expenditures. The marginal effect on exports of the tying of aid is quite uncertain, and there is no good way of assessing its magnitude without an exhaustive country-by-country study of aid procedures. Also, much depends on the distribution of aid by type: aid in the form of shipments of surplus agricultural commodities under U.S. Public Law 480 entails little or no net balance of payments cost for the United States; on the other hand, tying of aid under the so-called irrevocable letter-of-credit procedure may not materially reduce the foreign exchange cost of the aid expenditure.³¹ For these reasons, it seems preferable to make allowance for the effect of tying of aid, to the extent necessary, outside the formal apparatus of the model.

A third qualification has to do with the geographical distribution of the Rest of the World's autonomous foreign exchange receipts by recipient and, to some extent, by source. U.S. exports tend to benefit more from an additional dollar of foreign exchange received by Canada, Japan, or a Latin American country than from one received by, say, Australia.³² Again, capital and aid funds—especially, tied aid—are more likely to be spent in the region of origin than elsewhere. But until the model can be expanded by dividing the Rest of the World into a number of subregions it is not possible to allow formally for these geographic differences. For projection purposes, the model therefore operates on the implicit assumption of an unchanged dis-

³⁰ A substantial portion of the reduction from 1961 to 1962 in the Rest of the World's capital receipts could be accounted for by a lower U.S. short-term capital outflow to Canada and Japan; these two countries are also responsible for all the increase in reserves mentioned in the text.

³¹ The Brookings group estimate—or as they put it "guess"—the percentages of aid-financed imports from the United States which, under the irrevocable letter of credit procedure, represent substitutes for imports that would have occurred without the aid disbursements in question; these percentages for various geographic regions lie between 70 and 90 per cent, being highest for Latin America and lowest for Africa (Brookings Report, p. 172).

³² See W. W. Hicks, "Estimating the Foreign Exchange Costs of Untied Aid," *The Southern Economic Journal*, Vol. XXX (1963), pp. 168-74.

tribution of the item "autonomous foreign exchange receipts" among the various recipient subregions of the Rest of the World and of an unchanged proportion of these funds originating in the United States.

III. Projections to 1964 and 1968

As emphasized in Section I, projections from an econometric model are not unconditional predictions; they merely show expected values of the endogenous variables on the condition that the exogenous variables take certain assumed values. In general, these assumed values are, themselves, not unconditional predictions but merely more or less plausible extrapolations of trends as seen at present. The projections from the model can be no more valid than these assumptions. Moreover, the structure of the economic system in question may change over time, so that the coefficients estimated from data for the sample period no longer reflect economic behavior during the projection period.

Nevertheless, it seems worthwhile for two reasons to conclude this paper by showing such projections. First, they may, and often do, serve as a point of departure for further analysis, in which elements left out of the formal apparatus of the model can be conveniently introduced as corrections of the initial results. Second, since projections made partly with the help of an earlier version of this model have been published in the Brookings Report, it may be interesting to ascertain the extent to which these projections might have been altered if the revised version of the model presented in this paper had been available when the Brookings study was in progress.

Three projections have been made. The first, to 1964, is included for reasons of the inherent interest in a proximate period for which the postulate of an unchanged economic structure is somewhat more defensible, and for which assumptions about the values of the exogenous variables can be made with somewhat greater assurance, than for a more distant year. In addition, two projections to 1968 are presented for the purpose of comparison with the results in the Brookings Report. They are based, as far as possible, on assumptions made in that Report, particularly with respect to expected income and price changes. This has been done in order to draw attention to the effects on the projected values of differences in the method of projection and in the coefficients used, and does not necessarily imply acceptance, in all respects, of the Brookings assumptions about price and income changes. The Brookings group started with a set of "initial" assumptions about income trends (1961-68) in the United States and in Western Europe, given to them as part of the terms of reference of

their study, and added a set of "alternative" assumptions in which rates of economic growth in the United States and Western Europe were scaled down somewhat. To each of these sets of assumptions about income growth, the Brookings group added assumptions about trends in the number of man-hours, productivity, and several other factors, to arrive at a judgment about domestic and export price developments in the two industrial regions. Under the alternative assumptions, price increases in Western Europe, though not in the United States, are expected to proceed at a less rapid pace than under the initial assumptions. The changes from 1962 to 1964, assumed for purposes of the shorter-run projection made in this paper, are largely based on the Brookings group's initial assumptions about prices and on their alternative assumptions about incomes, a combination which was thought to reflect present short-term trends fairly adequately. The three sets of assumptions³³ are given in Table 5. It should be added that some of the assumptions which must be made in these projections cannot reasonably be expected to hold for a particular future year, say 1964 or 1968, but should be interpreted as anticipations of average values at the time for which the projection is to be made, say, during the years 1963-65 or 1967-69.

Table 6 shows actual values for 1961 and 1962 and projected values for 1964 and 1968 of the U.S. current account balance and its major components. While all these components are expected to grow, increases on the receipts and payments sides between 1961 and 1964 approximately cancel one another, so that the current account balance projected to 1964 equals the actual balance of 1961. This means that the worsening of the current account in 1962 is, in this projection, expected to be reversed by 1964. The projections of the current account balance to 1968 under the initial and alternative assumptions show expected improvements over 1961 by \$1.8 billion and \$1.0 billion, respectively.

Since the sum of the current account balances of the three regions is by definition zero, it is easy to work out the implications of these assumptions and projections for Western Europe's current account balance (see Table 7). Including those service transactions which are not estimated in the model, Western Europe's current account balance in 1961 was \$2.4 billion. The projected value for 1964 is also \$2.4 billion, and for 1968 it is \$4.0 billion and \$4.8 billion under the initial

³³ It should be noted that the Brookings group did not use the entire model for their projections. As a result, no single assumption corresponding to that in the last line of Table 5 (autonomous foreign exchange receipts of the Rest of the World) was made in the Brookings Report. The footnote to this item in Table 5 explains the extent to which the values given in the table were derived from various assumptions made in the Brookings Report and from other information.

TABLE 5. ASSUMED CHANGES IN SELECTED ITEMS¹ FOR PROJECTIONS OF U.S. CURRENT ACCOUNT BALANCE TO 1964 AND 1968

	Assumed Changes for Projections to		
	1964	1968	
		"Initial" Assumptions ²	"Alternative" Assumptions ²
	<i>Annual percentage increase from 1962 to 1964</i>	<i>Percentage increase from 1961 to 1968</i>	
Real GNP			
United States	4.5	43	36
Western Europe	4.2	33	29
GNP prices			
United States	1.5	11	11
Western Europe	2.75	20	11
Export prices			
United States	0.5	4	4
Western Europe	1.5	11	7
	<i>Excess of 1964 total over 1962 total, in billions of current U.S. dollars</i>	<i>Excess of 1968 total over 1961 total, in billions of current U.S. dollars</i>	
"Autonomous foreign exchange receipts" of Rest of World ³	1.7	2.3	2.3

¹ In addition to the assumptions shown in the table, the following assumptions have been made: (1) exchange rates and export prices of the Rest of the World will remain the same as in 1962; (2) inventory investment both in the United States and in Western Europe will remain approximately at the average value over recent years. Also, increases in international investment positions have been based in part on projections of long-term investment on page 150 in the Brookings Report (cited above, p. 60, fn. 3). For numerical assumptions, see Table 13 (p. 110).

² The two sets of assumptions for 1968 about GNP and price changes are from the Brookings Report (p. 215). The assumption about the increase in the Rest of the World's "autonomous foreign exchange receipts" is explained in the following footnote.

³ For a definition of "autonomous foreign exchange receipts" of the Rest of the World, see Table 4, footnote 3. The assumed increases in this item are based partly on the increases in the flow of capital and aid to the Rest of the World estimated in the Brookings Report (+\$3.6 billion from 1961 to 1968), and partly on the authors' estimate of the deterioration (-) of the Rest of the World's net service balance with Western Europe (-\$1.0 billion from 1961 to 1968) and on an assumed figure for the increase (-) in foreign exchange reserves of the Rest of the World during 1968 (-\$0.3 billion). The assumed increase in autonomous foreign exchange receipts from 1962 to 1964 is large relative to that from 1961 to 1968 because of the very low value of this variable in 1962 compared with 1961.

and alternative assumptions, respectively. The projected balances for Western Europe and the United States add to the assumed amounts of the Rest of the World's capital and aid receipts less reserve accumulation.

TABLE 6. U.S. CURRENT ACCOUNT BALANCE: ACTUAL, 1961 AND 1962, AND PROJECTED, 1964 AND 1968

(In billions of current U.S. dollars)

	Actual		Projected		
	1961	1962	1964	1968	
				"Initial" Assump- tions	"Alter- native" Assump- tions
Current account balance ¹	8.2	7.4	8.3	10.0	9.2
Exports of goods and services ¹					
Merchandise exports					
To Western Europe	6.8	7.1	7.5	9.2	8.5
To Rest of World	13.1	13.4	15.3	20.0	18.9
	19.9	20.5	22.8	29.2	27.4
Service receipts					
From Western Europe	2.2	2.5	2.5	3.2	3.0
From Rest of World	5.6	6.0	6.7	8.4	8.1
	7.8	8.5	9.2	11.6	11.1
Total receipts	27.7	29.0	32.0	40.8	38.5
Imports of goods and services ¹					
Merchandise imports					
From Western Europe	4.0	4.5	5.2	7.3	6.8
From Rest of World	10.5	11.6	12.5	15.4	14.8
	14.5	16.1	17.7	22.6	21.6
Service payments					
To Western Europe	2.5	2.6	2.9	3.9	3.7
To Rest of World	2.6	2.8	3.2	4.3	4.1
	5.1	5.4	6.1	8.2	7.8
Total payments	19.6	21.5	23.7	30.8	29.3

¹ Excluding military transactions and expenditures, and miscellaneous government services. (See also Table 3, p. 71.)

The analysis of these computed changes by type of "cause" is perhaps more interesting than the projections themselves. The separate elements of the computed changes in the U.S. current account balance are listed in Table 8. The reason for choosing 1961 as the base period for the computations in this table is twofold: first, this is the year chosen as the base period in the Brookings Report; second, the current account balance for 1961 computed from the model is, by coincidence, almost exactly equal to the actual balance in that year, a circumstance which facilitates the presentation. It is found that the effect of the assumed growth in Western European GNP largely offsets that of the

TABLE 7. CURRENT ACCOUNT BALANCES OF THE THREE REGIONS:
ACTUAL, 1961, AND PROJECTED, 1964 AND 1968*(In billions of current U.S. dollars)*

	1961, Actual	1964, Projected	1968, Projected	
			"Initial" Assumptions	"Alternative" Assumptions
Rest of World	-6.9	-7.0	-10.2	-10.2
United States ¹	+4.5	+4.6	+6.2	+5.4
Endogenous items	+8.2	+8.3	+10.0	+9.2
Exogenous items	-3.7	-3.7	-3.8	-3.8
Western Europe ¹	+2.4	+2.4	+4.0	+4.8
Endogenous items	-4.5	-5.6	-4.0	-3.2
Exogenous items	+6.9	+8.0	+8.0	+8.0

¹ Net exports of goods and services as given in the national income accounts, including items not estimated in the model (exogenous items).

assumed increase in U.S. GNP, leaving only a comparatively small deterioration in the U.S. current account balance that is due to income effects. Price effects account for a small improvement in the projection to 1964 and in that to 1968 under the alternative assumptions, but for a somewhat larger improvement in the projection to 1968 under the initial assumptions. According to these computations, projected changes in the U.S. investment position (net) result in appreciable improvements in the U.S. current account, and so does the assumed increase between 1961 and 1968³⁴ in the "autonomous foreign exchange receipts" of the Rest of the World.

In Table 9, the projected changes in the U.S. current account balance and its major components resulting from the application of the revised model are compared with those in the Brookings Report. The two sets of projections correspond more closely under the alternative assumptions than under the initial assumptions. Under the initial assumptions, the values for projected exports of goods and services are lower, and the values for projected imports of goods and services are higher, in the revised model than in the Brookings Report. Under the alternative assumptions, the differences in the two sets of projections are negligible.

The Brookings Report makes allowance for the effect on U.S. exports of increased discrimination against U.S. dollar goods in the European

³⁴ It is assumed that the Rest of the World's "autonomous foreign exchange receipts" decline somewhat from 1961 to 1964. From 1961 to 1962, they declined by \$2.7 billion, and their rising trend from 1962 on, reflected in the Brookings assumptions, is not so strong as to justify the expectation of full recovery to the 1961 level by 1964.

TABLE 8. U.S. CURRENT ACCOUNT BALANCE: ANALYSIS OF COMPUTED CHANGES FROM 1961 TO 1964 AND FROM 1961 TO 1968

(In billions of current U.S. dollars)

	1961 to 1964	1961 to 1968	
		"Initial" Assumptions	"Alternative" Assumptions
Computed change in U.S. current account balance ¹	0	+1.8	+1.0
Effect of change in ²			
U.S. real GNP	-2.4	-6.5	-5.4
W.E. real GNP	+2.1	+5.2	+4.5
U.S. inventory investment	-0.1	-0.2	-0.2
W.E. inventory investment ³	—	—	—
Income and inventory effects	-0.4	-1.5	-1.1
U.S. GNP prices	-0.4	-1.2	-1.2
W.E. GNP prices	+0.9	+2.2	+1.2
U.S. export prices	-0.1	-0.2	-0.2
W.E. export prices	+0.2	+0.7	+0.5
Price effects	+0.6	+1.5	+0.3
U.S. investment position (net)	+0.3	+0.7	+0.7
R.O.W. "autonomous foreign exchange receipts" ⁴	-0.5	+1.0	+1.0

¹ Excluding military transactions and expenditures, and miscellaneous government services. (See also Table 3, p. 71.)

² Assumed changes are given in Table 5 (p. 78.)

³ The assumed change in Western Europe's inventory investment is too small to produce effects in excess of \$0.05 billion.

⁴ For definition, see Table 4 (fn. 3). See also page 80 (fn. 34).

Economic Community (EEC). In order to make the results of the Brookings Report and those obtained from an application of the revised model comparable, the last line of Table 9 shows the change in the current account balance projected in the Brookings Report, excluding the allowance for increased EEC discrimination. Under the initial assumptions, the improvement in the U.S. current account projected by the Brookings group exceeds the improvement computed from the revised model by \$2.6 billion. Under the alternative assumptions, this excess is only \$0.8 billion. These discrepancies are accounted for by a number of differences in approach, in the values of the coefficients of the two versions of the model, and in assumptions about variables other than incomes and prices. A rough quantitative allocation of these discrepancies to the various sources is given in Table 10.

TABLE 9. PROJECTED CHANGES FROM 1961 TO 1968 IN U.S. CURRENT ACCOUNT:
COMPARISON OF BROOKINGS REPORT AND REVISED MODEL (MODEL 3)*(In billions of current U.S. dollars)*

	"Initial" Assumptions		"Alternative" Assumptions	
	Brookings Report (1)	Revised Model (2)	Brookings Report (3)	Revised Model (4)
Exports of goods and services ¹				
Merchandise exports ¹	+11.2	+9.3	+7.6	+7.5
Service receipts ²	+3.0	+3.8	+3.0	+3.3
Total receipts	+14.3	+13.1	+10.6	+10.8
Imports of goods and services ³				
Merchandise imports	+8.9	+8.1	+7.9	+7.1
Service payments ^{2, 3}	+1.6	+3.1	+1.5	+2.7
Total payments	+10.5	+11.2	+9.4	+9.7
Current account balance ^{1, 3}	+3.8	+1.8	+1.2	+1.0
Memorandum				
Allowance for "EEC discrimination"	-0.6	— ⁴	-0.6	— ⁴
Current account balance without EEC allowance ⁴	+4.4	+1.8	+1.8	+1.0

Sources: Columns 2 and 4 are based on Table 6; columns 1 and 3, on the Brookings Report (cited above, p. 60, fn. 3), Appendix Table 10, p. 289.

¹ Excluding exports transferred under military grants.

² Including interest and dividend account.

³ Excluding military expenditures: the Brookings Report projects reductions in military expenditures of \$0.4 billion and \$0.5 billion under the initial and alternative assumptions, respectively. Including this item, the improvement in the current account balance projected in the Brookings Report is thus \$4.2 billion and \$1.7 billion under the two sets of assumptions.

⁴ See text, pages 80-81.

Only the first of these discrepancies is accounted for by differences between the income and price elasticities of merchandise trade estimated in the revised model and those used by the Brookings group. In particular, the improvement in the U.S. current account that was due to price effects computed from Model 3 (+\$1.5 billion and +\$0.3 billion, respectively, under the two sets of assumptions)³⁵ is smaller than that projected in the Brookings Report (+\$4.3 billion and +\$1.4 billion, respectively).³⁶ This difference, particularly striking under the initial assumptions, stems chiefly from a larger Western European

³⁵ From Table 8.

³⁶ Computed from data in Brookings Report, Appendix Table 9, p. 228.

TABLE 10. U.S. CURRENT ACCOUNT PROJECTIONS FOR 1968:
PRINCIPAL SOURCES OF DIFFERENCES BETWEEN THE
BROOKINGS REPORT AND THE REVISED MODEL (MODEL 3)

(In billions of current U.S. dollars)

	"Initial" Assumptions	"Alternative" Assumptions
Excess of improvement in U. S. current account balance as projected in Brookings Report over that projected from Model 3 ¹	2.6	0.8
Accounted for by		
Differences in income and price elasticities of merchandise trade	1.4	-0.6
Differences in assumptions about size and effect of Rest of World's "autonomous foreign exchange receipts" ²	0.7	0.7
Differences in projections of service receipts and payments	0.7	0.9
Residual difference	-0.2	-0.2

¹ From Table 9.

² See Table 5 (fn. 3) and text, pages 74-75.

price elasticity of demand for merchandise imports from the United States assumed in the Brookings Report (-2.5, compared with -1 estimated in the model). On the other hand, income effects account for a somewhat smaller deterioration of the U.S. current balance in Model 3 than in the computations in the Brookings Report. The second discrepancy shown in Table 10 can be ascribed in large measure to the difference in the net total of the Rest of the World's "autonomous foreign exchange receipts" (corrected for reserve changes) assumed in the present study and in the Brookings Report. The projections to 1968 shown in this paper do, while the Brookings Report does not, make allowance (1) for an increase (by \$1.0 billion, over 1961), in accordance with recent trends, of the Rest of the World's net deficit with the two industrial regions on various service accounts not separately estimated in the model, and (2) for an assumed annual increase (of \$0.3 billion) in the Rest of the World's foreign exchange holdings at the approximate annual rate at which this group of countries has accumulated foreign exchange reserves over the seven-year period ended in 1962. These two items imply a reduction of \$1.3 billion in the Rest of the World's expenditure on imports of goods and services compared with what it would otherwise have been; the U.S. share in this reduction (45 per cent, or \$0.6 billion) accounts for the largest part of the difference between the two projections given in Table 10

under this heading.³⁷ The third difference shown in Table 10 is due, at least in part, to the fact that the Brookings Report confines its projection of receipts and payments for service transactions to those between the United States and Western Europe, and assumes that the services balance of the United States with the Rest of the World remains unchanged.

The material presented in this section should not be interpreted as entailing criticism of the projections made in the Brookings Report. The Brookings group has studied the individual components of the U.S. current account balance with great care, and has had the benefit of advice from many agencies of the U.S. Government. Such projections can hardly fail to be in many ways superior to a more mechanical extrapolation of past relations of the type reported in this paper. It is, in fact, surprising that the two sets of projections correspond rather closely, especially the projections under the "alternative" assumptions. From the material presented in this section one would, nevertheless, be inclined to draw the conclusion that the Brookings projections of the U.S. current account balance are somewhat optimistic. This is especially true for the projection based on the initial assumptions; even if the validity of these assumptions is stipulated, the present study would lead one to expect an improvement in the U.S. current account which is some \$2-3 billion less than that projected in the Brookings Report. The corresponding projection from Model 3 under the alternative assumptions is lower than the Brookings estimate by about \$1 billion or slightly less. Both these differences, but especially the second one, are within the margin of error that must be expected in this type of projection. Since the margin of error is large relative to the size of the projected balance, any usefulness which such an exercise may have for policy formulation must be sought in what is learned from the study about the structure of the economic system in question rather than in the projected values themselves.

³⁷ The differences in the two sets of projections that are due to the assumptions in the Brookings Report about the effects of tying foreign aid are not very large. The Brookings Report estimates that nearly all the assumed increase of \$2.4 billion in U.S. aid programs will be reflected in the U.S. current account as a rise of exports, but that only a negligible fraction of the increase of \$1.5 billion in Western European foreign aid will be so reflected. In the model presented in this paper, on the other hand, it is assumed that U.S. exports will show an increase equal to 45 per cent of the aggregate increase in U.S. and Western European foreign aid taken together. On this score alone, the Brookings projections of U.S. exports would be only some \$0.2 billion higher than those of Model 3. This accident of the figures should not detract from the fact that the explicit consideration in the Brookings Report of the geographic distribution of aid and capital funds, in respect of both source and recipient, is in principle superior to the rough global allocation implied in the three-region trade model discussed in this paper.

APPENDICES

The appendices present material of a technical nature (of interest chiefly to economists engaged in research in this field), and also some details about the model and its application, with which it was thought undesirable to burden the text. Appendix I lists and discusses the structural equations; II presents the multipliers of the model; III gives further detail about the projections; and IV consists of a tabulation of the data used in the study and a description of the sources of the data.

Before the structural equations are presented, a general comment about the method of estimation is in order. The equations have been estimated by the ordinary (single stage) least-squares method; the problem of the so-called least-squares bias in simultaneous equation models has been ignored.³⁸ The relative merits of various estimation methods for such models, when the number of observations is small, are still a matter of dispute.³⁹ Briefly, it is believed that the single stage least-squares method may give coefficient estimates which, though biased, have a smaller variance around their (biased) expected value than some of the principal alternative estimation methods.⁴⁰ The smaller variance of the parameter estimates compensates to some extent for the undesirable property of bias. At any rate, it is unlikely that the least-squares bias is large enough to invalidate the general conclusions drawn from the model, or to cast substantial additional doubt on the projections, given the considerable uncertainty surrounding the assumptions about the values of the exogenous variables at various future dates.

I. The Structural Equations

The model consists of 29 structural equations, of which 3 are identities. The coefficients of the equations have been estimated from annual data, generally for the 15-year period 1948-62. Values for 1962 were not available for Western Europe's GNP and related data when the computations were carried out, and in some equations one, two, or three of the early observations (1948-50) have been omitted; the fitting period is indicated next to the title of each equation. In the presentation below, the standard errors of the coefficients are given in parentheses below the point estimates. \bar{R}^2 denotes the coefficient of determination adjusted for degrees of freedom; s gives the standard error of estimate (root-mean-square error), corrected for the degrees of freedom, as a per cent of the sample mean of the dependent variable; and d denotes the Durbin-Watson test statistic for serial correlation; a double asterisk (**) attached to the d value indicates the presence of serial

³⁸ Except in the method of estimating the consumption functions (see Appendix I).

³⁹ See, for example, F. V. Waugh, "The Place of Least Squares in Econometrics," *Econometrica*, Vol. 29 (1961), pp. 386-96, and F. M. Fisher, "Comment," and F. V. Waugh, "Further Comment," *Econometrica*, Vol. 30 (1962), pp. 565-69; also the contributions by C. F. Christ, C. Hildreth, T. C. Liu, and L. R. Klein to "A Symposium on Simultaneous Equation Estimation," *Econometrica*, Vol. 28 (1960), pp. 835-71.

⁴⁰ See J. Johnston, *Econometric Methods* (New York, 1963), Chapter 10, for an excellent summary of recent research on this problem.

correlation (at the 95 per cent confidence level); a single asterisk (*) indicates that the Durbin-Watson test is inconclusive. Subscripts 1, 2, and 3 refer to the three regions: United States = 1; Western Europe (European OECD countries) = 2; Rest of the World = 3.

LIST OF VARIABLES

The data are shown, and the sources are described, in Tables 17-25 (pp. 116-22).

Jointly dependent variables

- Y_i = GNP, in current prices and 1954 exchange rates, in billions of U.S. dollars ($i = 1, 2$)
- C_i = Consumption, in current prices and 1954 exchange rates, in billions of U.S. dollars ($i = 1, 2$)
- P_{xi} = Export price index in U.S. dollars (1954 = 1)
- M_{ij} = Value of merchandise imports into region j from region i , in billions of U.S. dollars
- F_{ij} = Payments for transportation services by region j to region i , in billions of U.S. dollars
- V_{ij} = Payments for tourist travel services by region j to region i , in billions of U.S. dollars
- D_{ij} = Payments of interest and dividends by region j to region i , in billions of U.S. dollars
- O_{ij} = Payments for other private services by region j to region i , in billions of U.S. dollars
- $S_{ij} = F_{ij} + V_{ij} + D_{ij} + O_{ij}$ (not used in the basic model)
- N_1 = U.S. current account balance, excluding grant-financed military expenditures and government services (not used in the basic model)

Exogenous variables

- A_i = Fixed investment plus government expenditure on goods and services, in current prices and 1954 exchange rates, in billions of U.S. dollars ($i = 1, 2$)
- H_i = Change in inventories, in current prices and 1954 exchange rates, in billions of U.S. dollars ($i = 1, 2$)
- P_i = Implicit GNP price deflator (1954 = 1; $i = 1, 2$)
- I_{ij} = Investment position of region j in region i , at year end, i.e., total foreign assets, including short-term and nonprivate, held by region j in region i , in billions of U.S. dollars
- r_2 = Implicit exchange rate of European OECD countries vis-à-vis U.S. dollar (1954 = 1); i.e., OECD countries' GNP in current U.S. dollars and 1954 exchange rates divided by GNP in current U.S. dollars and current exchange rates (a rise in r_2 signifies a depreciation by Western Europe)
- K_3 = Net capital imports into the Rest of the World, in billions of U.S. dollars

B_i = Autonomous current account balance, i.e., net exports of goods and services from national income accounts less balance of endogenous current account items ($i = 1, 2$)

M_{31}^* = "Extraordinary" imports of automobiles and steel from Western Europe into the United States, in billions of U.S. dollars in 1954 prices. This variable is used as an adjustment to M_{21} (U.S. imports from Western Europe) and represents (1) the excess (for 1956-60) of automobile imports above a freehand trend line connecting automobile imports for 1955 and for 1961, and (2) an independent estimate for extraordinary steel imports at the end of 1959 and beginning of 1960 as a result of the steel strike in the United States.

t = Calendar year minus 1947

W_e = Korean-war "dummy" variable for consumption function; takes the value 1.0 in 1951, 1952, and 1953; in other years, it is zero.

W_p = Korean-war "dummy" variable for equation of export prices of primary products; takes the values of 1.0 in 1951 and of 0.5 in 1952; in other years, it is zero.

EQUATIONS

Region 1: United States

(1) U.S. GNP identity

$$Y_1 = C_1 + M_{12} + M_{13} + F_{12} + F_{13} + V_{12} + V_{13} + D_{12} + D_{13} \\ + O_{12} + O_{13} - M_{21} - M_{31} - F_{21} - F_{31} - V_{21} - V_{31} - D_{21} \\ - D_{31} - O_{21} - O_{31} + B_1 + H_1 + A_1$$

The GNP identity is stated in the conventional way, with GNP equal to the sum of consumption, domestic fixed and inventory investment, government expenditure on goods and services, and net exports of goods and services; but the last item is separated into the components individually estimated in the model and a residual item (B_1).

(2) U.S. consumption function (1948-62)

(a) Estimated:

$$\frac{C_1}{P_1} = 1.23 \frac{Y_1 - C_1}{P_1} - 24.8 W_e + 91.2 \\ (0.07) \quad (4.1) \quad (9.7) \\ \bar{R}^2 = 0.96 \quad \bar{s} = 2.6\% \quad d = 1.00^*$$

(b) Transformed:

$$\frac{C_1}{P_1} = 0.552 \frac{Y_1}{P_1} - 11.1 W_e + 40.9$$

Consumption is estimated as a function of GNP excluding consumption, and a dummy variable reflecting the lower level of consumption, partly as a consequence of higher personal tax rates, during the Korean war. The equation is then algebraically transformed into the form shown under (b), above.

- (3) U.S. merchandise imports from Western Europe (1951-62)

$$\frac{M_{21}}{P_{22}} - M_{21}^* = 0.0144 \frac{Y_1 - H_1}{(0.0035) P_1} + 0.0427 \frac{H_1}{(0.0141) P_1} + 3.67 \frac{P_1}{(1.93) P_{22}} - 6.78 \quad (0.82)$$

$$\bar{R}^2 = 0.97 \quad \bar{s} = 5.5\% \quad d = 1.48^*$$

Elasticities at the means of the respective variables:

With respect to income (final demand): 2.0

With respect to deflated European export prices (P_{22}/P_1): -1.3

The price coefficient is not significant at the 5 per cent level. As indicated above, "extraordinary" imports, M_{21}^* , of automobiles (during 1956-60) and steel (during and immediately following the 1959 steel strike), both in 1954 prices, have been subtracted from (M_{21}/P_{22}) for purposes of estimating this equation. M_{21}^* is regarded as an exogenous variable. See Table 25 (p. 122), column 5, and Chart 2 (p. 94).

- (4) U.S. merchandise imports from Rest of the World (1948-62)

$$\frac{M_{21}}{P_{23}} = 0.0197 \frac{Y_1 - H_1}{(0.0031) P_1} + 0.101 \frac{H_1}{(0.021) P_1} + 5.27 \frac{P_1}{(1.35) P_{23}} - 3.93 \quad (0.66)$$

$$\bar{R}^2 = 0.97 \quad \bar{s} = 3.0\% \quad d = 1.70$$

Elasticities at the means of the respective variables:

With respect to income (final demand): 0.8

With respect to deflated Rest of the World export prices (P_{23}/P_1): -0.6

- (5) U.S. payments to Western Europe for transportation services (1948-62)

$$F_{21} = 0.204 M_{21} + 0.120 \quad (0.017) \quad (0.051)$$

$$\bar{R}^2 = 0.91 \quad \bar{s} = 11.7\% \quad d = 1.56$$

- (6) U.S. payments to Rest of the World for transportation services (1948-62)

$$F_{21} = 0.131 M_{21} - 0.541 \quad (0.016) \quad (0.148)$$

$$\bar{R}^2 = 0.83 \quad \bar{s} = 14.1\% \quad d = 1.06^*$$

- (7) U.S. payments to Western Europe for travel (1948-62)

$$V_{21} = 0.00308 C_1 - 0.404 \quad (0.00018) \quad (0.049)$$

$$\bar{R}^2 = 0.95 \quad \bar{s} = 10.0\% \quad d = 1.29$$

- (8) U.S. payments to Rest of the World for travel (1950-62)

$$V_{21} = 0.00466 C_1 - 0.427 \quad (0.00017) \quad (0.048)$$

$$\bar{R}^2 = 0.98 \quad \bar{s} = 3.7\% \quad d = 0.71^{**}$$

- (9) U.S. payments to Western Europe on investment income account (1948-62)

$$D_{21} = 0.0184I_{12} + 0.0641$$

(0.0015) (0.0258)

$$\bar{R}^2 = 0.92 \quad \bar{s} = 10.3\% \quad d = 1.73$$

- (10) U.S. payments to Rest of the World on investment income account (1948-62)

$$D_{31} = 0.0334I_{13} - 0.163$$

(0.0026) (0.032)

$$\bar{R}^2 = 0.93 \quad \bar{s} = 11.0\% \quad d = 1.75$$

- (11) U.S. payments to Western Europe for other private services (1949-62)

$$O_{21} = 0.000644Y_1 - 0.098$$

(0.000066) (0.027)

$$\bar{R}^2 = 0.88 \quad \bar{s} = 12.8\% \quad d = 1.30$$

- (12) U.S. payments to Rest of the World for other private services (1948-62)

$$O_{31} = 0.0163(M_{13} + M_{31}) - 0.174$$

(0.0022) (0.045)

$$\bar{R}^2 = 0.78 \quad \bar{s} = 19.4\% \quad d = 0.65^{**}$$

The independent variable is the total of merchandise trade between the United States and Rest of the World.

- (13) U.S. export supply price (1949-62)

$$P_{21} = 1.69P_1 + 0.00472 \frac{M_{12} + M_{13}}{P_{21}} - 0.0253t - 0.580$$

(0.23) (0.00258) (0.0052) (0.196)

$$\bar{R}^2 = 0.97 \quad \bar{s} = 1.1\% \quad d = 1.71$$

The implied price elasticity of supply, at the mean of the variables, is +15.

The coefficient of the export volume is not significant at the 5 per cent level.

Region 2: Western Europe (W.E.)

- (14) W.E. GNP identity

$$Y_2 = C_2 + M_{21} + M_{23} + F_{21} + V_{21} + D_{21} + O_{21} - M_{12} - M_{32} \\ - F_{12} - V_{12} - D_{12} - O_{12} + B_2 + H_2 + A_2$$

See note to equation (1). Data on Western Europe's payments to, and receipts from, the Rest of the World for services are not available. Western Europe's net receipts on service account are, therefore, included in the residual item, B_2 .

(15) W.E. consumption function (1948-61)

(a) Estimated:

$$\frac{C_2}{P_2} = 1.11 \frac{Y_2 - C_2}{P_2} - 3.97 W_e + 59.5$$

(0.02) (0.91) (1.6)

$$\bar{R}^2 = 0.996 \quad \bar{s} = 0.9\% \quad d = 2.52$$

(b) Transformed:

$$\frac{C_2}{P_2} = 0.526 \frac{Y_2}{P_2} - 1.88 W_e + 28.2$$

See equation (2). The dummy variable, W_e , improves the fit of this equation, though probably for reasons different from those discussed in connection with equation (2).

(16) W.E. merchandise imports from United States (1950-61)

$$\frac{M_{12}}{P_{21}} = 0.0179 \frac{Y_2 - H_2}{P_2} + 0.413 \frac{H_2}{P_2} + 4.56 \frac{P_2}{r_2 P_{21}} - 5.36$$

(0.0070) (0.104) (5.29) (4.15)

$$\bar{R}^2 = 0.87 \quad \bar{s} = 8.8\% \quad d = 1.68$$

Elasticities at the means of the respective variables:

With respect to income (final demand): 0.9

With respect to deflated U.S. export prices corrected for exchange rates ($P_{21}r_2/P_2$): -1.0

The price coefficient and the constant term are not significant at the 5 per cent level. The data for M_{12} are not OECD reported imports from United States, but U.S. balance of payments data for exports to Western Europe. The correction for exchange rate variations (r_2) is necessary since P_2 is the implicit GNP price deflator derived from GNP data (in current and 1954 prices) expressed in 1954 exchange rates.

(17) W.E. merchandise imports from Rest of the World (1949-61)

$$\frac{M_{22}}{P_{22}} = 0.0663 \frac{Y_2 - H_2}{P_2} + 0.393 \frac{H_2}{P_2} + 5.95 \frac{P_2}{r_2 P_{22}} - 4.77$$

(0.0045) (0.077) (1.29) (0.78)

$$\bar{R}^2 = 0.99 \quad \bar{s} = 1.7\% \quad d = 2.38^*$$

Elasticities at the means of the respective variables:

With respect to income (final demand): 0.9

With respect to deflated Rest of World export prices corrected for exchange rates ($P_{22}r_2/P_2$): -0.4On exchange rate correction (r_2), see note to equation (16).

(18) W.E. payments to United States for transportation services (1948-62)

$$F_{12} = 0.0771 M_{12} + 0.279$$

(0.0095) (0.049)

$$\bar{R}^2 = 0.82 \quad \bar{s} = 7.6\% \quad d = 1.86$$

- (19) W.E. payments to United States for travel (1951-61)

$$V_{12} = 0.000597C_2 - 0.030$$

$$(0.000071) \quad (0.012)$$

$$\bar{R}^2 = 0.88 \quad \bar{s} = 12.5\% \quad d = 0.96^*$$

- (20) W.E. payments to United States on investment income account (1948-62)

$$D_{12} = 0.0616I_{21} - 0.483$$

$$(0.0040) \quad (0.065)$$

$$\bar{R}^2 = 0.94 \quad \bar{s} = 10.9\% \quad d = 2.18$$

- (21) W.E. payments to United States for other private services (1949-61)

$$O_{12} = 0.00180Y_2 - 0.141$$

$$(0.00011) \quad (0.026)$$

$$\bar{R}^2 = 0.96 \quad \bar{s} = 9.7\% \quad d = 0.80^{**}$$

- (22) W.E. export supply price (1948-61)

$$P_{22} \cdot r_2 = 2.18P_2 + 0.0255 \frac{M_{21} + M_{23}}{P_{22}} - 0.0899t - 0.937$$

$$(0.21) \quad (0.0067) \quad (0.0106) \quad (0.163)$$

$$\bar{R}^2 = 0.98 \quad \bar{s} = 1.5\% \quad d = 1.74$$

The implied price elasticity of export supply, at the means of the respective variables, is +2.5.

The explained variable is the export price in "local" currency, i.e., the export price in U.S. dollars, P_{22} , multiplied by the implicit W.E. exchange rate index r_2 . See also note to equation (16).

Region 3: Rest of the World (R.O.W.)

- (23) R.O.W. balance of payments identity

$$M_{13} + M_{23} + F_{13} + V_{13} + D_{13} + O_{13} - M_{31} - M_{32} - F_{31} - V_{31} \\ - D_{31} - O_{31} + B_1 + B_2 = K_3$$

The items to the left of the equality sign make up the region's consolidated current account balance, including the net balance with the United States and Western Europe of items not separately explained in the model ($B_1 + B_2$); see notes to equations (1) and (14). As a result of this definition, the current account balance of all three regions taken together is zero. The right-hand side of equation (23), K_3 , represents capital inflows, including foreign aid, plus any decumulation, or minus any accumulation, of gold and foreign exchange reserves of the Rest of the World. K_3 , B_1 , and B_2 are assumed to be exogenously determined.

- (24) U.S. share of R.O.W. merchandise imports from United States and Western Europe (1949-62)

$$\frac{M_{13}/P_{x1}}{(M_{13}/P_{x1}) + (M_{23}/P_{x2})} = -0.505 \frac{P_{x1}}{P_{x2}} + 0.940$$

$$(0.063) \quad (0.063)$$

$$\bar{R}^2 = 0.83 \quad \bar{s} = 3.0\% \quad d = 1.81$$

Elasticity of substitution of U.S. for W.E. goods in R.O.W. imports, at the means of the variables: -1.2

The equation implies that when the ratio of U.S. to W.E. export prices is unity, as in the index base year 1954, 43.5 per cent of R.O.W. imports would come from the United States and 56.5 per cent from Western Europe. The elasticity of substitution is defined as the proportionate change in the ratio of U.S. to W.E. exports to the Rest of the World, divided by the proportionate change in the ratio of U.S. to W.E. export prices.

- (25) R.O.W. payments to United States for transportation services (1948-62)

$$F_{13} = 0.0686 M_{13} + \frac{0.0965}{(0.0091)}$$

$$\bar{R}^2 = 0.80 \quad \bar{s} = 8.4\% \quad d = 0.91^{**}$$

The constant term is not significant at the 5 per cent level.

- (26) R.O.W. payments to United States for travel (1948-62)

$$V_{13} = 0.0357(M_{31} + M_{32}) - \frac{0.331}{(0.0032)} \quad (0.086)$$

$$\bar{R}^2 = 0.90 \quad \bar{s} = 9.8\% \quad d = 1.75$$

The explanatory variable is the value of total R.O.W. exports.

- (27) R.O.W. payments to United States on investment income account (1948-62)

$$D_{13} = 0.0393I_{31} + 0.0344(M_{31} + M_{32}) - \frac{0.034}{(0.0076)} \quad (0.0198) \quad (0.320)$$

$$\bar{R}^2 = 0.96 \quad \bar{s} = 6.6\% \quad d = 1.02^*$$

R.O.W. interest and dividend payments depend, apart from the book value of U.S. investment, on the value of total R.O.W. exports. The coefficient of R.O.W. exports and the constant term are not significant at the 5 per cent level.

- (28) R.O.W. payments to United States for other private services (1948-62)

$$O_{13} = 0.0365 \frac{M_{31} + M_{32}}{P_{23}} - \frac{0.405}{(0.0015)} \quad (0.041)$$

$$\bar{R}^2 = 0.98 \quad \bar{s} = 5.4\% \quad d = 2.36$$

The explanatory variable is the volume of total R.O.W. exports.

- (29) R.O.W. export supply price (1948-62)

$$P_{23} = 0.0297 \frac{M_{31} + M_{32}}{P_{23}} + 0.174W_p - \frac{0.00229t^2}{(0.0072)} + \frac{0.361}{(0.00053)} \quad (0.147)$$

$$\bar{R}^2 = 0.88 \quad \bar{s} = 2.2\% \quad d = 1.57^*$$

The implied price elasticity of export supply, at the means of the respective variables, is +1.2.

The trend term in this equation involves the squared value of t ; the coefficient of t itself was found not significantly different from zero. The dummy variable, W_p , corrects for the disturbance of primary product prices at the beginning of the Korean war.

In addition to these 29 equations, the following definitions are used in processing the model:

(a) The balance, N_1 , of those U.S. current account items which are explained in the model

$$N_1 = M_{12} + M_{13} + S_{12} + S_{13} - M_{21} - M_{31} - S_{21} - S_{31}$$

(b) U.S. receipts and payments on private service account

$$S_{12} = F_{12} + V_{12} + D_{12} + O_{12}$$

$$S_{13} = F_{13} + V_{13} + D_{13} + O_{13}$$

$$S_{21} = F_{21} + V_{21} + D_{21} + O_{21}$$

$$S_{31} = F_{31} + V_{31} + D_{31} + O_{31}$$

COMMENTS ON THE EQUATIONS

Import functions

From the point of view of the operation of the model, the most important equations are the four functions explaining imports into the two industrial regions, equations (3), (4), (16), and (17). In all four, inventory changes have been found to be an important explanatory variable in addition to "final demand" (that is, GNP less inventory changes). The coefficients of final demand and inventory changes are significantly different from zero at the 95 per cent confidence level in all four equations. The coefficients attaching to the price ratios⁴¹ are significant only in the two demand functions of U.S. and Western European imports from the Rest of the World. These two equations also show, in general, a better fit to the sample data than do the two equations of demand in the two industrial regions for imports from one another.

U.S. merchandise imports from Western Europe have been adjusted for "extraordinary" U.S. imports of automobiles and steel. The nature of this adjustment is shown in Chart 2. There is little doubt that the boom in imports of foreign cars during the late 1950's was an unusual experience that should not be allowed to influence the estimated parameters of this equation. For the same reason, an independent estimate of the additional steel imports into the United States at the end of 1959 and beginning of 1960 as a result of the 1959 steel strike has been deducted from U.S. imports from Western Europe. Chart 3 shows actual and computed values, 1951-62, of U.S. merchandise imports from Western Europe—equation (3)—as well as the contributions of the three explanatory variables. While it is possible that supply limitations in Western Europe exerted a depressing influence on U.S. imports from this region in the early part of the sample period, there is no detectable evidence of this in the data. These supply limitations had been overcome to a considerable extent by 1951, the beginning of the sample period for this

⁴¹ For reasons of computational convenience, the price ratios are inverted (price of "substitute" divided by "own" price), in contrast to the customary way of stating them; as a result, the price coefficients are positive.

CHART 2. ADJUSTMENTS OF MERCHANDISE IMPORTS OF THE UNITED STATES FROM WESTERN EUROPE, 1951-62

(In billions of U.S. dollars in 1954 prices)

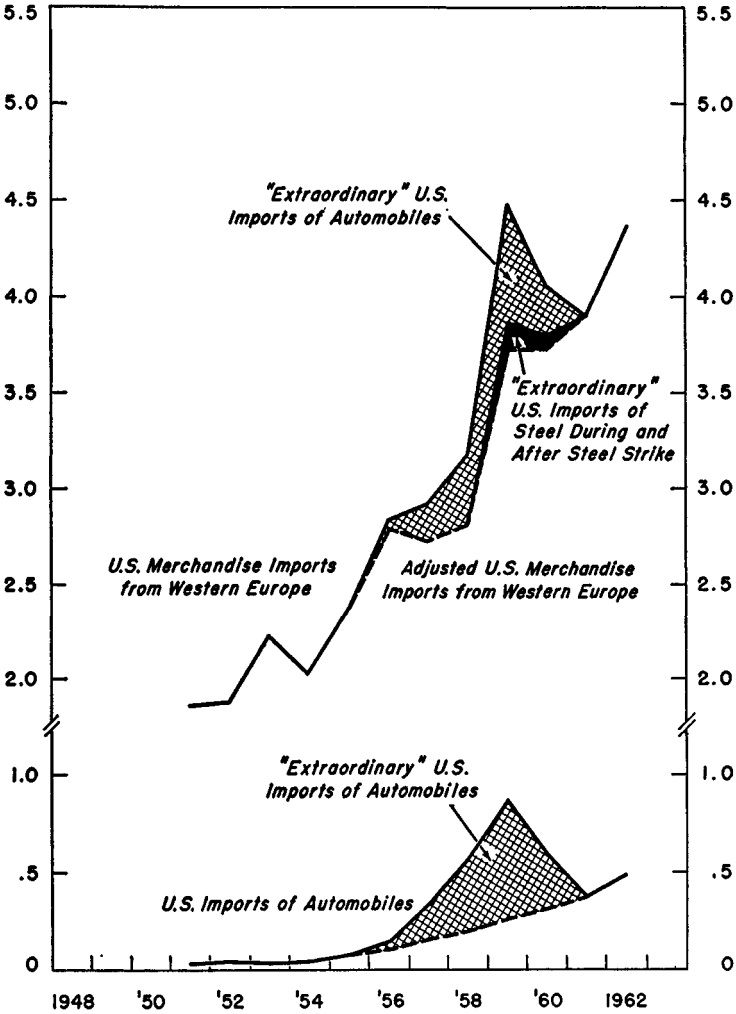
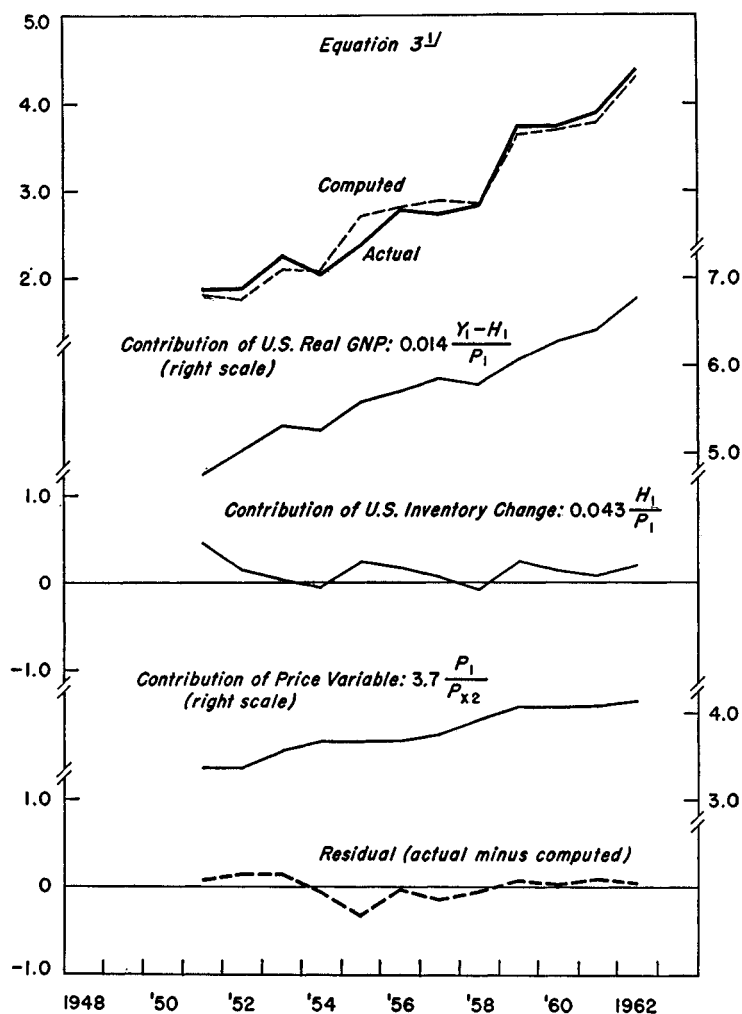


CHART 3. MERCHANDISE IMPORTS (EXCLUDING "EXTRAORDINARY" IMPORTS OF AUTOMOBILES AND STEEL) OF THE UNITED STATES FROM WESTERN EUROPE, 1951-62

(In billions of U.S. dollars in 1954 prices)



¹ Constant term: -6.8

particular equation, and have certainly not continued beyond the middle 1950's. If postwar supply shortages⁴² had caused U.S. imports from Western Europe to be lower than would have been observed in the absence of such shortages, the growth of these imports during the first half of the 1950's should have been more rapid and that in the later part of the 1950's, slower. There is, however, no evidence of such behavior; if anything, the opposite was true.

Chart 4 shows actual and computed values of U.S. merchandise imports from the Rest of the World, equation (4). It is interesting that the largest residual, in both equations (3) and (4), is in 1955, when the rapid recovery from the recession in the United States gives rise to computed values of imports in excess of actual values.

Of the major equations of the model, that for U.S. merchandise exports to Western Europe⁴³—equation (16)—is the least satisfactory from a statistical viewpoint. As can be seen from Chart 5, the effect of final demand is virtually that of a straight-line upward trend, while the variation of imports around such a trend is explained mainly by changes in inventory investment. The coefficient of this latter variable should not be interpreted too literally; it undoubtedly reflects not so much the marginal import content of inventory investment as the influence on imports of short-term variations in industrial production which do not find full expression in the GNP figures. When this equation was fitted, thought was given to the possibility of introducing certain adjustments similar to those made for U.S. imports from Western Europe. These adjustments, which would tend to reduce the residuals found for 1957 and for 1958–59, relate to extraordinary U.S. shipments of petroleum during 1957 following the Suez crisis, and to the deferment during 1958–59 of foreign demand for U.S. aircraft as commercial airlines changed from propeller to jet planes at a time when U.S. commercial jet aircraft were not available. An equation computed with such adjustments did indeed result in a better statistical fit. Unfortunately, the aircraft adjustment had to be very crudely estimated, since it was not possible to isolate U.S. exports of commercial aircraft to Western Europe from the global amount of such exports to all areas. Moreover, although \bar{R}^2 was higher, the estimated regression coefficients were not materially changed in the adjusted version. For these reasons, it was decided to retain the equation in unadjusted form.

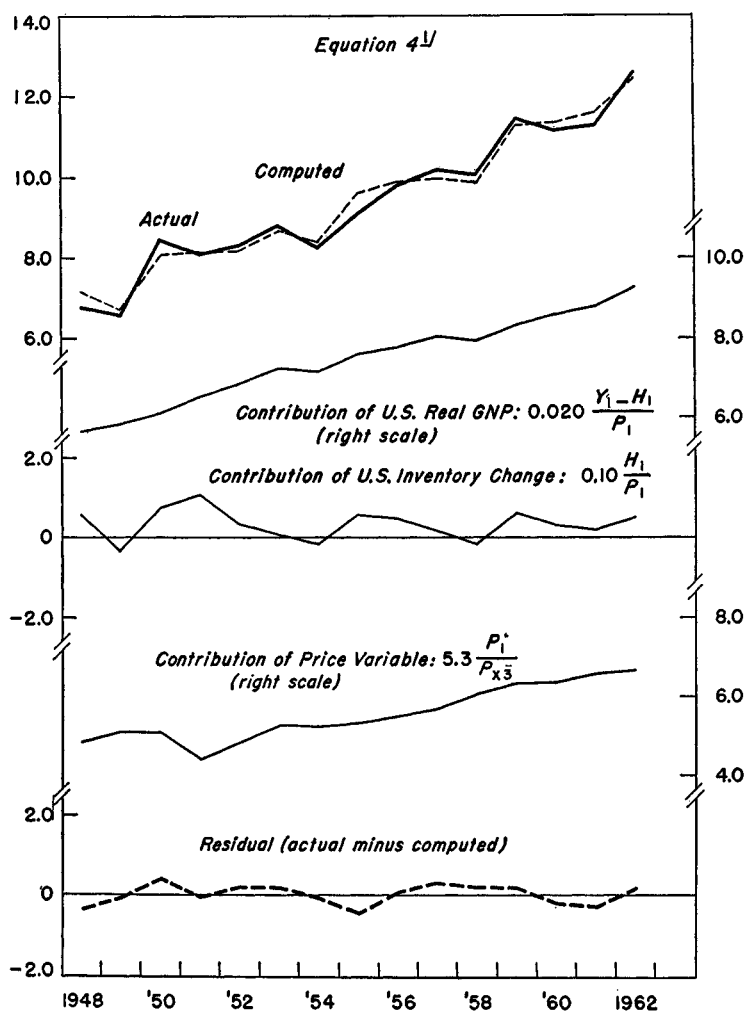
In order to take account of the effect of the extraordinary demands and domestic supply limitations in Europe during the postwar reconstruction period, it had originally been planned to incorporate into this import demand function a variable expressing the progressive import liberalization in Europe, particularly with respect to U.S. dollar goods. There are, however, serious doubts about the appropriateness of the existing index (published in a number of Annual Reports of the Organization for European Economic Cooperation) as a measure of liberalization in the present context. The index shows imports of items on a "free list" as a proportion (by value) of total imports. The effect of liberalization on imports is, therefore, already reflected in the index value,

⁴² Supply limitations are relevant in this context only to the extent that they are not reflected in relatively high export prices, a factor of which the equation takes separate account.

⁴³ According to its logical designation in the model, this equation explains Western Europe's imports from the United States, but the dependent variable in question is in fact taken from the export side of the U.S. balance of payments accounts.

CHART 4. MERCHANDISE IMPORTS OF THE UNITED STATES
FROM THE REST OF THE WORLD, 1948-62

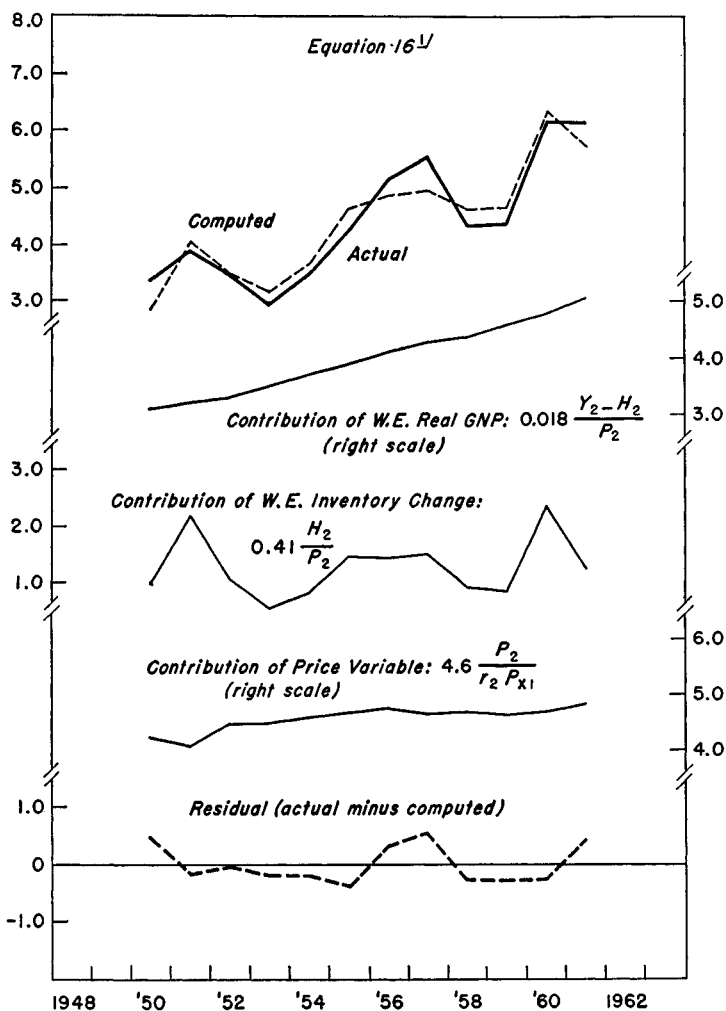
(In billions of U.S. dollars in 1954 prices)



¹ Constant term: -3.9

CHART 5. MERCHANDISE EXPORTS OF THE UNITED STATES
TO WESTERN EUROPE, 1950-61

(In billions of U.S. dollars in 1954 prices)



¹ Constant term: -5.4

and its use as an explanatory variable in the import function would be a questionable procedure. At any rate, a trial computation with this index showed that its coefficient is not statistically significant. From an inspection of the data and the fitted equation, one would be inclined to conclude that the effect of import restrictions in the early postwar years was not to reduce imports below what they would have been (given national income and price levels) in the absence of reconstruction difficulties, but rather to prevent the pressure of extraordinary demand from pushing imports substantially beyond this level. It is likely that import restrictions were reduced at a rate dictated by the pace at which exports could be expanded and at which domestic shortages were overcome. It is true that there can be no assurance that the coefficients of this equation reflect the true responsiveness of consumers and businesses in Western Europe to income and price changes; but the estimated values are not implausible and have, in the absence of persuasive reasons in favor of different ones, been accepted for purposes of the present model. In particular, it is not evident from Chart 5 that the relation of Western Europe's imports from the United States to Western Europe's GNP would have been very different if a shorter and more recent sample period had been chosen, provided that this period did not start from one of the troughs in imports. A similar comment applies to U.S. imports from Western Europe (Chart 3).

The equation for Western Europe's merchandise imports from the Rest of the World, equation (17), fits the data of the sample period extremely well (see Chart 6). Here again, inventory changes explain much of the short-term variation in imports.

For reasons stated in the text, it is interesting to ascertain how these four import equations would be altered if GNP prices were replaced by wholesale prices in the numerator of the relative-price variable in each equation.⁴⁴

The four import functions are as follows (P_{iw} is the wholesale price index of region i):

(3') U.S. merchandise imports from Western Europe (1951-62)⁴⁵

$$\frac{M_{21}}{P_{22}} - M_{21}^* = 0.0181 \frac{Y_1 - H_1}{P_1} + 0.0347 \frac{H_1}{P_1} + 3.70 \frac{P_{1w}}{P_{22}} - 8.20$$

(0.0019) (0.0143) (2.07) (1.58)

$$\bar{R}^2 = 0.97 \quad \bar{s} = 5.6\% \quad d = 1.49^*$$

(4') U.S. merchandise imports from Rest of the World (1948-62)

$$\frac{M_{31}}{P_{23}} = 0.0219 \frac{Y_1 - H_1}{P_1} + 0.0930 \frac{H_1}{P_1} + 6.95 \frac{P_{1w}}{P_{23}} - 6.45$$

(0.0023) (0.0191) (1.57) (1.04)

$$\bar{R}^2 = 0.98 \quad \bar{s} = 2.8\% \quad d = 1.73$$

⁴⁴ For this purpose, an index of wholesale prices of the European OECD countries (excluding Iceland and Luxembourg), weighted by GNP for the years 1953-55, was constructed. Wholesale prices and GNP data are from OECD, *Statistical Bulletins: General Statistics*. The values of the weighted index for the European OECD countries, 1949-62, are as follows (1954 = 1): 0.82, 0.86, 1.02, 1.03, 1.00, 1.00, 1.02, 1.06, 1.10, 1.12, 1.15, 1.16, 1.18, 1.21. U.S. wholesale price data are from U.S. Department of Commerce, *Survey of Current Business*.

⁴⁵ The statistical relation is not improved if the U.S. wholesale price index for commodities other than farm products and foods is used in the numerator of the price ratio instead of the index for all commodities. A marginal improvement is obtained by using the finished goods component of the U.S. wholesale price index; in this case, the price coefficient is 3.95 (± 2.00).

(16') W.E. merchandise imports from United States (1950-61)

$$\frac{M_{12}}{P_{s1}} = 0.0241 \frac{Y_2 - H_2}{P_2} + 0.366 \frac{H_2}{P_2} + 3.90 \frac{P_{2w}}{(6.71)r_2 P_{s1}} - 5.90 \quad (7.04)$$

$$\bar{R}^2 = 0.87 \quad \bar{s} = 9.1\% \quad d = 1.67$$

The data for M_{12} are U.S. balance of payments data for exports to Western Europe.

(17') W.E. merchandise imports from Rest of the World (1949-61)

$$\frac{M_{22}}{P_{s2}} = 0.0711 \frac{Y_2 - H_2}{P_2} + 0.372 \frac{H_2}{P_2} + 7.73 \frac{P_{2w}}{(1.22)r_2 P_{s2}} - 7.59 \quad (0.98)$$

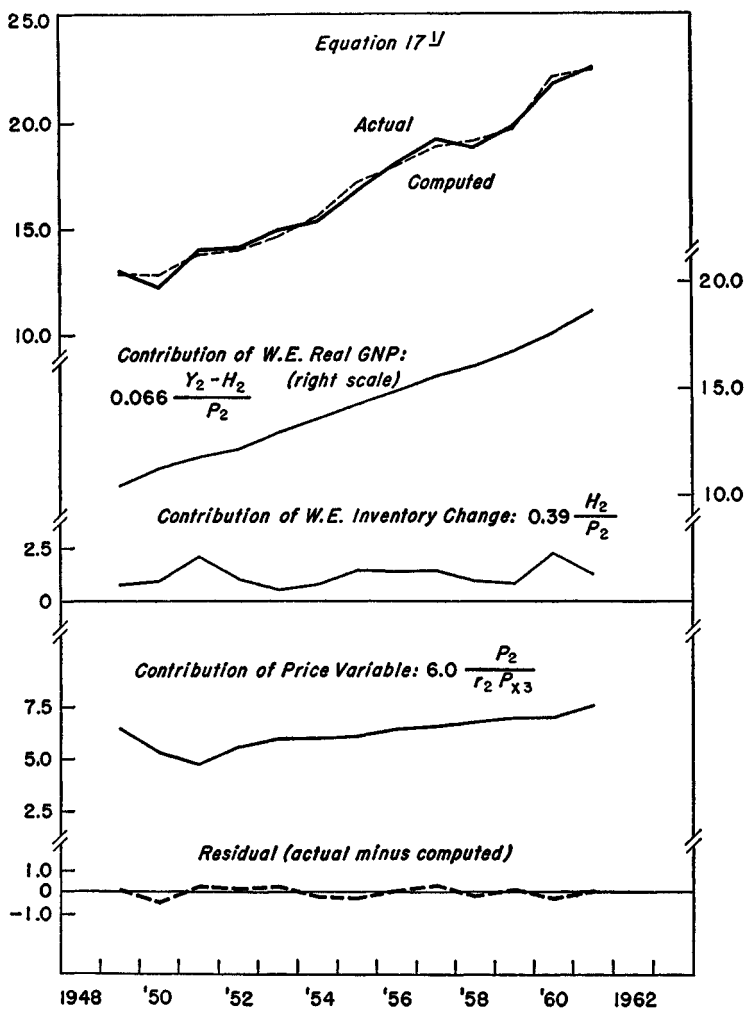
$$\bar{R}^2 = 0.996 \quad \bar{s} = 1.3\% \quad d = 2.18$$

The substitution of wholesale prices for GNP prices makes surprisingly little difference. The two functions for import demand by the United States and Western Europe from the Rest of the World, equations (4') and (17'), give somewhat higher, and somewhat more reliable, price coefficients, and the statistical fit over the sample period is marginally improved over equations (4) and (17). The remaining regression coefficients of each of these two equations are, however, not substantially changed. In the two demand equations for U.S. and Western European imports from the other industrial region—equations (3') and (16')—the price coefficients are neither appreciably different nor statistically more significant, and the fit of these equations is not improved over that of equations (3) and (16). In view of these statistical results, there seems to be no compelling reason to substitute the equations involving wholesale prices for those which state the responsiveness of imports to price changes in terms of the ratios of GNP prices to export prices.

Moreover, it might be argued that there are no persuasive theoretical reasons for making such a substitution. Such concepts as "income elasticity" and "price elasticity" of demand, sufficiently commonplace to require no definition when employed in theoretical analysis, must be precisely defined when quantitative results are reported. What the theorist calls "income elasticity," for short, may in a particular application be an elasticity with respect to disposable income, to GNP, or to yet other income measures. Matters are even worse when it comes to the concept of "price elasticity." In general, "all other prices" neither remain constant nor change in the same proportion. There is thus, in principle, an indefinitely large number of (partial) price elasticities which would have to be stated to give a full description of demand behavior with respect to prices in a particular case. For statistical reasons, it is ordinarily possible to use only one, or at best two, price coefficients in one equation. It is true that the most interesting price elasticity, though not the only useful one, is the elasticity with respect to the ratio of the price of the commodity in question to the price of its closest substitute; but it is quite obvious that the only basis for designating a particular good, or a certain group of goods, as "closest substitute" is information—which is generally not available—about the cross elasticities of demand. On a priori grounds, it is by no means certain that the "basket" of commodities entering into the wholesale price index is a closer substitute for imports than the basket of commodities and services in general as reflected in the GNP price index. As has been mentioned in footnote 17 (p. 67), there is also the practical consideration that wholesale prices could not easily be projected

CHART 6. MERCHANDISE IMPORTS OF WESTERN EUROPE FROM
THE REST OF THE WORLD, 1949-61

(In billions of U.S. dollars in 1954 prices)



¹ Constant term: -4.8

for a number of years into the future except on the basis of factors which also underlie any projection of GNP prices.

In his comments on the Brookings Report, Professor Balassa suggests the possibility of using the ratio of export prices as the price variable in the U.S. and Western European demand functions for imports from one another.⁴⁶ The argument supporting such a choice is that the range of goods exported by these two regions is fairly similar, so that the export price index is a better indicator than is the GNP price index of the price level of import substitutes. Reservations similar to those indicated above must also be made with respect to this suggestion. The equations have, nevertheless, been recomputed with this price variable:

(3'') U.S. merchandise imports from Western Europe (1951-62)

$$\frac{M_{21}}{P_{22}} - M_{21}^* = \frac{0.0164}{(0.0028)} \frac{Y_1 - H_1}{P_1} + \frac{0.0384}{(0.0143)} \frac{H_1}{P_1} + \frac{4.64}{(2.70)} \frac{P_{21}}{P_{22}} - 8.50$$

$$\bar{R}^2 = 0.96 \quad \bar{s} = 5.7\% \quad d = 1.61$$

(16'') W.E. merchandise imports from the United States

$$\frac{M_{12}}{P_{21}} = \frac{0.0234}{(0.0054)} \frac{Y_2 - H_2}{P_2} + \frac{0.370}{(0.098)} \frac{H_2}{P_2} + \frac{0.34}{(4.72)} \frac{P_{22}}{P_{21}} - 2.24$$

$$\bar{R}^2 = 0.86 \quad \bar{s} = 9.2\% \quad d = 1.69$$

The price coefficient in equation (3''), though somewhat higher than that found in equation (3), is not significant, and the price coefficient in equation (16'') is entirely unacceptable.

Thus, neither the a priori arguments in favor of using wholesale prices or export prices as deflators of "import" prices, nor the results of the recomputations, establish a persuasive case for altering the model in this respect so long as it is kept at the present level of aggregation.

Elasticity of substitution between U.S. and Western European goods in Rest of World's imports

Equation (24) shows the dependence of the share of U.S. goods in the Rest of the World's merchandise imports on the ratio of U.S. to Western European export prices. Actual and computed values of this share are shown in Chart 7. The regression coefficient of the export price ratio is highly significant. From this equation, an elasticity of substitution, as customarily defined, of -1.2 can be computed. As Chart 7 shows, the increase in the U.S. share during 1956-57, which may have resulted from limitations of supply and shipping facilities in Western Europe in the course of the Suez crisis, is not reflected in the computed values. Nor is the slight rise in the U.S. share in 1962, which may be the consequence of a successful increase in the tying of foreign aid, explained by the equation.

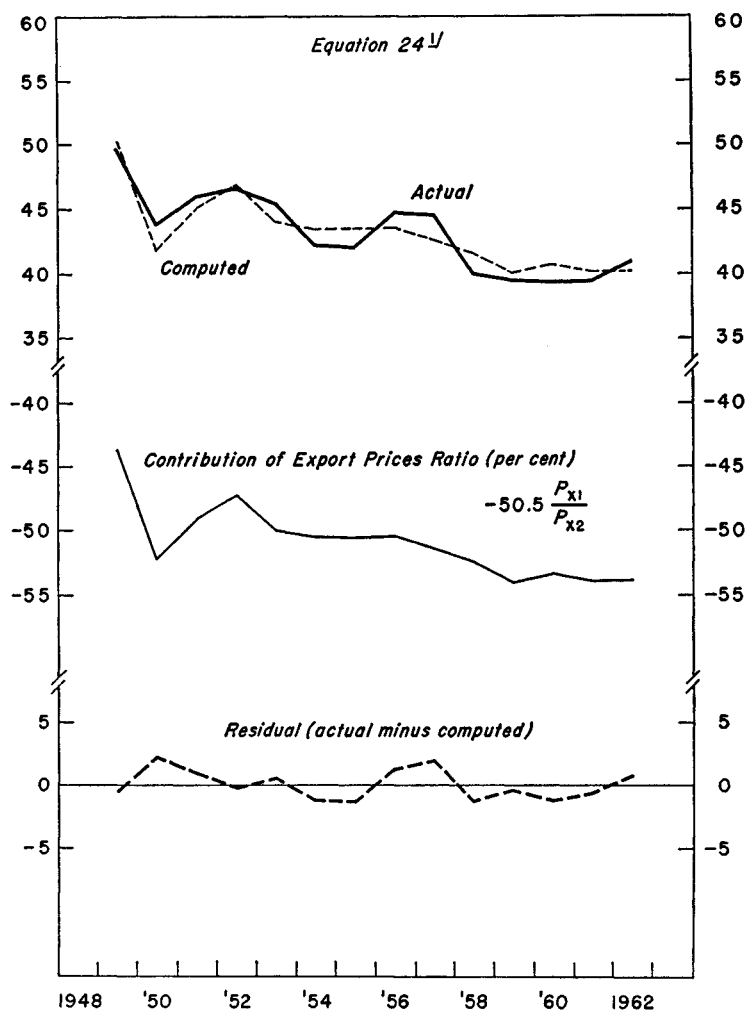
Service equations

Since regional data on Western Europe's service receipts and payments are not available, the model estimates only the service transactions of the United States with the two other regions but not the service transactions between

⁴⁶ *Op. cit.*, p. 580.

CHART 7. SHARE OF U.S. GOODS IN TOTAL R.O.W. MERCHANDISE IMPORTS
FROM THE UNITED STATES AND WESTERN EUROPE, 1949-62

(In per cent)



¹ Constant term: 94.0 per cent.

Western Europe and the Rest of the World. (The balance of service transactions between Western Europe and the Rest of the World is part of the exogenous adjustment item, B_2 , in the GNP identity for Western Europe.)

Payments of the two industrial regions for travel services and "other private services" are estimated as depending on consumption expenditure⁴⁷ and GNP, respectively. The same course cannot be followed in estimating payments for these services by the Rest of the World, since GNP and consumption figures for this region are not available. The Rest of the World's payments for travel and "other private services" have therefore been estimated as functions of total exports, on the hypothesis that these services are to a considerable extent connected with the conduct of the region's exporting business. Admittedly, a number of other variables, such as the total of exports plus imports or total foreign exchange receipts, might have been used with equal justification. In these eight equations, the regression coefficients exceed their standard errors by a factor of eight or more. Nevertheless, the standard errors of estimate (root-mean-square residuals) are quite high—frequently of the order of 10 per cent, and in some instances even higher.

Payments for transportation services have been estimated in all cases as functions of imports into the paying region. The comment made on the equations for travel and "other private services" regarding the significance of the regression coefficients and the standard errors of estimate applies also to these four equations.

Payments of interest and dividends are expressed as functions of the paying region's total liabilities to the receiving region concerned. No distinction is made between liabilities of different type (direct investment, portfolio investment, government loans, etc.) or of different maturity. The regression coefficients show, in a sense, the marginal yields of additions to the relevant stock of foreign assets. These yield figures depend, of course, very much on the distribution of the receiving region's holdings by type of asset. Projections from these equations will be successful only to the extent that the distribution of international assets by size of yield remains, for each of the regions, approximately the same as in the sample period. According to these investment income functions, the United States obtained in the past a marginal yield of about 6 per cent on its holdings in Western Europe (equation 20), while Western Europe obtained a marginal yield of only 2 per cent on its holdings in the United States (equation 9). The Rest of the World received a yield of somewhat over 3 per cent on its holdings in the United States (equation 10) and has paid to that region a yield of 4 per cent plus an additional amount of 3 per cent of total exports (equation 27). All of these "marginal yield" figures are statistically highly significant.

Export supply price equations

Export supply prices in the two industrial regions (equations 13 and 22) are taken to depend on GNP prices, the volume of exports, and a linear trend variable. The volume of exports was found to have a statistically significant

⁴⁷ Consumption expenditure is used as a proxy variable for disposable personal income. The U.S. Department of Commerce has published (*Survey of Current Business*, June 1963, p. 27) an equation for aggregate travel expenditure in the postwar period as a function of disposable income with a "marginal propensity to travel abroad" of 0.012. This coefficient is somewhat higher than the sum of the coefficients of consumption expenditure (0.008) in equations (7) and (8).

influence in Western Europe, where the implied price elasticity of export supply is +2.5, whereas the corresponding coefficient in the U.S. export price equation is not statistically significant at the 95 per cent confidence level; in the latter, the price elasticity of export supply, computed at +15, is thus not significantly different from infinity. In both industrial regions export prices appear to respond strongly to changes in GNP prices. In the short run, they tend to vary more than in proportion to changes in GNP prices, but over the sample period export prices rose much less than GNP prices. Consequently, the trend terms are negative in both equations. These negative trend terms may be interpreted as reflecting the more rapid increase in productivity in the output of export commodities than in the output of goods and services in general.⁴⁸

The export price index of the Rest of the World is estimated as a function of the volume of exports and a trend variable. The export volume exerts a significant effect on the price index so that the implied elasticity of export supply is relatively low (+1.2). The trend term in this equation is t^2 ($t = 1, 2, \dots$) with a negative coefficient. This term should not be interpreted as expressing improvements in productivity; it is merely a reflection of the joint effect of a number of influences which have caused a fairly rapid decline in the prices of primary commodities over the five-year period ended in 1962, following a period of several years of stability in these prices. Such a progressive decline in primary product prices is, of course, not expected to continue. Equation (29) is, therefore, not likely to be suitable for extrapolation. The sharp rise in prices following the outbreak of the Korean war is not fully reflected in the explanatory variables and has been corrected for by the use of a dummy variable, whose value is 1 in 1951, 0.5 in 1952, and zero in other years (see p. 87).

Consumption functions

The consumption functions for the two industrial regions have been estimated indirectly by regressing consumption on GNP minus consumption. The implied "marginal propensities to consume out of GNP" are in both regions slightly above 0.5 and statistically highly significant. In both functions, a dummy variable taking the value of unity during the years 1951-53 has been included, after inspection of the residuals from the equations initially fitted without such a dummy variable. For the United States it is plausible to assume that the implied shift in the consumption function reflects the 10 per cent increase in tax rates which was in force during those years. An interpretation of the role of this dummy variable in the Western European consumption equation would be possible only after study of consumption behavior and tax policies in individual countries.

II. Multipliers of Alternative Models

For purposes of further processing of the model the 16 service equations have been compressed into 4 equations, 1 each for U.S. receipts and payments from each of the two other regions. Furthermore, an identity defining the

⁴⁸ In this connection, see the interesting discussion by Bela Balassa, in comments on the Brookings Report, submitted to the Joint Economic Committee, *op. cit.*, pp. 581-84.

U.S. current account balance, as far as it is explained by the model, has been added. As a result, the full model (Model 1A) consists of 18 equations. The 18 dependent variables are the U.S. current account balance, its 4 merchandise components, its 4 service components, Western Europe's imports from, and exports to, the Rest of the World, export prices of the three regions, and real GNP and real consumption in the two industrial regions.

As pointed out above,⁴⁹ it is unlikely that the export price equations, and particularly the export price function of the Rest of the World, are suitable for projection over a longer period. For this reason an alternative model (Model 2A) has been processed in which the 3 export price equations have been deleted and export prices are assumed to be exogenously determined. Moreover, as also stated above, the estimated consumption functions would seem to be more suitable for short-run projection than for extrapolation from the model over several years. It is well known that the average consumption-GNP ratio is a better forecasting device for long-run purposes than is the short-run marginal propensity to consume.⁵⁰ The consumption-GNP ratio in the United States has in recent years fluctuated narrowly around 0.65, and in Western Europe around 0.63. Each of the two models mentioned above have been processed in an alternative version (Models 1B and 2B) in which these average consumption-GNP ratios have been substituted for the estimated consumption functions.

In the Brookings Report, parts of an earlier version of this model have been used in a manner which implies that GNP in the two industrial regions is exogenously determined. This follows simply from the fact that the values of various trade flows are projected with assumed values of GNP (and other variables). By suppressing the two consumption functions and the two GNP identities, Model 2, described in the preceding paragraph, can easily be altered to correspond in this respect to the method employed in the Brookings Report. This leaves Model 3, with 11 equations in as many endogenous variables (the U.S. current account balance, its 4 merchandise components, its 4 service components, and Western Europe's imports from, and exports to, the Rest of the World), and with GNP in the two industrial regions joining the list of exogenous variables in lieu of the two variables expressing the sums of fixed investment and government expenditure. For this version of the model, the consumption variables in the equations for service payments by the United States and Western Europe have been replaced by the values of GNP multiplied, respectively, by 0.65 and 0.63, so that the consumption variables can be omitted from the model.

In order to "solve" these models (that is, express the endogenous variables as functions of the exogenous ones) by linear methods, any nonlinear variable combinations appearing in the equations have been replaced by linear approximations around the means of the variables.⁵¹ The resulting system of simultaneous linear equations may be written

(II-1)

$$By' = \Gamma z'$$

⁴⁹ See pages 68 and 105.

⁵⁰ The theoretical foundation for this phenomenon has been elaborated by J. Duesenberry, *Income, Saving, and the Theory of Consumer Behavior* (Cambridge, Mass., 1952), and F. Modigliani, "Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting," in *Studies in Income and Wealth*, Vol. XI (National Bureau of Economic Research, New York, 1949), pp. 371-443.

⁵¹ See Lawrence R. Klein, *A Textbook of Econometrics* (Evanston, Illinois, and

where y' and z' are column vectors of the endogenous and exogenous variables, respectively, and B and Γ are the matrices of coefficients associated with these two sets of variables.⁵² The solution for y' is

$$(II-2) \quad y' = B^{-1}\Gamma z'$$

and $B^{-1}\Gamma$ is the matrix of multipliers of z' on y' .

Table 11 compares the standard errors of estimate from the equations originally fitted with similar standard errors derived from the solutions (the so-called reduced forms) of the linearized Models 1A and 3. In the reduced form calculations, the computed values of the endogenous variables have been derived solely from the actual values of the exogenous variables with the help of the multipliers, as indicated in equation (II-2). The standard errors of estimate from the reduced forms of Models 1A and 3 are, as would be expected, in many cases somewhat higher than those from the original equations. The comparison, nevertheless, suggests that the linearized model in its "reduced form" does not fit the data markedly worse than do the original equations. Also, the standard error of estimate of the U.S. current account balance (N_1) is about 13-14 per cent of the sample mean of this variable (\$5.5 billion).

Table 12 presents the multipliers, $B^{-1}\Gamma$, for Model 3.⁵³ To repeat, this table shows the changes induced in each endogenous variable (in the stub) when one of the exogenous variables (in the heading) changes by one unit. These effects must be interpreted in terms of the units in which the variables are stated (see List of Variables, p. 86).⁵⁴ The multipliers of the dummy variables, W_c and W_p , are not shown in this table.

White Plains, N.Y., 1953), pp. 120-21. For example, the product of two variables, $x_i y_i$, is approximated by $x_i \bar{y} + y_i \bar{x} - \bar{x} \bar{y}$, where bars indicate sample means. Since the sample means are known constants, the product $x_i y_i$ is, in effect, replaced by a weighted sum of these variables; similarly, a ratio of variables is replaced by their weighted difference. Constants in these approximations, such as $\bar{x} \bar{y}$, are incorporated into the constant term of the equation in question.

⁵² To illustrate: two equations

$$\beta_{11}y_1 + \beta_{12}y_2 = \gamma_{11}z_1 + \gamma_{12}z_2 + \gamma_{13}$$

$$\beta_{21}y_1 + \beta_{22}y_2 = \gamma_{21}z_1 + \gamma_{22}z_2 + \gamma_{23}$$

may be written

$$\begin{bmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} \gamma_{11} & \gamma_{12} & \gamma_{13} \\ \gamma_{21} & \gamma_{22} & \gamma_{23} \end{bmatrix} \begin{bmatrix} z_1 \\ z_2 \\ 1 \end{bmatrix}$$

and solved by premultiplying both sides by the inverse of the matrix B :

$$\begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{bmatrix}^{-1} \begin{bmatrix} \gamma_{11} & \gamma_{12} & \gamma_{13} \\ \gamma_{21} & \gamma_{22} & \gamma_{23} \end{bmatrix} \begin{bmatrix} z_1 \\ z_2 \\ 1 \end{bmatrix}$$

It should be noted that $z_3 = 1$, a procedure through which the constant terms of the equations are brought under the general formula for the solution.

⁵³ Tables of the multipliers for the other four models are available in mimeographed form and may be obtained from the authors.

⁵⁴ In Table 4, certain multipliers are given in units of millions of dollars, rather than in billions of dollars as in Table 12. Also, Table 4 shows effects of price changes by 0.01 units (one percentage point), whereas Table 12 indicates the effects of price changes by one unit (100 per cent).

TABLE 11. STANDARD ERRORS OF ESTIMATE
(ROOT-MEAN-SQUARED ERRORS)
OF VARIABLES

(In per cent of means of variables)

From Fitted Equations		From Reduced Forms ¹		
Variable (1)	Standard error of estimate ² (2)	Variable (3)	Standard error of estimate	
			Model 1A (4)	Model 3 (5)
—	—	N_1	13.1	14.0
M_{12}/P_{21}	7.2	M_{12}	7.4	7.6
S_{12}	5.1 ³	S_{12}	6.9	6.9
M_{13}	3.2 ⁴	M_{13}	4.3	4.0
S_{13}	2.9 ³	S_{13}	3.4	3.5
M_{21}/P_{22}	4.5	M_{21}	6.1	4.4
S_{21}	5.8 ³	S_{21}	9.2	8.0
M_{31}/P_{23}	2.6	M_{31}	3.1	2.6
S_{31}	5.1 ³	S_{31}	7.6	6.3
M_{22}/P_{23}	1.4	M_{22}	2.5	1.5
—	— ⁴	M_{23}	3.3	2.4
P_{21}	1.0	P_{21}	1.1	—
P_{22}	1.3	P_{22}	1.6	—
P_{23}	1.9	P_{23}	3.0	—
—	—	Y_1/P_1	1.4	—
C_1/P_1	2.3	C_1/P_1	2.2	—
—	—	Y_2/P_2	1.1	—
C_2/P_2	0.8	C_2/P_2	1.0	—

¹ The values during the fitting period of the listed dependent variables are computed from the values of the exogenous variables with the help of the respective tables of multipliers; the actual values of other dependent variables in the equation in question are not used in this computation.

² The standard errors of estimate are here shown uncorrected for degree of freedom, to make them comparable with those in Columns 4 and 5, which are also uncorrected.

³ The standard errors of estimate for service receipts and payments (S_{ij}) are obtained by adding the residuals of the corresponding four equations (for F_{ij} , V_{ij} , D_{ij} , and O_{ij}) and computing the root-mean-squared error from these new net residuals.

⁴ The standard error of estimate for M_{13} comes from an equation similar to equation (24) in which M_{13} is estimated as a function of ($M_{12} + M_{23}$) and (P_{21}/P_{22}). The corresponding standard error of estimate for M_{23} is not available.

TABLE 12. MULTIPLIERS OF MODEL 3: MULTIPLIER EFFECTS OF UNIT CHANGES IN THE VARIABLES IN THE COLUMN HEADINGS ON THE VARIABLES APPEARING IN THE STUBS¹

	Y_1/P_1	Y_2/P_2	H_1/P_1	H_2/P_2	P_1	P_2	P_{21}	P_{22}	P_{23}	r_2	I_{12}	I_{13}	I_{21}	I_{31}	B_3^2	1^3
N_1	-0.0336	0.0551	-0.0809	0.602	-9.10	8.48	-5.45	6.42	2.68	-8.25	-0.0184	-0.0185	0.0616	0.0217	0.448	8.37
M_{12}	0.0	0.0185	0.0	0.408	0.0	4.60	-0.290	0.0	0.0	-4.75	0.0	0.0	0.0	0.0	0.0	-0.520
S_{12}	0.0	0.00369	0.0	0.0315	0.0	0.835	-0.0224	0.0	0.0	-0.366	0.0	0.0	0.0616	0.0	0.0	-0.907
M_{13}	0.00990	0.0247	0.0353	0.122	2.83	2.28	-6.10	6.10	6.19	-2.35	0.0	0.0142	0.0	-0.0167	0.425	-7.99
S_{13}	0.00274	0.00865	0.0110	0.0426	0.758	0.798	-0.419	0.419	0.995	-0.824	0.0	0.000975	0.0	0.0382	0.0292	-2.04
M_{21}	0.0149	0.0	0.0292	0.0	3.67	0.0	-1.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.88
S_{21}	0.00582	0.0	0.00596	0.0	1.76	0.0	-0.218	0.0	0.0	0.0	0.0184	0.0	0.0	0.0	0.0	-2.56
M_{31}	0.0193	0.0	0.0797	0.0	5.27	0.0	0.0	0.0	3.84	0.0	0.0	0.0	0.0	0.0	0.0	-7.62
S_{31}	0.00620	0.000402	0.0123	0.00198	1.98	0.0372	-0.0995	0.0995	0.665	-0.0383	0.0	0.0336	0.0	-0.000273	0.00693	-3.75
M_{32}	0.0	0.0650	0.0	0.320	0.0	6.00	0.0	0.0	10.7	-6.19	0.0	0.0	0.0	0.0	0.0	-9.02
M_{23}	0.0129	0.0321	0.0458	0.158	3.67	2.96	6.42	-6.42	8.03	-3.05	0.0	0.0185	0.0	-0.0217	0.552	-10.4

¹ For list of variables, see page 86.² $B_3 = K_3 - B_1 - B_2$.³ Constant term.

III. Projections from Alternative Models

The assumed values of the exogenous variables used in the projections for 1964 and 1968 are listed in Table 13. For the assumptions for 1968, the figures for real GNP and all prices are obtained by translating the percentage changes assumed in the Brookings Report into absolute values.⁵⁵ In those

TABLE 13. ASSUMED VALUES OF EXOGENOUS VARIABLES FOR 1964 AND 1968 PROJECTIONS

	1964	1968	
		"Initial" Assumption	"Alternative" Assumption
<i>Billion 1954 U.S. dollars</i>			
Y_1/P_1	518.5 ¹	640.2 ²	608.9 ²
Y_2/P_2	320.7 ²	376.8 ²	365.5 ²
A_1/P_1	177.8 ¹	216.2	205.6
A_2/P_2	114.0 ²	133.9	129.9
H_1/P_1	3.0	4.0	4.0
H_2/P_2	3.0	3.0	3.0
<i>Billion current U.S. dollars</i>			
I_{12}	28.5 ⁴	37.0 ⁴	37.0 ⁴
I_{13}	16.5 ⁴	20.0 ⁴	20.0 ⁴
I_{21}	23.0 ⁴	28.0 ⁴	28.0 ⁴
I_{31}	58.5 ⁴	75.0 ⁴	75.0 ⁴
B_1	-3.7	-3.8	-3.8
B_2	8.0	8.0	8.0
K_1	7.0	10.2	10.2
<i>1954 = 1</i>			
P_1	1.204 ²	1.285 ²	1.285 ²
P_2	1.377 ²	1.524 ²	1.409 ²
P_{21}	1.120 ²	1.154 ²	1.154 ²
P_{22}	1.070 ²	1.154 ²	1.113 ²
P_{23}	0.922 ²	0.922 ²	0.922 ²
r_2	1.085 ²	1.085 ²	1.085 ²

¹ 4.5 per cent growth per annum, 1962-64.

² Brookings Report (cited above, p. 60, fn. 3), pp. 213 ff. and Table VIII-1.

³ 4.2 per cent growth per annum, from 1961 on.

⁴ Partly based on Table V-9 (p. 150), in Brookings Report.

variants of the model which require values for fixed investment plus government expenditure, this sum has been assumed to increase at the rate specified for GNP. Inventory investment is put at roughly the average value over recent years. With respect to the international investment positions, I_{ij} , the assumptions in the Brookings Report about private long-term investment have been supplemented, as required in the revised model, by rough guesses about government loans and short-term investment.

⁵⁵ Export prices in the Rest of the World have been assumed to be constant at their 1962, rather than at their 1961, value.

The variable B_1 , the residual current account balance⁵⁶ of the United States, has been fairly stable during recent years and has been put down for 1968 at its average for 1955–62. Variable B_2 , Western Europe's residual current account balance,⁵⁷ has shown an intermittent upward trend during the postwar period; the figure for 1968 assumes an increase in B_2 of some 2 per cent per annum, a somewhat smaller rise than that over the seven years ended in 1961. The net capital inflow into the Rest of the World, K_3 , is estimated for 1968 by adding to the 1961 value (\$6.9 billion) the assumptions in the Brookings Report of an increase of \$2.4 billion in U.S., and of \$1.5 billion in Western European, foreign aid, and by subtracting the assumed reduction of \$0.3 billion in the outflow of U.S. private long-term capital to the Rest of the World⁵⁸ and an equal amount to allow for an increase in the Rest of the World's reserve holdings.

The assumptions for 1964 are essentially the Brookings assumptions carried forward over the shorter period. With respect to price changes, the 1964 figures reflect the "initial" assumptions in the Brookings Report, whereas the "alternative" assumptions have been used for the 1964 interpolation of real GNP and related variables.⁵⁹ The values for B_1 , B_2 , and K_3 have not been mechanically interpolated, but have been set down after account has been taken of the recent movements in the time series in question. As a result, B_2 has been assumed to rise between 1961 and 1964 by the full amount of its assumed increase from 1961 to 1968, while K_3 is assumed to reach by 1964 merely its 1961 value, after recovery from its 1962 low.

These choices concerning capital movements and foreign aid have been made without a detailed study of the figures in question. Indeed, it is not possible to forecast short-term capital movements or reserve changes over a period of several years. A large margin of error in any projection must be expected from this source alone. The Rest of the World's net foreign exchange receipts on capital account and changes in this region's reserve holdings, taken together, exert a very strong influence on the U.S. balance of goods and services and may account for a substantial part of its observed variation. The volatility of this variable is due in part to the fact that it includes changes in reserve holdings (which have in some years amounted to well over \$1 billion), and in part to the variability of short-term capital movements, some of which undoubtedly take, at times, the form of capital flight from the Rest of the World. In the Brookings Report, the sum of these items was implicitly assumed to be zero in 1968; this may be the "expected" value, but a figure of +\$1 billion or -\$1 billion should not be considered out of the ordinary, even if the assumption relates to the annual average over a three-

⁵⁶ That is, the sum of the current account items not estimated in the model.

⁵⁷ Mainly Western Europe's surplus on service transactions with the Rest of the World.

⁵⁸ No data are given in the Brookings Report for the expected value of Western Europe's long-term capital exports to the Rest of the World. Therefore, in the present paper, this item has been included with the Rest of the World's net receipts of short-term capital; the implicit assumption is that net receipts by the Rest of the World of short-term capital from both industrial regions and of long-term capital (excluding aid) from Western Europe will be zero in 1968.

⁵⁹ Inventory investment in the United States in 1964 has been assumed to be somewhat below the average for recent years.

year period, 1967-69.⁶⁰ Since the multiplier with which this item affects the U.S. current account is estimated at 0.45, any projection into the relatively distant future should, on this score alone, be interpreted as having a probable error of about \$0.5 billion.

The projected values of the endogenous variables under these assumptions are shown in Tables 14-16. For reasons stated in the text, Models 1A and 2A may be considered more useful for short-term forecasting than for long-term projections; for the latter purpose, somewhat more faith may be placed on Models 2B and 3. All five versions of the revised model give very similar answers for the U.S. current account balance in 1964, and Models 2B and 3 do not differ appreciably in this respect for the two 1968 projections. Therefore, there was no good reason for not using the simplest version, Model 3, throughout the exposition in the text.

IV. Data and Sources of Data

The data used in this paper and their sources are shown in Tables 17-25. These tables have been compiled, in particular, for the convenience of those who wish to make projections based on assumptions different from the ones reported in this paper, and for different years.

⁶⁰ If the assumption were interpreted as relating to the single year 1968, rather than to the average value for 1967-69, an error in the assumption of $\pm \$2$ billion would not, on past experience, seem unusual.

TABLE 14. PROJECTED VALUES OF DEPENDENT VARIABLES IN 1964¹

	Model 1A	Model 1B	Model 2A	Model 2B	Model 3
<i>Billion current U.S. dollars</i>					
U.S. current account					
Balance, N_1	8.07	8.07	8.32	8.15	8.26
Current receipts					
Merchandise exports					
M_{12}	7.32	7.52	7.31	7.52	7.49
M_{13}	14.37	15.15	14.87	15.40	15.33
	21.68	22.67	22.18	22.92	22.82
Service receipts					
S_{12}	2.47	2.51	2.47	2.51	2.51
S_{13}	6.45	6.65	6.53	6.69	6.66
	8.92	9.16	9.00	9.20	9.17
Total receipts	30.60	31.83	31.18	32.12	31.99
Current payments					
Merchandise imports					
M_{21}	4.95	5.28	4.94	5.28	5.15
M_{31}	11.89	12.44	12.17	12.61	12.51
	16.85	17.72	17.11	17.89	17.66
Service payments					
S_{21}	2.73	2.89	2.73	2.89	2.88
S_{31}	2.95	3.16	3.00	3.19	3.20
	5.68	6.05	5.73	6.08	6.08
Total payments	22.53	23.77	22.84	23.97	23.74
Other variables					
M_{32}	22.84	23.84	23.55	24.30	24.21
M_{23}	19.56	20.30	20.03	20.71	20.62
Y_1/P_1	500 ²	523 ²	501 ²	524 ²	—
Y_2/P_2	311 ²	322 ²	311 ²	322 ²	—
			1964 = 1		
P_{21}	1.12	1.12	—	—	—
P_{22}	1.05	1.07	—	—	—
P_{23}	0.85	0.88	—	—	—

¹ Under assumptions given in Table 13.² In billions of 1954 dollars.

TABLE 15. PROJECTED VALUES OF DEPENDENT VARIABLES IN 1968
UNDER "INITIAL" ASSUMPTIONS¹

	Model 1A	Model 1B	Model 2A	Model 2B	Model 3
<i>Billion current U.S. dollars</i>					
U.S. current account					
Balance, N_1	9.80	9.81	10.53	10.18	9.97
Current receipts					
Merchandise exports					
M_{12}	8.81	9.25	8.79	9.24	9.21
M_{13}	17.46	19.11	18.91	20.02	20.00
	26.27	28.36	27.70	29.26	29.21
Service receipts					
S_{12}	3.06	3.15	3.05	3.15	3.15
S_{13}	7.89	8.30	8.09	8.44	8.42
	10.95	11.45	11.14	11.59	11.57
Total receipts	37.22	39.81	38.84	40.85	40.78
Current payments					
Merchandise imports					
M_{21}	6.54	7.22	6.53	7.24	7.26
M_{31}	13.66	14.81	14.43	15.35	15.37
	20.20	22.03	20.96	22.59	22.63
Service payments					
S_{21}	3.51	3.83	3.51	3.84	3.88
S_{31}	3.71	4.14	3.85	4.24	4.29
	7.22	7.97	7.36	8.08	8.17
Total payments	27.42	30.00	28.32	30.67	30.80
Other variables					
M_{22}	25.35	27.48	27.29	28.88	28.74
M_{23}	23.37	24.97	24.56	26.00	25.97
Y_1/P_1	590 ²	638 ²	591 ²	639 ²	—
Y_2/P_2	356 ²	380 ²	355 ²	379 ²	—
			<i>1954 = 1</i>		
P_{x1}	1.17	1.18	—	—	—
P_{x2}	1.12	1.16	—	—	—
P_{x3}	0.73	0.79	—	—	—

¹ Assumptions shown in Table 13.² In billions of 1954 dollars.

TABLE 16. PROJECTED VALUES OF DEPENDENT VARIABLES IN 1968
UNDER "ALTERNATIVE" ASSUMPTIONS¹

	Model 1A	Model 1B	Model 2A	Model 2B	Model 3
<i>Billion current U.S. dollars</i>					
U.S. current account					
Balance, N_1	8.04	8.17	9.71	9.48	9.16
Current receipts					
Merchandise exports					
M_{12}	8.20	8.61	8.14	8.55	8.46
M_{13}	15.56	17.02	17.99	18.98	18.90
	23.75	25.63	26.13	27.53	27.36
Service receipts					
S_{12}	2.95	3.03	2.93	3.02	3.01
S_{13}	7.58	7.95	7.86	8.16	8.13
	10.52	10.98	10.79	11.18	11.14
Total receipts	34.28	36.61	36.92	38.71	38.50
Current payments					
Merchandise imports					
M_{21}	6.33	6.90	6.20	6.81	6.79
M_{31}	13.00	13.98	13.94	14.73	14.76
	19.33	20.88	20.14	21.54	21.55
Service payments					
S_{21}	3.40	3.67	3.38	3.66	3.70
S_{31}	3.51	3.88	3.70	4.03	4.09
	6.91	7.55	7.08	7.69	7.79
Total payments	26.24	28.43	27.22	29.23	29.34
Other variables					
M_{22}	23.99	25.96	26.17	27.62	27.31
M_{23}	23.37	24.81	23.96	25.23	25.13
Y_1/P_1	562 ²	603 ²	566 ²	607 ²	—
Y_2/P_2	351 ²	374 ²	348 ²	370 ²	—
			<i>1954 = 1</i>		
P_{21}	1.16	1.17	—	—	—
P_{22}	0.94	0.97	—	—	—
P_{23}	0.70	0.75	—	—	—

¹ Assumptions shown in Table 13.² In billions of 1954 dollars.

TABLE 17. UNITED STATES AND WESTERN EUROPE: GROSS NATIONAL PRODUCT AND COMPONENTS
(In billions of U.S. dollars)

	United States				Western Europe ¹				
	GNP		Consumption	Change in Inventories	GNP			Consumption	Change in Inventories
	Current prices	1954 prices	Current prices	Current prices	Current prices and current exchange rates	Current prices and 1954 exchange rates ²	1954 prices and 1954 exchange rates ²	Current prices and 1954 exchange rates ²	Current prices and 1954 exchange rates ²
1948	259.4	293.1	178.3	4.7	153.8	114.2	148.9	82.2	1.2
1949	258.1	292.7	181.2	-3.1	157.3	127.0	159.3	88.8	1.5
1950	284.6	318.1	195.0	6.8	142.0	141.5	172.6	98.1	1.9
1951	329.0	341.8	209.8	10.2	166.3	165.3	182.0	111.3	4.8
1952	347.0	353.5	219.8	3.1	184.1	182.5	186.5	120.8	2.5
1953	365.4	369.0	232.6	0.4	194.9	193.9	196.6	128.5	1.3
1954	363.1	363.1	238.0	-1.6	206.7	206.7	206.7	136.1	2.0
1955	397.5	392.7	256.9	5.8	225.2	225.5	219.1	147.2	3.7
1956	419.2	400.9	269.9	4.7	246.8	246.4	229.0	159.6	3.8
1957	442.8	408.6	285.2	1.6	261.6	266.9	238.9	172.0	4.1
1958	444.5	401.3	293.2	-2.0	270.9	286.0	243.9	184.1	2.7
1959	482.7	428.6	313.5	6.6	278.7	306.1	255.2	195.3	2.6
1960	502.6	439.9	328.2	3.5	303.5	333.4	271.1	209.8	6.9
1961	518.2	447.7	336.8	1.9	330.9	359.7	283.3	225.6	3.9
1962	554.9	474.8	355.4	5.5	...	...	...	...	...

Sources: United States: U.S. Department of Commerce, *Business Statistics and Survey of Current Business*. Western Europe: Organization for Economic Cooperation and Development (OECD), *Statistical Bulletins: General Statistics*.

¹ Austria, Belgium, Luxembourg, Denmark, France, Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey, and United Kingdom.

² Since 1961, OECD combined GNP figures in U.S. dollars have been published in terms of 1958 exchange rates; to make recent figures consistent with earlier ones, they have been converted to a 1954 exchange rate basis.

TABLE 18. UNITED STATES AND WESTERN EUROPE: EXPORTS, IMPORTS, AND EXPORT PRICES

	United States				Western Europe ¹				Export Prices	
	Exports		Imports		Exports		Imports			
	Total	To Western Europe ²	Total	From Western Europe ²	Total ³	To United States	Total ³	From United States	United States	Western Europe
<i>Billion current U.S. dollars</i>									<i>1954 = 1</i>	
1948	13.193	4.566	7.563	1.066	9.031	0.938	17.201	4.469	0.99	1.14
1949	12.149	4.162	6.879	0.916	10.116	0.794	16.220	4.465	0.92	1.06
1950	10.117	2.964	9.108	1.280	10.104	1.284	14.484	3.192	0.89	0.86
1951	14.123	3.993	11.202	1.951	14.196	1.884	20.556	4.488	1.02	1.05
1952	13.319	3.472	10.838	2.022	14.004	1.932	19.008	4.056	1.01	1.08
1953	12.281	2.992	10.990	2.278	13.884	2.184	17.796	3.024	1.01	1.02
1954	12.799	3.492	10.354	2.030	14.676	1.920	18.756	3.408	1.00	1.00
1955	14.280	4.313	11.527	2.398	15.984	2.292	21.456	4.632	1.01	1.01
1956	17.379	5.378	12.804	2.949	17.640	2.808	23.568	5.532	1.04	1.04
1957	19.390	5.965	13.291	3.094	19.370	2.916	25.836	6.684	1.08	1.06
1958	16.264	4.668	12.952	3.299	19.801	3.180	23.196	4.992	1.08	1.04
1959	16.282	4.724	15.310	4.517	20.858	4.308	23.400	4.740	1.08	1.01
1960	19.459	6.696	14.724	4.174	22.670	4.044	27.624	6.888	1.09	1.03
1961	19.913	6.798	14.497	4.045	22.814	3.924	27.835	6.984	1.11	1.04
1962	20.479	7.106	16.145	4.537	22.508	4.380	29.557	7.464	1.11	1.04

Sources: U.S. exports and imports: U.S. Department of Commerce, *Balance of Payments, Statistical Supplement*, Rev. Ed. (2/11/62), and *Survey of Current Business*, June 1963. U.S. export prices: International Monetary Fund, *International Financial Statistics*. Western Europe, exports, imports, and export prices: Organization for Economic Cooperation and Development (OECD), *Statistical Bulletin: Series A, Foreign Trade*.

¹ As defined in Table 17 (fn. 1).

² As defined in Table 17 (fn. 1), and, for the period 1952-62, Finland, Spain, and Yugoslavia.

³ Less intratrade of Western Europe.

TABLE 19. TRADE OF UNITED STATES AND WESTERN EUROPE
WITH THE REST OF THE WORLD, AND SELECTED PRICE INDICES

	Imports from Rest of the World		Exports to Rest of the World		Implicit GNP Price Deflator		Implicit Exchange Rate Deflator	Export Price Index
	United States ¹ (1)	Western Europe ² (2)	United States ¹ (3)	Western Europe ² (4)	United States (5)	Western Europe ² (6)	Western Europe ³ (7)	Rest of the World ⁴ (8)
	←—Billion current U.S. dollars—→				←—1954 = 1—→			
1948	6.497	12.732	8.627	8.093	0.885	0.767	0.743	0.959
1949	5.963	11.755	7.987	9.322	0.882	0.797	0.807	0.910
1950	7.828	11.292	7.153	8.820	0.895	0.820	0.997	0.923
1951	9.251	16.068	10.130	12.312	0.963	0.908	0.994	1.151
1952	8.816	14.952	9.847	12.072	0.982	0.979	0.991	1.061
1953	8.712	14.772	9.289	11.700	0.990	0.986	0.995	0.988
1954	8.324	15.357	9.307	12.756	1.000	1.000	1.000	1.000
1955	9.129	16.284	9.967	13.694	1.012	1.029	1.001	1.003
1956	9.855	18.036	12.001	14.832	1.046	1.076	0.998	0.999
1957	10.197	19.152	13.425	16.454	1.084	1.117	1.020	1.000
1958	9.653	18.204	11.596	16.621	1.108	1.173	1.056	0.964
1959	10.793	18.660	11.558	16.550	1.126	1.200	1.098	0.941
1960	10.550	20.736	12.763	18.626	1.143	1.230	1.099	0.950
1961	10.452	20.851	13.115	18.890	1.157	1.270	1.087	0.926
1962	11.608	22.093	13.373	18.128	1.169	...	...	0.922

Sources: Columns 1-4 computed from Table 18; columns 5-7 computed from Table 17.

¹ Does not include trade with Finland, Spain, and Yugoslavia for the period 1952-62.² See Table 17 (fn. 1).³ European OECD countries' GNP in current U.S. dollars and 1954 exchange rates divided by GNP in current U.S. dollars and current exchange rates (a rise in this index signifies depreciation of European OECD countries' currencies vis-à-vis the U.S. dollar).⁴ Weighted export price index for underdeveloped areas, Canada, and Japan, weighted by imports of the United States and Western Europe from each of the three areas. (Computed from Table 23 and columns 1 and 2 of Table 19.)TABLE 20. U.S. BALANCE OF PAYMENTS: SELECTED RECEIPTS
ON SERVICES ACCOUNT

(In billions of current U.S. dollars)

	Transportation		Travel		Investment Income		Miscellaneous	
	Total	From Western Europe ¹	Total	From Western Europe ¹	Total	From Western Europe ¹	Total	From Western Europe ¹
1948	1.317	0.665	0.334	0.049	1.340	0.195	0.505	0.204
1949	1.238	0.602	0.392	0.050	1.395	0.209	0.464	0.118
1950	1.033	0.471	0.419	0.042	1.593	0.228	0.513	0.145
1951	1.556	0.709	0.473	0.036	1.882	0.322	0.558	0.171
1952	1.488	0.644	0.550	0.038	1.828	0.334	0.601	0.174
1953	1.198	0.487	0.574	0.041	1.910	0.387	0.619	0.174
1954	1.171	0.485	0.595	0.048	2.227	0.439	0.635	0.190
1955	1.406	0.606	0.654	0.061	2.444	0.518	0.697	0.222
1956	1.617	0.705	0.705	0.066	2.662	0.493	0.949	0.323
1957	1.967	0.826	0.785	0.086	2.817	0.471	1.010	0.344
1958	1.638	0.685	0.825	0.088	2.845	0.588	1.054	0.373
1959	1.646	0.703	0.902	0.098	3.043	0.750	1.158	0.405
1960	1.687	0.727	0.887	0.089	3.222	0.697	1.231	0.460
1961	1.688	0.783	0.900	0.092	3.844	0.835	1.407	0.532
1962	1.749	0.871	0.921	0.104	4.322	0.916	1.475	0.572

Sources: U.S. Department of Commerce, *Balance of Payments, Statistical Supplement*, Rev. Ed. (2/11/62), and *Survey of Current Business*, June 1963.¹ As defined in Table 17 (fn. 1) and, for the period 1952-62, Finland, Spain, and Yugoslavia.

TABLE 21. U.S. BALANCE OF PAYMENTS: SELECTED PAYMENTS
ON SERVICES ACCOUNT

(In billions of current U.S. dollars)

	Transportation		Travel		Investment Income		Miscellaneous	
	Total	To Western Europe ¹	Total	To Western Europe ¹	Total	To Western Europe ¹	Total	To Western Europe ¹
1948	0.646	0.306	0.631	0.119	0.280	0.187	0.219	0.160
1949	0.700	0.352	0.700	0.177	0.333	0.235	0.153	0.104
1950	0.818	0.432	0.754	0.215	0.369	0.253	0.153	0.101
1951	0.974	0.496	0.757	0.184	0.414	0.285	0.202	0.098
1952	1.115	0.572	0.840	0.246	0.421	0.271	0.221	0.113
1953	1.081	0.530	0.929	0.293	0.461	0.278	0.245	0.114
1954	1.026	0.509	1.009	0.349	0.420	0.271	0.258	0.122
1955	1.204	0.592	1.153	0.415	0.489	0.319	0.304	0.127
1956	1.408	0.679	1.275	0.461	0.568	0.363	0.389	0.174
1957	1.569	0.722	1.372	0.474	0.639	0.399	0.384	0.169
1958	1.636	0.771	1.460	0.538	0.669	0.384	0.427	0.212
1959	1.759	0.851	1.610	0.578	0.828	0.508	0.427	0.212
1960	1.988	1.040	1.744	0.666	0.939	0.567	0.450	0.240
1961	1.949	1.072	1.747	0.600	0.882	0.538	0.451	0.259
1962	2.055	1.139	1.905	0.615	0.995	0.591	0.436	0.254

Sources: U.S. Department of Commerce, *Balance of Payments, Statistical Supplement*, Rev. Ed. (2/11/62), and *Survey of Current Business*, June 1963.

¹ As defined in Table 17 (fn. 1) and, for the period 1952-62, Finland, Spain, and Yugoslavia.

TABLE 22. U.S. BALANCE OF PAYMENTS: SELECTED PAYMENTS AND RECEIPTS
ON SERVICES ACCOUNT

(In billions of current U.S. dollars)

	Payments to Countries Other Than Western Europe ¹				Receipts from Countries Other Than Western Europe ¹			
	Transportation	Travel	Investment income	Miscellaneous	Transportation	Travel	Investment income	Miscellaneous
1948	0.340	0.512	0.093	0.059	0.652	0.285	1.145	0.301
1949	0.348	0.523	0.098	0.049	0.636	0.342	1.186	0.346
1950	0.386	0.539	0.116	0.052	0.562	0.377	1.365	0.368
1951	0.478	0.573	0.129	0.104	0.847	0.437	1.560	0.387
1952	0.543	0.594	0.150	0.108	0.844	0.512	1.494	0.427
1953	0.551	0.636	0.183	0.131	0.711	0.533	1.523	0.445
1954	0.517	0.660	0.149	0.136	0.686	0.547	1.788	0.445
1955	0.612	0.738	0.170	0.177	0.800	0.593	1.926	0.475
1956	0.729	0.814	0.205	0.215	0.912	0.639	2.169	0.626
1957	0.847	0.898	0.240	0.215	1.141	0.699	2.346	0.666
1958	0.865	0.922	0.285	0.215	0.953	0.737	2.257	0.681
1959	0.908	1.032	0.320	0.215	0.943	0.804	2.293	0.753
1960	0.948	1.078	0.372	0.210	0.960	0.798	2.525	0.771
1961	0.877	1.147	0.344	0.192	0.905	0.808	3.009	0.875
1962	0.916	1.290	0.404	0.182	0.878	0.817	3.406	0.903

Source: Computed from Tables 20 and 21.

¹ Western Europe covers the countries defined in Table 17 (fn. 1) and, for the period 1952-62, Finland, Spain, and Yugoslavia.

TABLE 23. U.S. AND WESTERN EUROPEAN IMPORTS FROM CANADA AND JAPAN, AND EXPORT PRICES OF CANADA, JAPAN, AND UNDERDEVELOPED AREAS

	Imports				Export Prices		
	United States		Western Europe ¹				
	from Canada	from Japan	from Canada	from Japan	Canada	Japan	Under- developed Areas
	←—Billion current U.S. dollars—→				←—1954 = 1—→		
1948	1.601	0.063	1.170	0.038	0.88	0.99	0.97
1949	1.551	0.082	1.070	0.066	0.91	0.91	0.91
1950	1.960	0.182	0.696	0.072	0.95	0.85	0.92
1951	2.295	0.205	1.104	0.132	1.07	1.27	1.16
1952	2.403	0.235	1.428	0.192	1.06	1.13	1.06
1953	2.480	0.263	1.284	0.120	1.03	1.04	0.98
1954	2.396	0.280	1.116	0.120	1.00	1.00	1.00
1955	2.673	0.432	1.392	0.180	1.03	0.96	1.00
1956	2.912	0.558	1.476	0.228	1.06	0.99	0.99
1957	2.923	0.600	1.440	0.312	1.06	1.03	0.99
1958	2.703	0.671	1.452	0.312	1.05	0.98	0.95
1959	3.063	1.029	1.356	0.360	1.07	0.98	0.92
1960	2.904	1.148	1.680	0.468	1.07	1.00	0.93
1961	3.107	1.055	1.656	0.516	1.08	0.97	0.90
1962	3.661	1.358	1.608	0.588	1.12	0.95	0.89

Sources: U.S. imports: United Nations, International Monetary Fund, and International Bank for Reconstruction and Development, *Direction of International Trade*. Western European imports: Organization for Economic Cooperation and Development, *Statistical Bulletins: Series A, Foreign Trade*. Export prices, Canada: International Monetary Fund, *International Financial Statistics*. Export prices, Japan and underdeveloped areas: United Nations, *Monthly Bulletin of Statistics*.

¹ As defined in Table 17 (fn. 1) and, for the period 1952-62, Finland, Spain, and Yugoslavia.

TABLE 24. INTERNATIONAL INVESTMENT POSITION, DOMESTIC INVESTMENT, AND GOVERNMENT EXPENDITURE

U.S. International Investment Position						Fixed Private Domestic Investment plus Government Expenditure on Goods and Services
United States Foreign Assets and Investments in		Foreign Assets and Investments in the United States Held by		United States (billion U.S. dollars in current prices)	Western Europe (billion U.S. dollars in current prices and 1964 exchange rates)	
Western Europe	Rest of World ¹	Western Europe	Rest of World ¹			
← (Billion current U.S. dollars) →						
1948	11.26	14.56	7.59	6.25	72.9	33.4
1949	11.71	15.30	7.89	6.35	76.2	37.7
1950	12.43	16.41	9.11	8.01	82.2	41.9
1951	12.60	18.05	9.64	8.53	106.6	50.5
1952	12.92	19.96	10.85	9.38	122.8	58.7
1953	13.98	21.15	11.91	9.40	132.7	62.8
1954	14.41	23.29	14.27	10.18	125.8	67.0
1955	14.95	25.49	16.31	10.98	133.7	73.7
1956	15.80	29.35	17.62	12.16	141.7	82.1
1957	16.90	32.35	17.72	11.98	151.1	89.6
1958	17.93	35.92	20.30	12.79	152.0	95.3
1959	18.49	39.19	23.12	14.19	163.4	104.0
1960	20.44	43.52	24.04	14.74	167.9	114.7
1961	21.28	48.61	27.44	15.87	175.0	127.8
1962	22.34	52.92	26.69	16.89	190.2	...

Sources: U.S. international investment position: U.S. Department of Commerce, *Balance of Payments, Statistical Supplement*, Rev. Ed. (2/11/62), and *Survey of Current Business*, August 1963.

Domestic investment and government expenditure: United States, *Survey of Current Business*, July 1963; Western Europe (see Table 17, fn. 1), Organization for Economic Cooperation and Development, *Statistical Bulletins: General Statistics*.

¹ Excluding international organizations.

TABLE 25. MISCELLANEOUS VARIABLES

	U.S. Current Account Balance: Sum of Items Explained in the Model ¹ (1)	Residual Current Account Balances		Net Capital Inflow into the Rest of the World ³ (4)	"Extraordinary" Imports of Automobiles and Steel in the United States ⁴ (5)	
		United States ² (2)	Western Europe ² (1954 exchange rates) (3)			
←—————Billion current U.S. dollars————→						Billion 1954 U.S. dollars
1948	7.35	-3.87	5.88	0.88	—	
1949	6.87	-3.08	4.79	2.79	—	
1950	2.47	-1.85	3.64	0.22	—	
1951	5.04	-2.60	4.67	1.14	—	
1952	4.35	-3.09	4.82	1.76	—	
1953	2.88	-3.20	4.96	0.98	—	
1954	4.36	-3.43	5.57	2.53	—	
1955	4.80	-3.65	5.90	2.05	—	
1956	6.87	-3.94	6.44	3.83	0.040	
1957	8.71	-3.81	6.73	6.10	0.190	
1958	5.48	-4.23	6.68	5.15	0.365	
1959	3.10	-3.87	6.32	3.43	0.750	
1960	6.64	-3.63	6.09	5.01	0.335	
1961	8.23	-3.74	6.89	6.89	—	
1962	7.41	-3.63	... ⁵	... ⁵	—	

¹ Balance of merchandise transactions, transportation, travel, investment income, and "other private" services.

² Excess of net exports of goods and services from national income accounts over balance of current account items explained in the model. Western Europe covers the countries defined in Table 17 (fn. 1).

³ Balance of explained current account transactions of Rest of the World *plus* residual current account balances of United States and Western Europe (cols. 2 and 3). This item includes any reduction (+) or increase (-) in the reserve holdings of the Rest of the World.

⁴ Authors' estimate (see pp. 93-94).

⁵ These figures are not available for 1962, since the figures in columns 3 and 4 are derived in part from GNP data for Western Europe. Column 4 minus column 3 was -\$2.62 billion in 1962, compared with zero in 1961 and -\$1.08 billion in 1960.

Les effets des changements de revenu et de prix sur la balance des paiements des Etats-Unis

Résumé

Ce mémoire évalue les effets des changements de revenu et de prix intervenant aux Etats-Unis et en Europe occidentale sur la balance des comptes courants des Etats-Unis et sur ses éléments principaux. En sus de leurs effets directs sur les échanges commerciaux entre les Etats-

Unis et l'Europe occidentale, ces facteurs de revenu et de prix exercent une partie appréciable de leur influence totale sur les comptes courants des Etats-Unis d'une façon triangulaire. A titre d'exemple, une augmentation du revenu de l'Europe occidentale tendrait à accroître les importations provenant tant des Etats-Unis que du reste du monde; à son tour, l'augmentation des recettes du reste du monde en devises entraînerait un certain accroissement des importations de cette région en provenance des Etats-Unis. Afin de pouvoir évaluer ces effets, tant directs qu'indirects, l'analyse que présente ce mémoire utilise un modèle du commerce mondial dans lequel les mouvements de marchandises et les paiements de services entre les trois régions considérées (les Etats-Unis, l'Europe occidentale et le reste du monde) dépendent des revenus, des prix et d'un certain nombre d'autres éléments.

Les auteurs concluent que la balance des comptes courants des Etats-Unis tendrait à rester inchangée si les taux de croissance économique et l'évolution des prix étaient proportionnellement les mêmes aux Etats-Unis et en Europe occidentale. Une croissance plus marquée et une augmentation plus rapide des prix en Europe occidentale qu'aux Etats-Unis seraient l'une et l'autre à l'avantage de la balance des comptes courants des Etats-Unis. Un autre élément qui présente une importance quantitative considérable, et qui influe particulièrement sur les exportations des Etats-Unis vers le reste du monde, est le capital étranger, y compris l'aide étrangère, reçu par le reste du monde. La dernière partie du mémoire établit des projections du compte courant des Etats-Unis pour les années 1964 et 1968, et compare la projection de 1968 à celle qui figure au rapport de la Brookings Institution intitulé *The United States Balance of Payments in 1968*.

Efectos producidos en la balanza de pagos de Estados Unidos por las variaciones en el ingreso y en los precios

Resumen

Este artículo ofrece cálculos de los efectos producidos en el saldo de la cuenta corriente estadounidense y en sus principales elementos por las variaciones registradas en el ingreso y los precios en Estados Unidos y en la Europa Occidental. Más allá de sus efectos directos sobre el comercio entre Estados Unidos y la Europa Occidental, buena parte de toda la influencia que dichos factores del ingreso y de los precios ejercen sobre la cuenta corriente estadounidense es por vía

triangular. Por ejemplo, los aumentos del ingreso de la Europa Occidental suelen provocar que haya mayores importaciones procedentes de Estados Unidos así como del Resto del Mundo; el aumento de los ingresos en divisas extranjeras percibidos por el Resto del Mundo tiende a ocasionar, a su vez, que se produzca algún aumento de las importaciones de dicha región procedentes de Estados Unidos. Para medir tanto los efectos directos como los indirectos, el análisis se vale de un modelo de comercio internacional en el cual se supone que las corrientes del comercio en mercancías y de pagos por concepto de servicios entre tres regiones (Estados Unidos, Europa Occidental y el Resto del Mundo) dependen de los ingresos, los precios y varios factores más.

Mediante ese análisis, se llega a la conclusión de que de haber tasas de crecimiento económico proporcionalmente iguales y una evolución pareja en materia de precios en Estados Unidos y la Europa Occidental, el saldo de la cuenta corriente estadounidense propendería a permanecer sin variación. Dicho saldo se vería favorecido si se produjese en la Europa Occidental una tasa de crecimiento más acelerada que la de Estados Unidos o si los precios aumentaran a un ritmo mayor que en este país. Otro factor de considerable importancia cuantitativa y que repercute particularmente sobre las exportaciones de Estados Unidos al Resto del Mundo consiste en el monto de divisas extranjeras percibidas por el Resto del Mundo en cuenta de capital, incluyendo la ayuda extranjera. La última parte del artículo presenta proyecciones de la cuenta corriente estadounidense para 1964 y 1968, y compara las del último de esos años con las proyecciones que figuran en el informe de la Brookings Institution intitulado *The United States Balance of Payments in 1968* (La Balanza de Pagos de Estados Unidos en 1968).

Economic Stabilization and Progress in Greece, 1953-61

Contribution of Foreign Exchange and Trade Reforms

Andreas S. Gerakis and Haskell P. Wald*

GREECE CARRIED OUT a sweeping reform of its foreign exchange and international trade system on April 9, 1953. The drachma was devalued, its official parity being reduced by 50 per cent. Multiple exchange practices were eliminated. A little later, a series of bold measures were taken to liberalize imports.

In the present study, the situation that made the reforms necessary is outlined briefly. Next, the reforms themselves are described in detail, and their influence on the country's monetary stability, balance of payments, and growth is appraised. A final section is devoted to the conclusions which may be drawn from the study.

Background of the Reforms¹

By mid-1950, thanks largely to foreign aid, production in Greece had recovered from the devastation it had suffered during World War II and the ensuing years of civil strife. Gross national product (both total and per capita), in real terms, had risen above that of prewar years. The country, however, was still plagued by inflation and the inflation-conscious attitude of the public.

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¹ This section is based largely on Evangelos Ap. Eliades, "Stabilization of the Greek Economy and the 1953 Devaluation of the Drachma," *Staff Papers*, Vol. IV (1954-55), especially pp. 22-49.

Monetary and credit conditions were most unsatisfactory. Owing to the public's lack of confidence in the drachma, the gold sovereign performed most of the functions of money, especially its store-of-value function. The price of the gold pound was regarded as a financial barometer. When it rose, other prices were expected to follow suit. Consequently, the monetary authorities found it necessary to peg the free market rate of the sovereign by importing and selling sovereigns. Valuable foreign exchange holdings were thus wasted.

Because of the inflation and the opportunities for speculative investments opened up by it, the demand for loanable funds was strong. On the other hand, the inflationary conditions discouraged money savings and hence the supply of loanable funds. This situation, as well as the increased risks and costs of lending under such conditions, kept interest rates extremely high—illegally, up to 30-36 per cent per annum on private loans. Banks lent money on much better terms, prescribed by the Government. Yet, as they were not permitted to offer their depositors attractive interest rates, deposits remained very low; therefore, the banks' ability to extend credit was severely limited.

In order to channel bank funds into the most "productive" avenues (at least in the first instance), an intricate network of credit regulations was developed, which resulted in an abnormal pattern of interest rates and which was partially ineffective, since the regulations were often evaded. To supplement the inadequate volume of private bank credit, the Bank of Greece made direct advances to selected categories of borrowers. In so doing, however, the Bank increased the money supply and contributed to the inflationary situation.

Given the regressive structure of the tax system, the inflation—and substantial tax evasion—complicated the task of balancing the state budget and removed any possibility of government borrowing from the public. In turn, budget deficits—necessarily financed by the central bank—aggravated the inflationary pressures.

Furthermore, the inflation hampered efforts to improve the country's external accounts. Despite repeated devaluations, which had reduced the official parity from Dr 150 to Dr 15,000 to the dollar between 1944 and 1949, the currency was overvalued. To cut foreign deficits, reliance was placed on export subsidies, quantitative restrictions on imports, and bilateral trade agreements. Not only did these measures fall short of achieving their objectives; they also resulted in considerable corruption in the administration, very high prices for the public, and excessive importers' profits, most of which the Government was unable to tax.

Inevitably, the inflationary conditions undermined economic devel-

opment. The attention of businessmen was diverted from productive to financial investments, such as gold hoarding or the purchase of foreign exchange. The ability of the Government to undertake public investment projects was curtailed. As an anti-inflationary device, it became necessary to "freeze" part of the U.S. aid funds in counterpart accounts instead of spending them for development purposes.

During the second half of 1950, the economic situation tended to worsen as the country was confronted with two pressing problems: (1) a resurgence of inflationary pressures as a result, primarily, of the Korean war and (2) the need for adjusting to a considerable reduction in U.S. aid. To deal with these new conditions, the Government progressively instituted a stabilization program involving a tightening of credit, a steep reduction in the Government's current deficit, a drastic curtailment of development expenditures, and reforms of the foreign exchange system designed to reduce the balance of payments deficit. At the expense of increased unemployment and a small decline in industrial production and gross national product, this program, aided by the abatement of international inflationary pressures, succeeded by 1952 in improving the balance of payments substantially and effectively halting the upward movement of prices. It thus paved the way for the more comprehensive reforms in 1953.

The Reforms

As stated above, the reforms in 1953 included a devaluation of the official parity of the drachma. The old parity had been $\text{Dr } 15 = \text{US\$}1$.² However, subsidies had been granted to exporters either in the form of direct payments or in the form of import rights. It has been estimated that, with these subsidies, the "average effective rate" for exports was $\text{Dr } 20.9 = \$1$ shortly before the devaluation. Again, "contributions" were levied on imports, ranging up to 200 per cent of the foreign exchange value involved. These "contributions" raised the "average effective rate" of the import dollar (not including tariffs and other customs duties) to an estimated $\text{Dr } 17.6$.³ A calculation made for purposes of this study shows that immediately before the reforms "the purchasing power parity equilibrium rate of exchange"

² Actually, it was $\text{Dr } 15,000 = \text{US\$}1$. On May 1, 1954, a new drachma was introduced for the sole purpose of simplifying the currency system. Each new drachma was exchanged for 1,000 old ones. All figures quoted here will be in terms of these new drachmas.

³ See Marina Goudi, *The Readjustment of the Price of Foreign Exchange* (in Greek, Athens, 1953), p. 17.

was Dr 20.4 = \$1.⁴ As a result of the Government's anti-inflationary program—and certain special factors—the free market rate for the gold sovereign had fallen below the official ceiling before the reforms. The black market U.S. dollar rate had also declined and was Dr 15.59, or only slightly above the official parity, at the end of March 1953.

The Greek Government decided to set the new official parity at Dr 30 = \$1. It argued that prevailing free market rates and effective import and export rates, as well as purchasing power calculations of the type given above, underestimated the "equilibrium rate of exchange" which, of course, may never be determined with precision. The new 30-to-1 rate was chosen because it was judged high enough, not only to eliminate the existing overvaluation of the drachma, but also to absorb any primary and secondary price effects of the devaluation itself. It seemed high enough, therefore, to ensure that the devaluation would be a once-for-all adjustment, and that another change in the external value of the drachma would not be needed for a long time to come.

A second feature of the reforms was the elimination of multiple currency practices. However, it was decided that a few export taxes and import subsidies were needed on a temporary basis. The export taxes were applied to a few commodities, such as cotton, rice, and olive oil, which were essential for domestic consumption and had received relatively low subsidies prior to the devaluation. The import subsidies were restricted to a limited number of essential foodstuffs and raw materials. These temporary exchange measures were intended to delay the inevitable increases in the cost of living and thus help the economy to adjust gradually to the new exchange rate. Moreover, the export taxes were designed to absorb the windfall profits of producers and exporters and to prevent a steep decline in export prices in terms of foreign currencies.

Third, the reforms included a series of steps liberalizing imports. Import quotas were abolished, except those on a few luxury goods (for which import licenses were liberally granted, however) and on six agricultural commodities with respect to which farmers presumably needed protection. The elimination of quotas was not restricted geographically, but freed imports from practically all countries, including the dollar area. Furthermore, various administrative proce-

⁴ The calculation referred to was $112.62 \cdot \frac{49}{105} \cdot \frac{38.77}{100} = 20.4$, where 112.62 is the Bank of Greece's average selling rate for the U.S. dollar in 1938 (a "normal" year of equilibrium in the Greek balance of payments); 49 and 105 are the U.S. wholesale price index (1948 = 100) in 1938 and March 1953, respectively; and 100 and 38.77 are the Greek wholesale price index in 1938 and March 1953, respectively.

dures in connection with imports were liberalized, and all import monopoly privileges were withdrawn, except for a few held by the Government or the Agricultural Bank on behalf of the Government. Finally, importers were again allowed to make extensive use of foreign suppliers' credits for specified purposes and maturities.

The fact that the foreign exchange system was unified at Dr 30 = \$1 meant that for many imports ("luxuries" and items competing with domestic production) "effective exchange rates" remained unchanged or were actually reduced.⁵ The Government felt it necessary to take certain measures to mitigate the potentially adverse effects of this result on home industry and the balance of payments. Thus, domestic bank financing for importers was severely restricted, and luxury taxes were increased. Specific tariffs were raised by 33½ per cent in accordance with provisions of the General Agreement on Tariffs and Trade (GATT), which permit adjustments proportionate to changes in the local price of the sovereign. (Subsequent to the reforms, the exchange rate of the sovereign in the free market rose to about Dr 300. Nevertheless, the Bank of Greece announced, and has since—with a few exceptions—adhered to, a policy of abstaining from interventions designed to prevent a rise in the rate of the gold pound.) A permanent tariff committee was established to consider and submit recommendations on appeals for higher protection and to study the tariff system with the object of modernizing it and perhaps making it more restrictive. However, the measures just enumerated—although adequate to offset the reductions in "effective" import rates—did not prevent a substantial decline in the prices that the Greek consumer had to pay for many foreign goods. This was due to the fact that the liberalization policy increased the availability of these imports on the market and thereby eliminated the scarcity prices—considerably above importers' costs—which had formerly prevailed under the regime of quantitative restrictions.

Contribution to Domestic Economic Stabilization

For some time, the ultimate success of the reforms remained uncertain, because it was still to be demonstrated that domestic price stability could be achieved and defended for more than a temporary period. The primary and secondary effects of the devaluation led to

⁵ For example, before the reforms, a 200 per cent "contribution" was levied on a large number of imported goods; this implied an effective exchange rate of Dr 45 to the import dollar. As a result of the reforms, this rate became Dr 30 to the dollar.

a steady climb of prices which was not halted until about the middle of 1956, when the wholesale price index had risen to a level 50 per cent above that of 1952 (see Table 5, p. 142). Thereafter, the Greek economy moved forward under conditions of price stability that were remarkable by any standards, inasmuch as wholesale prices rose by only 3.7 per cent from 1956 to 1961.

An examination of the causes of this stability indicates that it owed much to the earlier reforms. A growing conviction among the public that both a realistic parity for the drachma and, in general, a stable foreign exchange system had been established inspired stronger confidence in the currency. The public's tendency to flee from the drachma—which was one of the most virulent inflationary elements in prior periods—gradually subsided. Moreover, the liberalization of imports proved to be a powerful anti-inflationary factor. It eliminated "scarcity" prices for formerly restricted imports, thus exercising an indirect downward pressure on the price indices.⁶ By allowing importers to accept foreign suppliers' credits, it also helped to ease the capital shortage and to reduce interest rates. Another of its stabilizing influences was that incipient inflationary forces, whether of the demand-pull or the cost-push variety, were channeled into imports. While in these and other ways the reforms can be said to have created a solid framework for monetary stability, the credit for preserving that stability is due, of course, to the Government's economic policy following the reform measures and to its determination to improve the current budget, not to push the development effort to a point beyond the nation's means, and, in general, to avoid excessive monetary expansion.

Success in the struggle against inflation brought, in addition to price stability, a number of other interesting developments. In the first place, the gold sovereign declined in importance in the Greek monetary setting. The Bank of Greece, consequently, was able to discontinue—beginning in 1953—the policy of pegging the gold pound at a fixed rate. Nevertheless, the sovereign rate on the open market fell appreciably, while the sovereign/dollar cross rate in Athens decreased to levels prevailing in other European markets and in the Middle East. An even sharper drop would have occurred, perhaps even enough to create profitable arbitrage opportunities for exports of gold pounds, except that the monetary authorities made extensive (net) purchases of such pounds to build up the country's gold reserves.

The waning of the public's interest in gold was paralleled by a

⁶ Indirect because the goods affected by the liberalization are of relatively minor importance in the construction of the country's price indices.

build-up of its deposits in the commercial banking system, especially after 1956 when the effects of monetary stability were reinforced by the Government's decision to raise interest rates on bank deposits. Between 1952 and 1961, demand deposits rose from Dr 0.7 billion to Dr 3.8 billion; savings deposits from Dr 0.08 billion to Dr 12.9 billion; and time deposits from Dr 0.01 billion to Dr 1.5 billion.

The growth of deposits enabled the banking system to expand its credit substantially. Total bank credit outstanding rose from 17.1 per cent of gross national product (GNP) at current prices at the end of 1952 to 29.7 per cent at the end of 1961. It therefore became possible eventually to lower the ceilings for interest rates on bank loans,⁷ while in the nonbank loan market interest rates fell to a range of 12-16 per cent per annum by 1961, compared with 30-36 per cent in 1952. Furthermore, the monetary authorities were able to eliminate many quantitative and other restrictions on bank lending and to curtail the Bank of Greece's direct advances to the economy.

Through the post-reform period, very large increases in the money supply were absorbed by a continuing decline in the income velocity of money—and to a lesser extent by an expansion of the monetary sector of the economy—and had, consequently, no inflationary repercussions. Specifically, from 1952 to 1961 the GNP at current prices rose by 187 per cent whereas the money supply increased by 400 per cent. This corresponded to a decrease from 11.8 to 6.8 in annual velocity.

Finally, there was a marked improvement in public finances. This reflected determined efforts to progress in that direction and played an important part in safeguarding monetary stability. However, monetary stability, once achieved, helped the Government by eliminating a basic budgetary difficulty which it had encountered under inflationary circumstances, namely, that of having to make expenditures at prices higher than those which pertained to part of its corresponding tax revenues. Furthermore, in an environment of stable prices it became possible for the authorities to remove gradually some of the subsidies which they had granted formerly, most notably the subsidy on bread. Between the fiscal year 1952/53 and 1961,⁸ current expenditures rose by less than 144 per cent, while current revenues increased by approximately 167 per cent (Table 1). In fact, beginning with 1957 there have been moderate surpluses in the current budget, which totaled Dr 3.9 billion (\$130 million) by the end of 1961 and covered one fourth of the corresponding deficit in the investment

⁷ Maximum interest rates payable by the banking system on deposits were also lowered at the same time.

⁸ See Table 1, footnote 1.

TABLE 1. GREECE: BUDGET DATA, FISCAL YEARS 1952-61¹

(In billions of new drachmas)

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Current budget										
Expenditure	6.6	6.6	8.6	10.3	12.4	13.0	13.2	14.1	14.9	16.1
Revenue	5.7	6.4	8.1	9.7	12.3	13.2	14.3	14.8	15.8	17.1
Surplus (+) or deficit (-)	-0.9	-0.2	-0.5	-0.6	-0.1	+0.2	+1.1	+0.7	+0.9	+1.0
Investment budget										
Expenditure	...	1.2	1.3	1.4	1.3	2.2	2.6	3.4	4.1	5.1
Revenue	...	²	0.2	0.3	0.2	0.2	0.2	0.4	0.5	0.6
Deficit	...	-1.2	-1.1	-1.1	-1.1	-2.0	-2.4	-3.0	-3.6	-4.5
Over-all deficit	...	-1.4	-1.6	-1.7	-1.2	-1.8	-1.3	-2.3	-2.7	-3.5

Sources: Figures for 1952-55 have been provided by the Economic Research Department of the Bank of Greece. Those for 1956-60 have been based on data from the Bank of Greece, Economic Research Department, *The Greek Economy in 1960* (in Greek, Athens, 1961), pp. 52-53; and those for 1961 have been based on data from the Bank of Greece, Economic Research Department, *Monthly Statistical Bulletin*, October 1962, p. 53.

¹ For 1952-55, the fiscal year covers the 12 months ended June 30 of the year given; for 1956-61, the fiscal year corresponds to the calendar year.

² Less than 50 million drachmas.

budget. Financing the deficit in the investment budget was also facilitated by two other factors directly associated with the new monetary climate. In the post-reform years, but particularly after 1957, Treasury borrowing from sources other than the Bank of Greece became feasible once more.⁹ By the end of 1961, the Government, and the government-controlled Public Power Corporation, had sold almost Dr 4.2 billion (\$140 million) of long-term bonds, some of their issues being oversubscribed by an eager public. An additional Dr 3.6 billion (\$120 million) of Treasury notes had been placed with the banking system, which had, on occasion, displayed a desire to buy such notes considerably in excess of legal requirements.¹⁰ The second factor was that the authorities could utilize all available counterpart funds (resulting from foreign aid, loans, or reparations) to cover the deficit of the investment budget. (It will be recalled that such funds had had to be partly "frozen" in the pre-reform period.) As a result of these developments, the Government was able to increase its investment expenditures (not including similar outlays by government-controlled enterprises) from Dr 1.2 billion in 1952/53 to Dr 5.1 billion in 1961 (a 325 per cent increase), with no inflationary consequences for the economy.

⁹ Dr 300 million (\$10 million) of long-term Treasury securities were sold in 1954, largely, however, by high-pressure methods which were entirely unnecessary for later issues.

¹⁰ In general, 18 per cent of bank deposits.

Effects on the Balance of Payments

One of the main purposes of the reforms was to strengthen the country's balance of payments position. The results are shown in Table 2. Despite the reduction in foreign governments' grants and reparations between 1952 and 1961, Greece's foreign exchange reserves rose over the same period from \$71.9 million, or less than three months' imports, to \$250.5 million, more than five months' imports. Thus, Greece acquired a comfortable cushion against potential adversities in its external accounts. The following brief observations are intended to clarify the role of the reforms as they affected exports, receipts from invisibles, the capital inflow, imports, and payments for invisibles.

EXPORTS

An increase in exports made a substantial contribution to the improvement in the balance of payments in the period 1953-58. Export receipts (on a payments basis) rose uninterruptedly to a record total of \$243 million in 1958, which was more than twice their value in 1952. This increase may be ascribed to a number of factors, including economic expansion in Greece's major trading partners, the Western European countries, the reduced need of these countries for U.S. assistance, and their increasing willingness to procure agricultural commodities from their prewar Eastern European suppliers rather than through U.S. aid-financed surplus disposal programs. However, the devaluation, too, proved to be a powerful stimulus to exports, its effectiveness being due to favorable conditions on the side of both demand and supply. Thus, the elasticity of substitution between Greek and competing foreign commodities turned out to be high. A particularly extensive substitution appears to have occurred at the expense of Turkey, the keenest rival of Greece in world markets. This is clearly demonstrated in Tables 3 and 4, showing for these two countries total export proceeds, the volume of exports of tobacco, cotton, raisins, and currants (Greece's four major export products), and ratios of these data relative to averages for earlier years. On the other hand, the domestic supply of export products was aided initially by the drawing down of large stocks accumulated during the preceding period of inflation and export difficulties. But the available supplies continued to expand, as increases in current output were made possible by the removal of acreage restrictions in force before 1953, by the utilization of industrial capacity that had been idled by the deflationary program of 1951-52, and by the employment of new

TABLE 2. GREECE: BALANCE OF PAYMENTS, 1952-61

(In millions of U.S. dollars)

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
A. Goods, services, and private transfer payments										
1. Receipts										
Exports f.o.b.	115.0	134.1	161.0	206.5	209.6	222.8	242.8	212.5	208.6	234.3
Travel	9.6	22.7	25.3	29.1	31.2	41.5	36.2	41.7	51.4	68.1
Transportation	36.1	27.3	30.9	39.5	51.5	69.2	62.4	60.8	75.7	97.5
Emigrant remittances	17.9	45.6	47.0	50.6	60.9	75.0	76.7	88.6	90.4	98.3
Other	19.5	17.3	24.0	45.2	52.0	67.4	52.6	60.1	61.3	61.6
Total	198.1	247.0	288.2	370.9	405.2	475.9	470.7	463.7	487.4	559.8
2. Payments										
Imports c.i.f.	-289.5	-253.1	-333.2	-381.9	-485.7	-523.7	-529.8	-463.4	-520.3	-585.1
Travel	-7.1	-6.6	-8.3	-9.9	-12.7	-15.2	-15.3	-15.4	-18.8	-19.3
Investment income	-3.6	-4.0	-3.4	-5.5	-3.5	-4.4	-3.9	-4.1	-3.7	-7.3
Government	-5.3	-6.1	-7.8	-7.9	-7.4	-10.0	-8.1	-10.3	-12.3	-12.4
Other	-10.6	-7.5	-9.9	-13.3	-16.7	-21.9	-21.3	-23.3	-26.8	-32.5
Total	-316.1	-277.3	-362.6	-418.5	-526.0	-575.2	-578.4	-516.5	-581.9	-656.6
Balance	-118.0	-30.3	-74.4	-47.6	-120.8	-99.3	-107.7	-52.8	-94.5	-96.8
B. Miscellaneous, transfer payments, and capital										
Reparations and indemnities	26.6	7.6	7.2	0.9	0.7	0.4	0.2	2.8	0.8	0.9
Import credits	—	7.2	8.8	12.8	24.6	33.8	18.3	-4.5	7.8	6.0
Other private capital	14.6	18.1	23.0	25.0	26.4	35.6	38.3	46.3	30.4	57.1
Other	-9.6	-9.1	-7.3	-8.8	-3.3	-3.0	-3.5	6.7	-4.3	-7.4
Total	31.6	23.8	31.8	29.9	48.4	66.8	53.3	51.3	34.7	56.6
C. Official grants and loans										
U.S. grants	92.3	62.5	51.5	53.4	50.8	2.9	30.2	39.3	36.0	31.6
U.S. Government deposits in drachmas	5.4	—	—	7.0	7.0	2.8	-2.2	-6.0	5.6	-2.3
U.S. official loans	—	—	—	10.0	15.0	16.6	11.2	16.7	9.8	15.2
German Government and other official loans	—	—	—	—	—	—	—	13.5	11.9	33.7
Total	97.7	62.5	51.5	70.4	72.8	22.3	39.2	63.5	63.3	78.2
D. Net errors and omissions	3.3	-3.9	2.8	-1.7	3.4	0.2	1.9	-0.3	1.9	-11.6
E. Monetary movements: increase (-) in assets	-14.6	-52.1	-11.7	-51.0	-3.8	10.0	13.3	-61.7	-5.4	-26.4
Year-end gold and foreign exchange reserves¹	71.9	120.6	131.5	186.8	190.1	178.9	161.7	207.6	223.5	250.5

Sources: International Monetary Fund, *Balance of Payments Yearbook* and *International Financial Statistics*.¹ These figures are based on data from International Monetary Fund, *International Financial Statistics*. They exclude the 1946 stabilization loan from the United Kingdom to Greece; this loan was not drawn on, and it was repaid in installments during the period covered by the table.

TABLE 3. GREECE AND TURKEY: ANNUAL AVERAGE OF EXPORTS, 1951-52, 1953-58, 1957-58, AND 1959-61

Value of All Exports (million U.S. dollars)			Volume of Major Exports (thousand metric tons)					
Greece	Turkey		Tobacco		Cotton		Raisins and Currants	
			Greece	Turkey	Greece	Turkey	Greece	Turkey
1951-52	111.0	338.5	36.5	57.4	5.5	62.9	75.6	39.7
1953-58	184.8	323.5	56.0	66.9	23.2	57.1	107.6	46.1
1957-58	226.0	296.0	65.7	72.3	27.4	47.5	110.6	54.3
1959-61	210.0	341.0	60.6	93.7	37.5	89.1	101.3	68.9

Sources: United Nations, *Yearbook of International Trade Statistics*, 1960, p. 13; International Monetary Fund, *International Financial Statistics*, September 1962, p. 38; and Food and Agriculture Organization of the United Nations, *Trade Yearbook*, 1954, 1957, 1959, 1961, and 1962.

capacity that reached the operational stage as more investment projects were completed.

After 1958, however, Greece's export earnings declined. This was not the result of domestic inflation, which, as indicated above, had been brought under effective control by mid-1956, but was due to the

TABLE 4. GREECE AND TURKEY: RATIOS OF GREEK TO TURKISH EXPORTS¹

	Total	Tobacco	Cotton	Raisins and Currants
Average 1953-58 (Average 1951-52 = 100)	174.0	132.0	467.0	123.0
Average 1959-61 (Average 1957-58 = 100)	81.0	71.2	73.0	72.2

Sources: See Table 3.

¹ Ratios for total exports are based on dollar values; those for individual commodities, on volume.

currency devaluation in Turkey (and, to a lesser extent, that in Spain) and to the farm price support policies of the Greek authorities. In an attempt to bolster exports, the Government took measures aimed at redirecting some foreign trade toward countries with which Greece had concluded bilateral agreements—chiefly the communist state trading nations of Eastern Europe.¹¹ Many of these measures were abandoned after it was discovered that they probably did more harm than good. The state trading nations often paid higher prices than

¹¹ This was accomplished by increasing government imports from the countries in question and by imposing quota restrictions on certain private imports from Western nations.

Western purchasers for Greek goods, but recouped by charging correspondingly higher prices for their own exports. They were less exacting in their standards of quality, packing, classification, and sorting of the farm commodities that they bought, and they frequently re-exported against convertible currencies many of their imports from Greece. Thus, they disrupted Greece's internal price structure, brought about a decline in its sales to Western markets, and eased the pressure for much needed improvements in its export methods.

RECEIPTS FROM INVISIBLES

The reforms doubled the exchange rate for invisibles and, by eliminating the overvaluation of the currency (the principal cause of the flight of capital), they caused a decline in the premium on foreign exchange in the black market. Both these effects in turn increased the public's willingness to surrender its foreign exchange receipts to the authorities. As a result, immediately after the reforms, invisibles (recorded)—especially tourist receipts and emigrant remittances¹²—rose sharply, most of the increase no doubt reflecting exchange earnings which had previously eluded the Bank of Greece. Thereafter, receipts from invisibles continued to increase at a slower, but still most satisfactory, rate, more than tripling between 1953 and 1961. By 1957 they had, for the first time, surpassed exports and become the main source of the country's earnings of foreign currencies.¹³ Undoubtedly, these gratifying developments must be attributed to numerous factors in addition to the reforms. Thus, the spectacular increase in shipping earnings should be ascribed mainly to the transfer to the Greek Registry¹⁴ of a huge tonnage of ships owned by Greeks, while the rise in emigrant remittances was helped by increased emigration. However, the reforms themselves played a significant part. As noted above, they reduced the leakage into the black market of receipts from invisibles. Also, along with other important influences (such as the economic boom in the Western world, the spread of the main currents of international tourism across Europe toward the Middle East, and the Greek Government's efforts to increase tourism in Greece), they contributed to the increase in tourist receipts, from \$10 million in 1952 to \$68 million in 1961, by making Greece one of

¹² "Private capital transfers" in the balance of payments classification of the International Monetary Fund.

¹³ It is of interest that in 1961, for the first time, *net* invisibles surpassed exports.

¹⁴ This transfer was a result of the tax and other incentives granted to Greek shipowners by the Government and of various forms of international pressure on the so-called flags of convenience.

the least expensive countries for the foreign tourist. The opinion that the devaluation stimulated tourism appears to be corroborated by the fact that, when compared with countries in the Organization for European Economic Cooperation (OEEC) and Spain, Greece was first in the rate of increase from 1952 to 1955 in foreign tourist arrivals, and second only to the Federal Republic of Germany in the rate of increase in foreign exchange proceeds from tourism.¹⁵

INFLOW OF CAPITAL

The capital account also contributed to the improvement in the balance of payments. According to the statistics in Table 2, the net inflow of private foreign capital (not including import credits) rose from \$15 million in 1952 to \$57 million in 1961;¹⁶ however, these are the amounts actually recorded, and they certainly understate the increase that did in fact take place.¹⁷ To be sure, this influx of capital can be attributed in part to a number of causes other than the reforms; for example, the political and economic pressures which forced many Greeks living abroad (particularly in Turkey and the United Arab Republic) to move themselves and their property out of their countries of residence. Nevertheless, the influence of the reforms was important. By establishing a realistic parity for, and in fact initially undervaluing, the drachma in relation to other currencies, they induced a return flow of the funds which had left Greece illegally before the devaluation and, moreover, attracted funds owned by Greek emigrants, who are always eager to invest part of their wealth in the mother country, provided this can be done without loss that is due to an overvaluation of the drachma.

From the standpoint of its direct impact on the development effort, the capital inflow in the earlier years of the period here discussed was somewhat disappointing. Most of this capital consisted of funds belonging to individual Greeks and Greek emigrants and was used to

¹⁵ As shown by the statistics in Organization for European Economic Cooperation, *Tourism in Europe, 1961* (Paris, September 1961), and International Monetary Fund, *Balance of Payments Yearbooks*.

Incidentally, Spain seems to have had a similar experience since its currency reform in 1959.

¹⁶ It showed a further considerable increase in 1962.

¹⁷ The official statistics do not, of course, show the capital flight which occurred before April 9, 1953. On the other hand, part of the inflow after the reforms is believed to be concealed in the data for receipts from invisibles, which are therefore overstated. Taking these facts into consideration, one can conservatively estimate that the improvement in the capital account between 1952 and 1961 contributed no less than \$80 million to the improvement in the over-all balance of payments in that same period.

purchase real estate. International capital of the kind needed to develop unexploited resources and to introduce modern technical and organizational methods did not show much interest in Greece. But this is not surprising. An exchange rate adjustment, of and by itself, could not be expected to attract foreign investors, especially in view of Greece's past record of financial shakiness and default. Later, however, the prolonged political and monetary stability of Greece, its rapid rate of growth and, in general, its over-all excellent economic prospects—all of which are to some extent related to the reforms—started to have their effect. Direct investment by European and U.S. concerns is rising at a most satisfactory rate. The most striking example of this increased interest was an agreement in 1962 between the Greek Government and a group of foreign firms (T. Pappas, ESSO, and Kellogg) providing for a total investment of no less than \$100 million over the next few years in an oil refinery, a steel plant, an ammonia plant, and a petrochemicals factory.¹⁸

IMPORTS

In the initial post-reform stage, the balance of payments also benefited from a decline in imports, caused by the restrictive price effects of the devaluation and the anti-inflationary policies of the Government, which were continued throughout the first half of 1953. However, toward the end of that year, import payments started to climb rapidly. Their vigorous upward movement was uninterrupted for the next five years, with the result that they more than doubled between 1953 and 1958. The main reasons for these developments were rising incomes, rising domestic prices (until mid-1956), a relatively expansionary government monetary and credit program, and the policy of liberalizing imports.

It is perhaps desirable to explain in some detail the three principal ways in which import liberalization tended to boost imports. First, as mentioned earlier, it resulted in lower prices to the Greek consumer for many imported goods that had previously been subject to quantitative restrictions. Second, it enabled Greek importers to utilize foreign suppliers' credits and, in turn, to extend credit to their own customers. As a result, there was a spectacular expansion of installment sales—previously quite uncommon in Greece—of imported products. Third, there was a widespread feeling in the country that the liberalization was not in line with economic realities and would have to be

¹⁸ See statement (in Greek) by the Minister of Finance, S. Theotokis, in *Kathimerini*, December 13, 1962, p. 1.

abandoned sooner or later. This led to large precautionary purchases of foreign goods by the importers.

This surge in imports was followed by a leveling off in 1959 and 1960, when the rate of growth of real incomes declined and a considerable degree of price stability was achieved. By that time, too, various restrictive tax and credit measures (including the restoration of a number of advance deposit requirements on imports) had become more effective, major investment projects (notably the oil refinery) had been completed and were producing import substitutes, and Greek industry had increased its productivity and become more able to cope with foreign competition. The liberalization itself had come to be accepted as a sustainable policy. Moreover, the Greek consumer slowed down his purchases of liberalized goods, as he found that he had perhaps gone too deeply into installment debt and that his pent-up demand for such goods had been satisfied, to some extent.

Finally, in 1961 there was another substantial increase in imports, reflecting the sharp rise in real incomes (more than 11 per cent) and large-scale investment during that year.

It is instructive to recall, in the light of subsequent developments, the arguments which were initially leveled against the liberalization policy, but which, interestingly enough, are no longer heard in Greece. They were that (a) unless the authorities pursued severe deflationary policies, imports would tend to increase constantly, thereby upsetting balance of payments equilibrium, and (b) valuable foreign exchange resources would be wasted on nonessentials, to the detriment of the development effort.

With respect to the first objection, it may be remarked that, though expenditures on imports actually did rise substantially between 1952 and 1961 (from \$289 million to \$585 million), they remained well within foreign exchange availabilities. No restrictive economic program became necessary and, in fact, it can very well be claimed that the Government's policy has been quite expansionary since mid-1953.

As to the other objection, there are no satisfactory data clearly identifying the changes in imports of liberalized goods after the reform. However, the Economic Research Department of the Bank of Greece publishes a classification of imports by various categories, including "nonbasic foodstuffs" and "nonbasic industrial consumer goods," which more or less group together the items affected by the liberalization. Changes in the figures for these categories can, therefore, be taken as roughly indicating the order of magnitude of changes in imports of liberalized goods; and it can be inferred that, from 1952 to 1961, the latter rose by \$40-50 million—a considerable increase inasmuch as it amounted to somewhere between 16 per cent and 20

per cent of the rise in total imports between those years.¹⁹ However, before the liberalization policy is judged on the basis of this evidence, the following should be borne in mind:

(1) The above estimate clearly overstates the effects of the liberalization per se. Imports of the goods in question would probably have risen even if the liberalization had not been carried out. No doubt, pressures on the authorities for increases in the relevant quotas would have been strong. Furthermore, experience indicates that evasion of the quota limitations would have occurred. For instance, as long as scarcity prices prevailed for some products, emigrants would have tended to send such goods, rather than remittances in money, to their relatives in Greece. Or, Greeks might have exported funds illegally, bought goods abroad, and imported them on the basis of regulations which permitted imports in excess of quota restrictions, provided that the importer could show that he had paid for his transaction with his own foreign exchange holdings, and that he had not acquired this foreign exchange in a way violating exchange control laws.

(2) The removal of quotas and other liberalization measures did not, of course, leave the Government powerless to restrict specific imports. Reliance could be placed, and was placed, on tariff increases—to the extent that they were permitted by the GATT—on taxes, and on credit instruments, such as advance deposits.²⁰

(3) It is by no means certain, or even probable, that any foreign exchange made available as a result of fewer imports of liberalized goods would have been utilized to enlarge the nation's productive capacity. As pointed out in the next section, the liberalization policy itself was one of the chief inducements to private investment during the period under survey, and it therefore appears highly unlikely that, in the absence of this inducement, the private investment effort would have been any greater than it actually was. Moreover, as explained below (p. 143), there is every reason to doubt that the Government could have profitably expanded its own development program.

(4) Any "wastage" of foreign currency resources, which might be attributed to the liberalization, has to be weighed against its favorable effects on the monetary situation (see p. 130) and industry as well as the benefit it bestowed on the country by eliminating the evils of the quota system (see p. 126).

¹⁹ These figures are based on import arrivals, not payments, and hence are not directly comparable with the data in Table 2. They have been furnished to the authors by members of the Economic Research Department of the Bank of Greece.

²⁰ Nevertheless, the use of advance deposits was evidently a departure from the initial content and spirit of the liberalization policy.

On the whole, there seems to be reason for believing that the alleged injurious consequences of the liberalization were rather negligible and that its effects were of real benefit to the economy.

PAYMENTS FOR INVISIBLES

Expenditures on invisibles rose from \$27 million in 1952 to \$71 million in 1961. This can be largely ascribed to the vigorous economic expansion, which led to a steady increase in expenditures by Greeks abroad for tourism and other purposes. It also reflected a rise in such other items as dividend and interest payments to foreigners (a consequence of the large capital inflow and increasing output) and government expenditures in foreign countries.

Contributions to Economic Growth

The rate of growth of the Greek economy since the reforms has been among the highest in the world. The GNP in constant prices rose by 86.8 per cent during the nine years ended 1961, that is at an annual rate of 7.2 per cent (compounded). Since the natural rate of increase of the population of Greece was relatively low and large-scale emigration took place, per capita incomes also rose substantially, i.e., by 6.2 per cent a year.

One of the most powerful stimulants to growth was the improved balance of payments. Increased exports and invisibles affected incomes directly and through the multiplier process. There were also accelerator effects; for example, the boom in foreign tourism—and government efforts—led to considerable investments in transportation, hotels, and other facilities for the foreign traveler. The capital account of the payments balance also contributed to the growth of income, inasmuch as the large inflow of foreign funds provided the financial basis for greater investment activity and—of late, particularly—brought much needed technical know-how into the country (see p. 138).

Private investment expenditures were a second important contributor to the growth. Between 1952 and 1961 these expenditures rose from Dr 3.7 billion to Dr 11.2 billion,²¹ or from 7.5 per cent to 12.1 per cent of the GNP (Table 5). Among the factors that facilitated or prompted their increase were the considerable decline in interest rates during the period covered; the greater availability of credit

²¹ These figures do not include the value of ships transferred to the Greek Registry.

from the banking system or other sources; the balance of payments developments mentioned above; and the import liberalization policy, which forced Greek industrialists to accelerate their investment effort in order to cope with foreign competition. Yet, despite their upward trend, the investment expenditures of the private sector not only lagged behind the aspirations of the Greek people for rapid economic progress; they also fell short of the not overly ambitious projections of the Government's development plan. Furthermore, they were in large part devoted to the construction of luxury housing.

TABLE 5. GREECE: SELECTED ECONOMIC STATISTICS, 1952-61

	Wholesale Price Index in Athens and Piraeus ¹	Gross National Product		Gross Fixed Capital Formation ²				Money Supply ¹
		In constant 1954 prices	In current prices	In constant 1954 prices		In current prices		
				Private	Public	Private	Public	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1952	100.0	49.4	37.9	3.7	2.6	2.9	1.5	3.2
1953	115.3	56.6	50.3	4.6	2.3	3.7	1.9	4.2
1954	129.3	58.7	58.7	5.4	2.3	5.4	2.3	5.4
1955	138.7	63.3	66.6	6.5	2.4	6.5	2.6	6.4
1956	150.6	67.8	77.7	7.3	2.9	7.6	3.3	8.0
1957	151.5	73.9	83.8	7.4	3.0	7.8	3.4	8.9
1958	147.8	76.3	87.3	9.5	3.5	10.2	3.9	10.3
1959	150.2	79.3	90.8	8.9	4.1	9.9	4.8	11.3
1960	153.7	83.0	97.2	10.1	5.6	10.9	6.4	13.7
1961	156.1	92.3	108.8	11.2	7.0	12.1	8.0	16.0

Sources: Bank of Greece, *Monthly Statistical Bulletin*, December 1958, p. 71, October 1962, p. 90, December 1962, pp. 22 and 31; Ministry of Coordination, Department of National Accounts, *National Accounts of Greece, 1949-1959*, pp. 61 and 74; and *National Accounts of Greece, 1958-1961* (in Greek and not yet published). Data for fixed capital formation not including ships transferred to the Greek Registry, the money supply, the gold sovereign rate in Athens, and the gold sovereign/dollar cross rate in Athens, Zürich, and Beirut were furnished by members of the Economic Research Department of the Bank of Greece. The price index implied in Cols. (2) through (7) is not that in Col. (1).

Since private investment did not attain the levels which were considered desirable, public investment was expanded considerably. Between 1952 and 1961, government expenditure on development projects rose from Dr 2.6 billion (constant drachmas) to Dr 7.0 billion (from 5.3 per cent to 7.6 per cent of the GNP). This was a substantial increase, particularly as it came at a time when foreign aid was cut drastically. Thus, public investment expenditures were, during the period under review, a third major dynamic growth factor. In retrospect, given the degree of price stability and the comfortable

balance of payments situation that actually prevailed, it might appear that the Government could have done even more without unduly straining the economy. However, some misjudgments, coupled with the losses incurred in connection with various government projects, suggest that an attempt further to expand public investment expenditures would have overtaxed the limited organizational and planning talents of the administration and would have involved serious waste.

Three other aspects of national income developments may be singled out, inasmuch as they illustrate some of the positive and negative influences of the reforms. First, Greek industry, notwithstanding

TABLE 5 (concluded). GREECE: SELECTED ECONOMIC STATISTICS, 1952-61

Bank Deposits ³			Income Velocity of Money Supply (Cols. 3 + 8) (12)	Total Credits Granted to Econ- omy ^{3,4} (billion drachmas) (13)	Gold Sovereign Rate in Athens ¹ (drachmas) (14)	Gold Sovereign/ Dollar Cross Rate in Athens ¹ (15)	Gold Sovereign/ Dollar Cross Rate in Zürich ¹ (16)	Gold Sovereign/ Dollar Cross Rate in Beirut ¹ (17)
Demand (9)	Savings billion new drachmas (10)	Time drachmas (11)						
0.7	0.08	0.01	11.8	6.5	208.5	12.70	11.85	11.70
1.2	0.14	0.02	12.0	8.2	273.7	...	10.55	10.18
1.6	0.3	0.04	10.9	10.5	310.9	...	9.68	9.67
2.1	0.5	0.07	10.4	11.6	309.5	10.68	9.54	9.43
1.9	1.8	0.3	9.7	14.6	320.6	10.59	10.25	10.19
2.3	4.1	0.6	9.4	18.6	314.0	10.34	10.20	10.16
2.5	5.8	1.1	8.5	22.0	304.6	9.91	9.59	9.72
2.9	8.5	1.3	8.0	24.5	290.7	9.62	9.53	9.59
3.5	10.8	1.2	7.1	28.7	283.9	9.41	9.36	9.38
3.8	12.9	1.5	6.8	32.4	291.7	9.63	9.67	9.70

¹ Annual averages.

² Does not include value of ships transferred to Greek Registry.

³ At end of year.

⁴ By the banking system, including the central bank, the Agricultural Bank, the Mortgage Bank, and special institutions, i.e., the Economic Development Financing Organization, the Post Office Savings Departments, and the Consignations and Loans Fund.

some pessimistic predictions, demonstrated the ability to survive and prosper after quantitative restrictions had been removed and the increased protection afforded by the devaluation in some fields had worn off. The volume of industrial output rose by almost 110 per cent between 1952 and 1961. Although some assistance was provided by the Government, chiefly in the form of advance deposits on imports and moderate tariff increases, the main factor was that productivity (according to the best available estimates made by the Research Department of the Bank of Greece) roughly doubled in those same years. Without the spur of import liberalization, it is doubtful

that industry could have made such strides. The expansion of industry was especially rapid in 1960 and 1961. In those years, there were encouraging signs of small but increasing exports of manufactured goods, even to hard currency areas.

Second, after 1952 there was a shift toward a more equitable distribution of income. Importers' scarcity profits and windfall gains on speculative ventures, two prominent features of the earlier period of economic disorganization, disappeared, while increased foreign competition tended to eliminate excessive profit margins in industry. The reduction in interest rates also helped. In the low-income agricultural sector, the substantial expansion of output was accompanied by a 10 per cent improvement in the ratio of prices received by farmers to prices paid.²² An improved budget situation resulted in an increase in the buying power of government workers' salaries and pensions. Wage increases in private industry also outdistanced the increase in the cost of living. Employment made good gains during these years, but the unemployment rate still remained disturbingly high. Needless to say, the improvement in the distribution of incomes, coupled with the increase in national income, had salutary effects, not only of an economic but also of a political nature. It may partly explain the country's phenomenal government stability after 1952, a stability which could not have been predicted from Greece's earlier history of short-lived shaky regimes, but which itself was one of the major "real" factors that contributed to the country's economic progress during the period discussed.

Third, agricultural output increased by more than 67 per cent in the nine years ended 1961.²³ This over-all picture of progress in the agricultural sector is partly marred by the results of various government interventions in the markets for farm commodities—interventions which were, of course, departures from the spirit and the letter of the reforms. The detrimental effects of such interferences on export commodities have been mentioned above (p. 135). Government policies of the same kind were also applied to agricultural products consumed primarily or exclusively at home. Their consequences were equally, if not more, injurious.

One example of these policies concerns wheat. Memories of past difficulties led postwar Greek Governments to encourage wheat pro-

²² But this increase in the ratio of prices received to prices paid by farmers was also due to factors other than the reforms; for instance, the Government's price support policies and the improvement in the terms of trade.

²³ Ministry of Coordination, Department of National Accounts, *The National Accounts of Greece, 1948-1969*, p. 72, and *The National Accounts of Greece, 1958-1961* (not yet published).

duction by restricting imports and introducing support programs, which kept domestic prices much higher than corresponding world prices. Responding to this stimulation, output expanded and, eventually, completely covered domestic consumption requirements. In 1959, it even left a considerable surplus over and above these needs. Until recently, the budget was seriously affected by the Government's policy of subsidizing the price of bread. In addition, a heavy deficit was incurred when the surplus part of the 1959 crop had to be sold abroad at competitive prices. Now the Government is incurring additional losses because of its uphill struggle to discourage wheat cultivation by granting subsidies to farmers who switch to the production of other more promising farm commodities. Moreover, the consumer has been penalized because he has had to pay too much for his bread; and, since bread is one of the principal items in the Greek diet, its high price has affected living costs materially, thereby undermining the competitive ability of the entire economy. It is ironical that Greece, but for the policy in question, could have obtained large amounts of wheat from the United States under the advantageous terms of Public Law 480.²⁴

Conclusions

Despite some black spots, the economic history of Greece since the days of the reforms has been undisputably a success. In fact, it need not fear a comparison with the so-called economic miracles of the last decade. To be sure, Greece's progress can be, in large part, imputed to favorable "real" factors, such as peace in the country's international relations, domestic political stability, a low rate of population increase, proximity to and close ties with the fast growing Western European area, an expanding trade with Eastern Europe, an improvement in the terms of trade,²⁵ the existence of large and relatively wealthy Greek minorities abroad, the rising trend of world capital movements, and the various pressures which international shipping developments applied on Greek shipowners to transfer their vessels to the Greek flag.

Nevertheless, this survey of events after 1952 provides evidence that the reforms helped Greece to strengthen its balance of payments,

²⁴ The Agricultural Trade and Development Assistance Act.

²⁵ The terms of trade (ratio of prices received for exports to prices paid for imports) rose from 98.7 in 1952 to 107.5 in 1961 (Kingdom of Greece, National Statistical Service of Greece, *Monthly Bulletin of Statistics*, January and December 1961).

make the drachma a respected currency,²⁶ and accelerate the rate of its economic growth. Much, of course, remains to be done by way of eliminating economic backwardness and raising living standards to tolerable levels. The solid accomplishments of the nine years 1953-61, however, have in many ways created conditions favorable to further progress, not the least of which is the confidence prevailing abroad in Greece's future prospects. This confidence is not unrelated to the fact that Greece was the first country to be admitted as an associate member of the European Economic Community, an association from which the Greeks expect a major boost to their economic growth. Most probably this same confidence will be reflected in an increasing flow of foreign capital into the country.

The experience of Greece suggests a number of conclusions of general interest—particularly to underdeveloped countries which still hesitate to undertake such reforms. First, this experience shows once more that the price elasticity of demand for a country's merchandise exports is normally high, simply because buyers in international trade do tend to switch to the cheapest source of supply. Second, such reforms affect not only the trade balance but also invisibles (of which tourism seems to be quite price-elastic) and the capital account of the balance of payments. These latter effects, often not duly emphasized or even neglected in theoretical discussions, were very significant in Greece. Their importance will probably increase for all countries in the future because, to cite just one reason, capital is becoming more mobile and alert to profitable investment opportunities across national frontiers. Third, although such reforms cannot by themselves ensure monetary stability, they can help to lay the foundations on which a sound system of money and credit can be built. By devaluing and abolishing multiple rate practices, a country can eliminate basic causes of distrust in its currency, namely overvaluation and a disorderly exchange rate structure. By liberalizing imports, it acquires a powerful weapon for combating domestic inflationary pressures, including the price effects of the former two reform measures. Fourth, the policies of liberalizing imports and unifying the foreign exchange system may perform the invaluable service of exerting effective disciplinary action on domestic industry, forcing it to become more efficient. Fifth, Greece's impressive economic growth in the period covered by this study would seem to belie the pessimistic contention that some meas-

²⁶ The reputation of the Greek currency, resting primarily on the factors analyzed above, was enhanced in 1959, when the drachma was granted limited nonresident convertibility for current account payments. It is interesting to note that the drachma is accepted everywhere and is hoarded as a hard currency in the neighboring countries, Turkey, Albania, Bulgaria, and Yugoslavia.

ure of inflation is a necessary price for rapid economic development. It would seem to lend support to the contrary argument that monetary stability, with its favorable effects on exports and imports of goods and services, the inflow of capital, savings, and public finances, tends to stimulate sustained growth at a high rate. Finally, the reforms discussed, in conjunction with the monetary stability to which they contribute, tend to bring about a less unequal distribution of incomes, thus reducing social conflict and government instability—two major obstacles to an effective development effort.

Contribution des réformes de change et de commerce à la stabilisation économique en Grèce, 1953-61

Résumé

En 1953, la Grèce a dévalué la drachme, unifié son système de change et libéré ses importations. Ces réformes ont été suivies d'une politique appropriée destinée à assurer leur succès. La présente étude souligne qu'elles ont beaucoup contribué à la création d'un climat monétaire favorable, caractérisé par une stabilité remarquable du niveau des prix, une diminution considérable de la vitesse-revenu de la monnaie, une augmentation spectaculaire des dépôts bancaires et de la capacité de prêt des banques, une diminution du rôle du souverain or dans le système monétaire grec, un assainissement du budget courant de l'Etat et un empressement renouvelé du public à souscrire aux emprunts de l'Etat. Ces réformes ont également contribué à consolider la balance des paiements du pays en stimulant les exportations et les recettes provenant des invisibles (du tourisme en particulier) et en rendant possible un afflux important et croissant de capitaux étrangers; en conséquence, la Grèce a pu, depuis 1953, augmenter considérablement ses réserves de change. La remarquable taux d'accroissement enregistré entre 1952 et 1961 par le Produit National Brut de la Grèce, taux composé qui a atteint 7,2 pour-cent par an en valeur réelle, peut être attribué dans une large mesure à ces réformes. Au cours de la période étudiée, les trois principaux éléments de croissance ont été l'amélioration de la balance des paiements, un programme dynamique de développement (que le gouvernement a pu mettre en oeuvre, grâce à la position solide des comptes extérieurs du pays et à la diminution de la vitesse de la monnaie) et une augmentation des investissements privés (en partie

liée à l'afflux de capitaux et en partie imposée aux milieux d'affaires grecs par la concurrence étrangère plus âpre amenée par les mesures de libération des importations). Finalement, les réformes ont aidé à réaliser une distribution plus équitable du revenu, réduisant ainsi les conflits sociaux et contribuant à la stabilité politique dont a bénéficié la Grèce au cours des neuf années (1953-1961) couvertes par la présente étude.

El aporte de las reformas cambiarias y comerciales a la estabilización económica de Grecia, 1953-61

Resumen

En el año 1953 Grecia devaluó el dracma, unificó su sistema cambiario y liberalizó sus importaciones. Este artículo expresa que dichas reformas (las cuales fueron seguidas por una política adecuada que tenía por objeto garantizar el éxito de las mismas) contribuyeron mucho a crear un ambiente monetario favorable caracterizado por un grado extraordinario de estabilidad en los precios, una disminución considerable en la velocidad-ingreso del dinero, un incremento espectacular en los depósitos bancarios así como en la capacidad del sistema bancario para efectuar préstamos, una mengua del lugar que el soberano de oro ocupaba en el sistema monetario griego, un mejoramiento en el presupuesto ordinario del Gobierno, y una renovada disposición de parte del público a conceder préstamos al Gobierno Central. Las reformas también contribuyeron a fortalecer la balanza de pagos del país al estimular las exportaciones y los ingresos provenientes de invisibles (particularmente del turismo) y al hacer factible una afluencia mayor y creciente de capital extranjero, con el resultado de que, a partir de 1953, Grecia ha logrado aumentar considerablemente sus reservas de divisas. La elevada tasa de crecimiento del producto nacional bruto de Grecia entre 1952 y 1961, la cual equivale al 7,2 por ciento anual (compuesto) en términos reales, puede atribuirse en gran medida a las reformas. Los tres principales factores del crecimiento económico de Grecia durante el periodo al cual se contrae el artículo fueron: la situación mejorada de la balanza de pagos, un dinámico programa de desarrollo (programa que el Gobierno pudo llevar adelante merced a la fuerte posición externa del país y la disminuyente velocidad del dinero), y el aumento observado en la inversión privada (en parte vinculado con la afluencia de capital

y en parte impuesto a los negociantes griegos por la aguda competencia extranjera creada por las medidas de liberalización de las importaciones). Por último, otro efecto saludable de las reformas fue el hecho de que contribuyeron a alcanzar una distribución más equitativa de los ingresos, aminorando así los conflictos de carácter social y contribuyendo al notable grado de estabilidad política disfrutado por Grecia durante los nueve años abarcados por este artículo (1953-1961).

Domestic Policies and Payments Problems of the Sudan, 1947-62

Adnan Mahhouk and Franz Drees*

THIS PAPER is concerned with the interaction between domestic economic policies and external balance in the Sudan. Part I contains an analysis of balance of payments developments during the period 1947-62. Following a description of trends and structural relationships, the discussion is divided into three periods: 1947-51, characterized by a sharply rising trend of exports and imports; the 1952-56 export cycle; and the 1957-62 export cycle. Part II deals with monetary and fiscal developments as related to balance of payments problems. The policies adopted by the Sudanese authorities to attain domestic and external equilibrium are appraised in the light of payments developments.

I. Balance of Payments Developments

TRENDS

The structure of the Sudan's balance of payments is heavily weighted with commodity trade, which accounts on average for well over 80 per cent of the Sudan's current exchange receipts and payments. Other items of the current account are relatively less important. During 1947-62, earnings from services averaged about 9 per cent of exports, and expenditures on services were about 18 per cent of imports (Table 1). The balance on services account was negative in all years except 1952; in most years, the deficit ranged between LSd 2 million and LSd 5 million.¹

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¹ LSd 1 = US\$2.87. The Egyptian pound was the currency in circulation up to 1957 when the Sudanese pound was issued. Since the Sudanese currency was issued at par with the Egyptian pound, the Sudanese pound is used throughout the paper.

TABLE 1. SUDAN: BALANCE OF PAYMENTS ON GOODS AND SERVICES ACCOUNT, TOTALS, 1947-62

(In millions of Sudanese pounds)

	Receipts	Payments	Balance
Trade	820.5	787.0	33.5
Services	76.6	139.8	-63.2
Goods and services	897.1	926.8	-29.7

Sources: International Monetary Fund, *Balance of Payments Yearbooks*.

As shown in Table 2 and Chart 1, the trend of the Sudan's foreign trade has been sharply upward. Between 1947 and 1962, exports increased at a rate of about LSd 4.2 million a year while imports increased at the higher annual rate of LSd 4.7 million. The rate of increase in exports was considerably above that of imports during the period 1947-51; subsequently, the position was reversed.

It is also evident from Chart 1 that exports fluctuated considerably more than imports. Thus, the average annual deviation of exports from their trend values² during this period was LSd 9.2 million, compared with LSd 7.7 million for imports. The maximum percentage deviation was 89 per cent for exports and 55 per cent for imports. Exports increased by as much as 119 per cent in one year (1951), and fell by 41 per cent in another (1952), compared with a maximum annual rise in imports of 47 per cent (1952) and a fall of 23 per cent (1958). Subject to a lag of approximately one year, imports have followed exports closely. The lag is, in fact, probably shorter than one year, but the assumption of a one-year lag was found to provide a good approximation. The correlation coefficient of the deviations of exports and imports from their respective trend values was +0.81 when imports were lagged by one year.³

The fluctuations in the trade balance appear large unless account is taken of this lag in imports, which is attributed to the close link between export earnings and government revenues, the delayed adjustment of government expenditures to changes in revenues, the lag in the distribution of income by cotton boards to tenants, and the usual

² Calculated by the least-squares method.

³ The correlation coefficient was +0.18 for unlagged imports. The regression equation of exports and lagged imports, both as defined by J. J. Polak (see below, p. 162, fn. 18), was $M_t = 10.3 + 0.89 X_{t-1}$, where M_t is imports in period t , and X_{t-1} is exports in period $(t-1)$. Where only commodity imports and exports were included, the regression equation was $M_t = 18.6 + 0.66 X_{t-1}$. The difference between the two equations is due primarily to aid-financed imports, for which adjustment is made in the first equation but not in the second.

TABLE 2. SUDAN: BALANCE OF TRADE, ANNUALLY, 1947-62¹*(In millions of Sudanese pounds)*

	Exports	Imports	Net Credit or Debit (-)
1947	16.9	15.9	+1.0
1948	26.8	21.9	+4.9
1949	31.6	23.3	+8.3
1950	36.3	26.8	+9.5
1951	79.6	41.6	+38.0
1952	46.7	61.2	-14.5
1953	44.7	50.3	-5.6
1954	40.9	47.5	-6.6
1955	56.0	51.2	+4.8
1956	71.7	48.2	+23.5
1957	51.6	69.7	-18.1
1958	44.7	54.0	-9.3
1959	68.0	49.2	+18.8
1960	64.0	61.9	+2.1
1961	61.3	77.7	-16.4
1962 ²	79.7	86.6	-6.9

Sources: International Monetary Fund, *Balance of Payments Yearbooks*.¹ Imports are c.i.f.; exports are mostly c.i.f.² Provisional.

expenditure lag by income earners. However, the effect of the last factor has diminished in recent years because of the growth in bank credit.

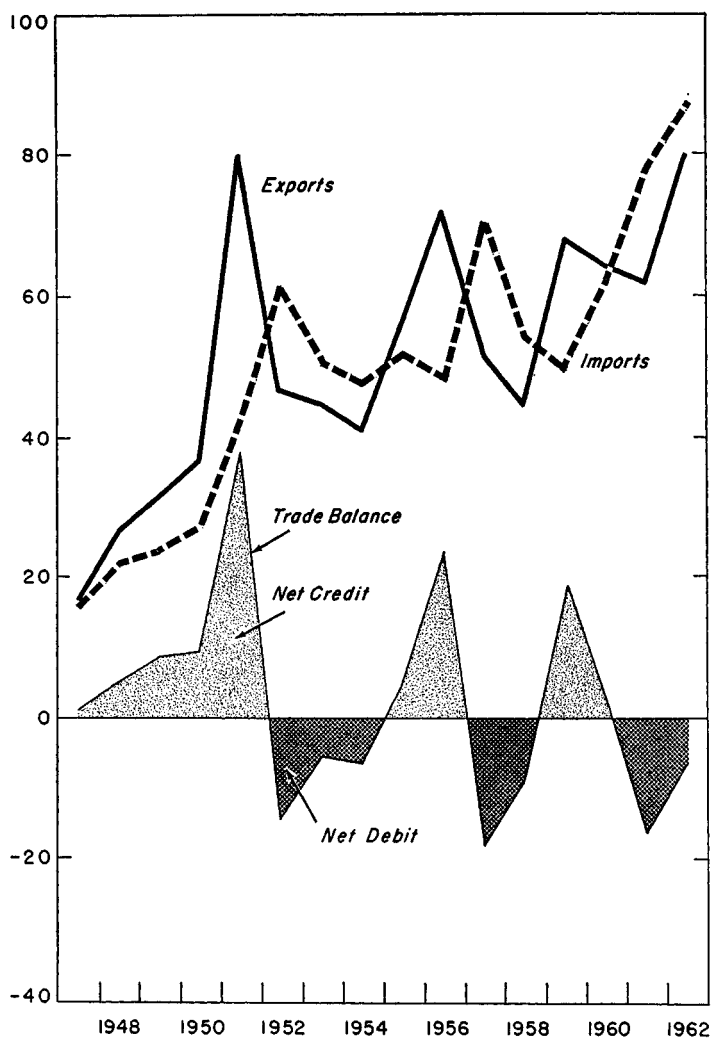
Between 1950 and 1958, the Sudan incurred small net deficits on transfer payments; they averaged about LSd 1 million a year. However, the position was reversed thereafter by the receipt of grants from the United States and payments of compensation by the United Arab Republic,⁴ and a net surplus of LSd 22.5 million was recorded during the four years 1959-62.

For the period 1947-62 as a whole, there was a net capital inflow on both private and official accounts, the former amounting to LSd 19.7 million and the latter to LSd 18.4 million. Until 1957, private capital movements were usually outward on account of increased holdings of Egyptian pounds by the public. However, the withdrawal in 1957 of LE 18.5 million of Egyptian notes and coins and the issuing of Sudanese currency reversed this trend. Official capital movements were also outward in each year of the period 1947-58, but during the

⁴ In compensation for the flooding of Wadi Halfa by the High Dam, the United Arab Republic agreed to pay to the Sudan LE 15 million, of which the first installment of LE 3 million was paid in January 1960, and three installments of LE 4 million each were paid in January 1961, January 1962, and February 1963.

following four years a net inflow of LSd 29.0 million was recorded. The net yearly figures in the various balance of payments accounts are shown in Table 3.

CHART 1. SUDAN: BALANCE OF TRADE, ANNUALLY, 1947-62¹



¹ Based on data in Table 2. Imports are c.i.f.; exports are mostly c.i.f.

TABLE 3. SUDAN: BALANCE OF PAYMENTS DATA, ANNUALLY, 1947-62

(In millions of Sudanese pounds)

	Trade Balance (1)	Net Services (2)	Net Transfer Payments (3)	Current Account Balance (Cols. 1 + 2 + 3) (4)	Net Private Capital (5)	Net Official Long- Term Liabilities (6)	Net Capital Move- ments (Cols. 5 + 6) (7)	Changes in Monetary Reserves ¹ (8)
1947	1.0	-2.3	0.6	-0.7	-0.9	-0.3	-1.2	1.5
1948	4.9	-2.4	0.6	3.1	-0.3	-0.3	-0.6	-2.6
1949	8.3	-3.3	0.9	5.9	-0.9	-0.4	-1.3	-4.3
1950	9.5	-4.2	-0.2	5.1	-3.0	-3.3	-6.3	0.7
1951	38.0	-0.8	-0.5	36.7	-3.0	-0.5	-3.5	-33.7
1952	-14.5	0.1	-0.4	-14.8	-0.9	-0.6	-1.5	16.0
1953	-5.6	-3.3	-1.5	-10.4	1.1	-0.5	0.6	6.8
1954	-6.6	-3.9	-1.2	-11.7	0.2	-0.5	-0.3	9.0
1955	4.8	-8.3	-1.4	-4.9	1.1	-0.5	0.6	3.6
1956	23.5	-5.0	-1.1	17.4	-1.8	-0.8	-2.6	-14.8
1957	-18.1	-2.4	-1.1	-21.6	20.2 ²	-2.6	17.6 ²	4.4 ²
1958	-9.3	-1.2	-2.2	-12.7	-0.6	-0.3	-0.9	13.2
1959	18.8	-3.7	2.5	17.6	1.0	8.8	9.8	-26.7
1960	2.1	-3.9	6.5 ³	4.7	0.1	6.7	6.8	-11.4
1961	-16.4	-5.9	7.7 ⁴	-14.6	5.1	6.0	11.1	3.3
1962 ⁵	-6.9	-12.7	5.8 ⁴	-13.8	2.3	7.5	9.8	3.7

Sources: International Monetary Fund, *Balance of Payments Yearbooks*.¹ Minus sign indicates increase; plus sign indicates decrease. The difference between column 8 and columns (4 + 7) is due to errors and omissions.² "Capital movements" includes a credit item of LSd 18.5 million for the withdrawal of Egyptian pounds held by the public; "changes in monetary reserves" includes a corresponding debit item.³ Includes LSd 3 million received from the United Arab Republic under the Nile Waters Agreement.⁴ Includes LSd 4 million received from the United Arab Republic under the Nile Waters Agreement.⁵ Provisional.

A significant change in the composition of imports occurred during this period. Imports of raw materials and capital goods taken together increased much faster than imports of consumer goods, especially after 1959. Between 1950 and 1962, the share of consumer goods in imports dropped from 69 per cent to 44 per cent, while the share of raw materials and capital goods increased from 31 per cent to 56 per cent. It would appear that the adjustment of raw materials and capital goods to cyclical movements was slower than the adjustment of consumer goods. Thus, while in 1953 imports of consumer goods declined by LSd 9.6 million (25 per cent), other imports declined by LSd 1.4 million (6 per cent). In the following year, imports of consumer goods increased slightly, while other imports declined by LSd 3.6 million (17 per cent). Differences in the lag were not so evident during the period of rising imports, but were again apparent in the downturn. Imports of consumer goods declined by LSd 12.6 million in 1958 (31 per cent) while other imports increased by LSd 4.5 million (16 per cent). In 1959, consumer goods increased by LSd 5.7 million (21 per cent) while other imports declined by LSd 8.0 million (25 per cent).

Analysis of exports in this and other sections of this paper is primarily in terms of cotton exports, because these have been by far the largest single export item and have accounted for much of the fluctuation in total exports.

Exports other than cotton have risen steadily since 1948, except in 1951, when they rose sharply above their trend value, and in 1958, when they dropped far below. On the other hand, the fluctuations in cotton exports have been quite pronounced. The share of cotton in total exports declined from 61 per cent in 1948 to 55 per cent in 1962, because other exports increased more rapidly. While the value of cotton exports rose by 175 per cent between 1948 and 1962, that of other exports went up by 250 per cent. This is partly explained by the fact that price movements affected cotton adversely in relation to other exports. The decline in the share of cotton would have been even greater had it not been for the completion of a major irrigation scheme in the Gezira area, which resulted in an increase of output.

FLUCTUATIONS

It has been found convenient to divide the 16 years 1947-62 into three periods related to the fluctuations in export earnings: the export boom of 1947-51 and the export cycles of 1952-56 and 1957-62. The first period was marked by large surpluses in the balance of payments, resulting in a substantial accumulation of reserves. As shown in Table 4, this was also the pattern in each recovery phase of the two export cycles. In the declining phases, deficits on current account were recorded, and these were at a higher annual rate during the 1957-62 cycle. In recent years, the emergence of a net inflow of capital has had a considerable impact on movements in reserves.⁵

The fluctuations in the over-all balance of payments were amplified during part of this period by the adoption of certain cotton-pricing policies in 1954. These policies were reversed in 1959 because of their adverse effects on balance of payments stability.

Export boom of 1947-51

During the five-year period 1947-51, the Sudan experienced an unprecedented export boom, brought about by the rise in the value of

⁵ In this paper, the term "current account" includes goods, services, and transfer payments. Capital movements are defined to include all private capital plus official long-term liabilities. All other capital movements are included with changes in monetary reserves.

cotton exports.⁶ Imports reacted slowly and, as shown in Table 3, the trade balance improved from a surplus of LSd 1.0 million in 1947 to LSd 38.0 million in 1951; trade surpluses during the five-year period totaled LSd 61.7 million. When allowance is made for the deficits on services and transfer payments, current account surpluses amounted to LSd 50.1 million.

TABLE 4. SUDAN: EXPORT FLUCTUATIONS AND BALANCE OF PAYMENTS TRENDS, 1947-62

(In millions of Sudanese pounds)

	Trade Balance	Balance on Current Account	Capital Movements	Changes in Reserves ¹
1947-51 export boom	61.7	50.1	-12.9	-38.4
1952-56 export cycle	1.6	-24.4	-3.2	20.6
Declining phase (1952-54)	-26.7	-36.9	-1.2	31.8
Recovery phase (1955-56)	28.3	12.5	-2.0	-11.2
1957-62 export cycle	-29.8	-40.4	54.2	-13.5
Declining phase (1957-58)	-27.4	-34.3	16.7	17.6
Recovery phase (1959-62)	-2.4	-6.1	37.5	-31.1

Sources: International Monetary Fund, *Balance of Payments Yearbooks*.

¹ Minus sign indicates increase, and no sign indicates decrease, in reserves.

Since the Egyptian pound was then the currency in circulation, the monetary expansion brought about by these surpluses was partly reflected in an increase in short-term assets of the private sector,⁷ totaling about LSd 9 million for the whole period; other private capital movements were negligible. On official account, there was some outflow of capital in the form of a reduction of long-term liabilities, by LSd 4.8 million. After allowance for all these movements, official exchange reserves increased by LSd 38.4 million during the period 1947-51. About two thirds of these reserves were in the form of sterling balances and short-term securities, and the remainder in long-term sterling securities.

⁶ The quantity of cotton exports was almost doubled between 1947 and 1951, and prices more than doubled. The rise in world cotton prices was partly due to the devaluation of sterling in 1949, but most of the increase took place in 1950 and 1951 as a result of the Korean war boom.

⁷ Holdings of Egyptian pounds were classified as short-term foreign assets.

Export cycle of 1952-56

The sharp rise in cotton prices in 1950-51 came to an end early in 1952,⁸ and was followed by a sharp decline in the 1952/53 season. In addition, the quantity of cotton exported dropped by 40 per cent in the calendar year 1952. The decline in cotton prices thus went hand in hand with a decline in the volume of exports, and the proceeds from cotton exports fell from LSd 47.5 million in 1951 to LSd 29.0 million in 1952. Total export proceeds dropped from LSd 79.6 million to LSd 46.7 million, while imports, influenced by higher incomes in earlier years, increased from LSd 41.6 million to LSd 61.2 million (Table 2).

There was a further, but smaller, decline in exports in 1953 and 1954. As this was more than offset by the decline in imports, the deficit in the trade balance fell from LSd 14.5 million in 1952 to LSd 6.6 million in 1954. This improvement, however, can be explained entirely by the improvement in the terms of trade, resulting from both the rise in export prices⁹ and the decline in import prices.

Cotton prices rose until January 1955; a period of relative stability at a slightly lower level then followed, but prices resumed their upward trend in March 1956, and rose by almost 50 per cent during the 12 months ended March 1957. Although prices averaged less in 1955 than in 1954, the volume of cotton exports increased by about 60 per cent. On the average, there was a 20 per cent rise in prices in 1956, together with a 20 per cent increase in the volume of exports; both factors accounted for the sharp rise of exports to LSd 71.7 million in 1956, from LSd 56.0 million in 1955 and LSd 40.9 million in 1954.

Despite the higher incomes realized from exports, and a rise in import prices, the value of imports failed to increase in the 1954-56 period because of the tightening of restrictions on imports (July 1955-September 1956) and the closing of the Suez Canal in November 1956; they averaged LSd 49.0 million during the three-year period. Thus, a

⁸ From a peak of 136 U.S. cents a pound in January 1952, the price of G4S (Gezira Grade 4 Sakel) in Liverpool declined steadily to 44 U.S. cents a pound in August 1953, a decline of 68 per cent. Average prices of G4S declined from 89 U.S. cents a pound during the 1951/52 season (August 1 to July 31) to 48 U.S. cents a pound in 1952/53, and then rose to approximately 52 U.S. cents in 1953/54.

⁹ On the average, cotton export prices were 26 per cent higher in 1954 than in 1953. The volume of cotton exports from the Sudan, however, declined somewhat in 1954 although world demand for long-staple cotton was brisk and prices were rising sharply. The cotton authorities then felt that, in view of sharply rising prices, it would be desirable to ration Sudanese cotton; therefore, limited amounts were offered for sale until such time as the full increase in demand, which they anticipated, was reflected in higher prices. Consequently, in May 1954 the system of sales by private contract was replaced by the system of auctioning cotton with minimum reserve prices.

marked improvement in the trade and over-all balance of payments position was achieved.

Export cycle of 1957-62

Imports rose sharply in 1957. The increase was from LSd 10.7 million during the last quarter of 1956 to LSd 13.4 million in the first quarter of 1957, LSd 17.7 million in the second quarter, and LSd 18.7 million in the third. For the year 1957 as a whole, imports increased to LSd 69.7 million, from LSd 48.2 million in 1956. On the other hand, there was a sharp decline in export proceeds in 1957. Cotton prices had passed their peak before the 1957 crop was available for export. From 77 U.S. cents a pound in March 1957, prices declined steadily to a low of 30 cents a pound in February 1959.¹⁰ The minimum reserve prices of the Gezira Board were, however, maintained relatively high, and a sharp decline in sales followed. The volume of cotton exports in 1957 dropped by more than 50 per cent. In the following year, the crop was the poorest on record,¹¹ and sales remained low. During the two-year period 1957-58, the Sudan had trade deficits aggregating LSd 27.4 million and current account deficits of LSd 34.3 million. Capital inflows on private account, however, amounted to LSd 19.6 million (of which the withdrawal of Egyptian pounds from circulation accounted for LSd 18.5 million). Monetary reserves fell by LSd 17.6 million.

A number of measures (increase in interest rates, higher cash margins for documentary import credits, reduction in credit ceilings), combined with the reduction in incomes, produced a decline in imports from LSd 18.7 million in the third quarter of 1957 to LSd 12.0 million in the first quarter of 1958. In April 1958, the restrictive measures were intensified; nevertheless, in the months immediately following imports rose, and the figure for the second quarter of 1958 was a record quarterly total of LSd 22.8 million. A major factor in this increase was that an accelerated development program expanded government imports from LSd 5.3 million in the full year 1957 to LSd 15.6 million in 1958. On the other hand, imports for private use declined from LSd 62.6 million in 1957 to LSd 43.9 million in 1958.¹²

Receipts from exports rose sharply in 1959 and declined only slightly in the next two years, because of a drop in exports of cotton. In 1962, export receipts advanced considerably, primarily as a result of an

¹⁰ For Sudan Gezira Grade 5 Sakel.

¹¹ In yield per acre.

¹² These data are derived from customs statistics, which differ somewhat from the exchange control data used elsewhere in this paper.

increase in the volume of cotton exports. However, imports moved upward steadily after 1959. As a result, the trade balance changed from a credit of LSd 2.1 million in 1960 to debits of LSd 16.4 million in 1961 and LSd 6.9 million in 1962, the improvement in 1962 resulting from a proportionately larger increase in exports. But a sustained inflow of official capital and an improvement in net receipts from services and transfer payments produced favorable reserve movements. Reserves increased by LSd 26.7 million in 1959 and LSd 11.4 million in 1960; although small declines followed in the next two years, an over-all increase of LSd 31.1 million was achieved in the four-year period ended 1962.

II. Monetary and Fiscal Policies and Payments Problems

Between 1950¹³ and 1962, the money supply in the Sudan rose by 89 per cent. This followed from a steep rise in bank credit to the private sector and a moderate increase in net foreign assets, only partly offset by a net improvement in the position of the government sector and by a rise in time and savings deposits and in the capital accounts of the banking system (Table 5).

The impact on the money supply of the sharp fluctuations in the balance of payments has generally been neutralized by opposite changes in the fiscal position of the Government. Thus, between 1950 and 1960, while net foreign assets fluctuated between a minimum of LSd 21.1 million and a maximum of LSd 85.0 million, and net government deposits between LSd 8.3 million and LSd 49.4 million, the money supply fluctuated only within the range LSd 25.5 million to LSd 35.0 million.¹⁴ This pattern has been replaced in recent years by a steady growth of the money supply as a result of the rapid growth in bank credit. These developments are summarized in Table 5.

The major trends in public finances have been (1) a steep rise in domestic revenues and ordinary expenditures of the Government,¹⁵ (2) considerable fluctuations in the ordinary budget surpluses, super-

¹³ Monetary statistics are not available for the period prior to 1950. Moreover, the series available for the period before 1957 are less reliable than later ones, because the amount of Egyptian currency in circulation in the Sudan prior to the issuance of the Sudanese pound could be estimated only roughly. Also, reporting forms for banks were not standardized until 1957.

¹⁴ End-of-year figures only.

¹⁵ During the period 1948 to 1961/62, government domestic revenues increased from LSd 15.7 million to LSd 68.7 million, while current expenditures increased from LSd 10.3 million to LSd 60.6 million. For 1948 and 1949, the fiscal year covers 12 months ended December 31; for 1950/51, 18 months ended June 30; for 1951/52–1961/62, 12 months ended June 30.

imposed upon a declining trend,¹⁶ (3) a sharp rise in development expenditures,¹⁷ and (4) the emergence of over-all deficits financed largely from external sources. Because of the sharp rise in development expenditures, the over-all budgetary position (treating foreign assistance as financing) has been in deficit each year since 1957/58, with the exception of 1959/60. This represents a departure from earlier years, when development expenditures played a relatively minor role and were financed wholly from ordinary budget surpluses.

TABLE 5. SUDAN: ORIGIN OF THE MONEY SUPPLY, END OF YEAR, 1950-62

(In millions of Sudanese pounds)¹

Year	Money	Net Foreign Assets	Domestic Assets				
			Total	Net claims on Government ²	Private credit	Quasi-money	Other
1950	25.48	47.21	-21.73	-20.21	1.25	-2.23	-0.54
1951	34.70	84.98	-50.28	-49.41	2.35	-3.03	-0.19
1952	32.48	67.98	-35.50	-38.02	5.13	-1.76	-0.85
1953	30.93	59.65	-28.72	-33.00	8.39	-2.22	-1.89
1954	30.52	51.50	-20.98	-34.28	17.78	-2.84	-1.64
1955	29.03	45.32	-16.29	-33.27	21.24	-2.66	-1.60
1956	30.20	61.65	-31.45	-48.10	21.08	-2.80	-1.63
1957	28.64	36.92	-8.28	-27.74	26.03	-3.27	-3.30
1958	32.31	21.12	11.19	-8.34	26.55	-4.00	-3.02
1959	32.83	47.71	-14.88	-28.68	23.98	-5.22	-4.96
1960	34.98	58.41	-23.43	-45.59	34.79	-5.77	-6.86
1961	41.66	55.21	-13.55	-37.05	38.94	-6.75	-8.69
1962	48.18	51.28	-3.10	-30.11	46.59	-7.93	-11.65

Source: International Monetary Fund, *International Financial Statistics*.¹ Prior to 1958, in Egyptian pounds.² Including the claims on, and deposits of, the central, provisional, and local governments and official entities.

The Sudan's fiscal policy has been mostly directed toward contracting the demand for imports by raising taxes. Only in one major instance did the authorities introduce tax cuts to stimulate imports and to keep prices low. The Government has also at times restrained the upward trend in expenditures during periods when the balance of payments was in deficit. In this respect, however, it has been handicapped by an unusually long lag between balance of payments developments and the appropriate adjustment of government expenditures;

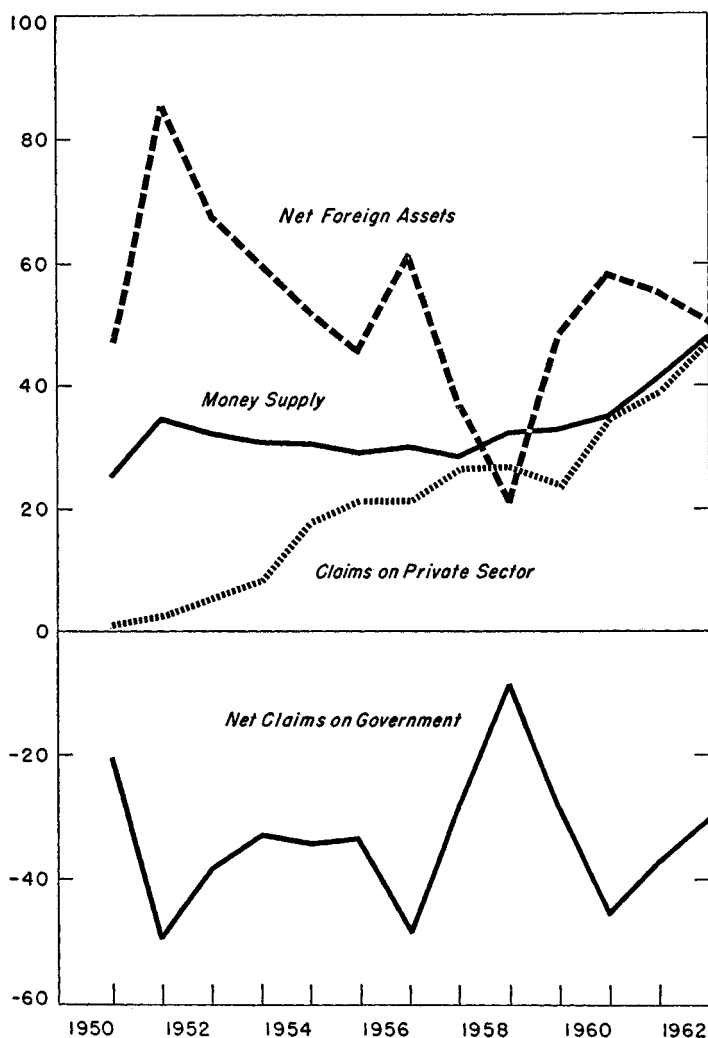
¹⁶ Ordinary budget surpluses, averaging LSd 11 million a year, were realized in each year during this period. The range of fluctuation was from LSd 0.6 million in 1958/59 to LSd 24.7 million in 1951/52.

¹⁷ From LSd 1.9 million in 1948 to LSd 23.5 million in 1961/62 in absolute amount, and from 16 per cent to 28 per cent of total government expenditure.

such adjustment has become more complicated because of the steady growth of the share of development expenditures in total public expenditures.

The three main factors affecting monetary developments, namely, changes in foreign assets, the Government's cash position, and bank credit to the private sector, are depicted in Chart 2. Only in 1954 did

CHART 2. SUDAN: ORIGIN OF THE MONEY, END OF YEAR, 1950-62¹



¹ Based on data in Table 5.

the foreign assets position and the Government's net position move in the same direction. In all other years, they moved in opposite directions. Bank credit to the private sector increased in every year except 1956 and 1959.

In dealing with balance of payments fluctuations, the authorities are making increasing use of monetary measures. This is due partly to the rapid growth of bank credit to the private sector, which has become a factor of major importance; it grew from LSd 1.25 million (equivalent to 5 per cent of the money supply) at the end of 1950 to LSd 46.6 million (equivalent to 97 per cent of the money supply) at the end of 1962.

Monetary and fiscal developments during the 16 years 1947-62 may be divided into three periods, characterized by the types of policies being followed, even though some of these policies (especially import controls) have been in force with varying degrees of rigor throughout the whole postwar period. In the first phase, which lasted until 1954, the main emphasis was on direct import controls, and on taxation measures affecting especially imports. The second phase, which lasted until the end of 1958, was characterized by two important policies: (1) the pricing policy for cotton became more rigid when the reserve price system was adopted in May 1954; (2) there was increasing resort to monetary measures to counteract fluctuations in the balance of payments. The third phase was characterized by a flexible cotton-pricing policy and accelerated development activities based, to a considerable extent, on foreign financing. Since the reserve price system for cotton was modified early in 1959, the Sudanese authorities have been comparatively successful in disposing of the cotton crops with a smaller carry-over from one season to another. This achievement has had a significant impact on balance of payments and monetary stability.

To analyze the interaction between monetary and fiscal developments and the payments problems of the Sudan, a model developed by J. J. Polak¹⁸ has been used in this paper. The calculations are set forth in Table 6.¹⁹

¹⁸ See J. J. Polak, "Monetary Analysis of Income Formation and Payments Problems," *Staff Papers*, Vol. VI (1957-58), pp. 1-50, and J. J. Polak and Lorette Boissonneault, "Monetary Analysis of Income and Imports and Its Statistical Application," *Staff Papers*, Vol. VII (1959-60), pp. 349-415.

¹⁹ In this section, terms such as "imports," "exports," "domestic credit," and "capital movements" are used as defined by Polak in the articles cited above. Briefly, import payments are defined to include commodity imports, most service payments, and private transfer payments minus drawings on project loans. Export receipts include commodity exports, receipts from private transfer payments, net investment income, and receipts from other services. Changes in reserves are a composite of the movement of monetary assets, monetary gold,

TABLE 6. SUDAN: BALANCE OF PAYMENTS, INCOME, MONEY, AND COMPUTATION OF IMPORTS¹

(In millions of Sudanese pounds)

	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Y (average for year)						298.4	310.3	313.2	332.3	350.0	374.7	
Y ₁ (estimate for end of year)					284.2	312.6	307.9	318.5	346.1	353.8	395.5	
M	45.3	64.9	57.9	55.3	62.8	57.0	80.0	63.9	48.6	64.8	78.9	91.8
M/Y ²						0.191	0.258	0.204	0.146	0.185	0.211	
MO	34.7	32.5	30.9	30.5	29.0	30.2	28.6	32.3	32.8	35.0	41.7	48.2
ΔMO	9.2	-2.2	-1.6	-0.4	-1.5	1.2	-1.6	3.7	0.5	2.2	6.7	6.5
Y ₁ /MO ³					9.8	10.4	10.8	9.9	10.6	10.1	9.5	
ΔY ₁						28.4	-4.7	10.6	27.6	7.7	41.7	
KΔY ₁						2.84	-0.47	1.06	2.76	0.74	4.17	
ΔR ⁴	33.7	-16.0	-6.8	-9.0	-3.6	14.8	-22.9 ⁵	-13.2	26.7	11.4	-3.3	-3.7
X	82.0	50.1	47.5	43.6	57.9	74.7	58.3	51.0	72.3	71.7	69.0	86.6
C (M - X + ΔR)	-3.0	-1.2	3.6	2.7	1.3	-2.9	-1.2 ⁵	-0.3	3.0	4.5	6.6	1.5
ΔD (ΔMO - ΔR) ⁴	-24.5	13.8	5.2	8.6	2.1	-13.6	21.3	16.9	-26.2	-9.2	10.0	10.2
Q (X + C + ΔD = M + ΔMO)	54.5	62.7	56.3	54.9	61.3	58.2	78.4	67.6	49.1	67.0	85.6	98.3
Q (O)	31.61	36.37	32.65	31.84	35.55	33.76	45.47	39.21	28.48	38.86	49.65	57.01
Q (-I)		19.08	21.95	19.71	19.22	21.46	20.37	27.44	23.66	17.19	23.45	29.96
Q (-II)			3.27	3.76	3.38	3.29	3.68	3.49	4.70	4.06	2.95	4.02
Q (-III)				0.55	0.63	0.56	0.55	0.61	0.58	0.78	0.68	0.49
Computed M				55.86	58.78	59.07	70.07	70.75	57.42	60.89	76.73	91.48
Actual M - computed M				-0.6	4.0	-2.1	9.9	-6.9	-8.8	3.9	2.1	0.3

¹ See text, page 162, and footnote 18.² Average import propensity = 0.199. An average of 0.20 was used in this paper.³ Average income velocity = 10.2. An average of 10.0 was used in this paper.⁴ The surpluses and deficits of the balance of payments have been used for ΔR. The monetary statistics show slightly different amounts. Thus there is a small difference between ΔR and ΔD in this table and the changes in net foreign assets and domestic assets in Table 7 (p. 173).⁵ The withdrawal of Egyptian pounds held by the public (LSd 18.5 million) has not been treated as private capital inflow, as is done in the balance of payments statistics.

FIRST PHASE, 1947-54

The sharp rise in exports during the period 1947-51, and particularly in 1951, was quickly reflected in an increase in the Government's cash balances; budgetary surpluses rose from LSd 3.5 million in 1948 to LSd 20.0 million in 1951/52. There was no corresponding rise in imports; although imports rose appreciably in 1951, a higher rate of increase was prevented by a large contraction of credit, amounting to LSd 24.5 million, and a small outflow of capital, totaling LSd 3.0 million.²⁰ The rate of increase was also slowed down by the lag in disbursement of larger incomes by cotton boards to tenants and a continuation of the restrictive import policies adopted in 1947.²¹ This situation produced a sharp rise in the cost of living, and there were widespread demands for wage increases, culminating in strikes in the late months of 1951. Although the authorities had begun in 1949 to liberalize import policy, it was not until August 1951 that the restrictive import policy was completely reversed by the introduction of an Open General License (OGL) list covering practically all imports.

Export proceeds fell sharply in 1952, and there were further but smaller declines in 1953 and 1954; imports, however, rose sharply in 1952, and then declined moderately in 1953 and 1954. One of the factors accounting for these developments, i.e., the close link between export proceeds and government revenues, has already been noted. The Government's domestic revenues declined between 1951/52 and 1952/53 by almost LSd 16 million (from LSd 46.2 million to LSd 30.3 million), while government ordinary and development expenditures increased by LSd 4.1 million. An over-all budgetary surplus of LSd 20.0 million in 1951/52 was thus eliminated in 1952/53.²² Official entities, consisting mainly of the cotton boards, also increased their cash balances in 1950/51 because of the lag in the disbursement of income to tenants, but in 1951/52 their payments exceeded their receipts. Furthermore, expansion of bank credit to the private sector, which until 1952 was relatively unimportant in domestic credit, as-

and monetary liabilities. Domestic credit is the change in the money supply (defined as the sum of currency in circulation plus private demand deposits) minus the change in net foreign exchange reserves. Capital movements are defined as imports minus exports plus changes in net reserves.

²⁰ For the definition of these terms, see footnote 19.

²¹ Import duties had also been raised from 10 per cent to 15 per cent *ad valorem*, with larger increases on certain items.

²² Budgets were balanced throughout the declining phase of the export cycle. In fact, during the three years 1952/53-1954/55, when cotton exports were declining, over-all budgetary surpluses totaling LSd 0.4 million were realized. In the face of steadily rising ordinary and development expenditures, large budgetary deficits would have been incurred had the Government not resorted to raising tax rates, especially on imports at the end of 1952 and in July of each following year through 1956.

sumed considerable importance in the years immediately following.²³ These factors contributed to reversing the impact of changes in domestic credit from a contraction of LSd 24.5 million in 1951 to expansions of LSd 13.8 million in 1952, LSd 5.2 million in 1953, and LSd 8.6 million in 1954. The demand for imports in 1952 was also influenced by the large export earnings of earlier years, especially those in 1951, which were not fully reflected in incomes until 1952; it was stimulated further by the introduction of the OGL list in August 1951.

In view of the comfortable exchange position, the authorities in late 1951 and early 1952 were prepared to permit a substantial rise in imports even though exports had declined sharply in the fourth quarter of 1961 and continued low. It was soon realized, however, that the expansionary forces were stronger than had been anticipated, and it was feared that the exchange reserves might soon be depleted, thus jeopardizing the expanded development program drawn up in 1951. Consequently, in September 1952 the scope of the OGL list was considerably reduced, and special import restrictions were imposed on building materials and transport equipment, to dampen the residential construction boom that had been experienced since 1951. In 1953, however, the authorities decided to shift the weight of their restrictive policies to taxation measures. The OGL list in force prior to August 1951 was rapidly restored; and in 1954, it was extended to include—with certain minor exceptions—all imports from the sterling area. In January 1953, export duties on cotton were reduced sharply in an effort to promote exports, and in July *ad valorem* import duties were raised from 15 per cent to 25 per cent. The rates of import duties on certain items were raised again in 1954, and a tax on commercial incomes was introduced. This shift in policy was prompted by the deterioration in the Government's fiscal position and its small deposits of domestic currency at a time when its foreign assets position remained high.

It was during this declining phase that the Sudan experienced an unprecedented expansion of bank credit to the private sector, amounting to LSd 18.9 million during the four years 1952–55. This expansion appears to have been caused by the increase in the number of banks operating in the Sudan,²⁴ the strong demand for credit, the excess liquidity position of the banks, and the easy money policy of the

²³ Only three banks operated in the Sudan, and these pursued generally conservative credit policies. The three banks were the National Bank of Egypt, Khartoum, which was also the Government's bank; Barclays Bank D.C.O., which was the main depository of the Sudan Gezira Board; and the Ottoman Bank.

²⁴ Two new banks (Crédit Lyonnais and Bank Misr) started operating in 1953, raising to five the number of banks in the Sudan. Since then, three more banks have opened offices: the Arab Bank (1956), the State Bank of Ethiopia (1958), and the Sudan Commercial Bank (1960).

National Bank of Egypt, Khartoum (NBEK), which maintained the rediscount rate at 3 per cent.²⁵ At the end of 1951, when claims on the private sector amounted to only LSd 2.2 million,²⁶ the cash reserves of all commercial banks amounted to LSd 5.6 million and their foreign assets to LSd 12.6 million, compared with foreign liabilities of LSd 1.3 million. By the end of 1955, their cash reserves had been reduced to LSd 1.3 million and foreign assets to LSd 4.5 million, while their foreign liabilities had been increased to LSd 8.6 million. In 1954, the banks resorted, for the first time, to borrowing from the NBEK; these borrowings amounted to LSd 1.7 million at the end of that year and to LSd 2.5 million at the end of 1955.

SECOND PHASE, 1955-58

The adoption in May 1954 of a new cotton marketing policy by the Gezira Board had a significant impact on the fluctuations in national product, disposable income, investment, and imports.²⁷ The positive correlation between the movement of cotton prices and the volume of exports experienced during both the 1952-56 and the 1957-62 export cycles was responsible for amplifying fluctuations in export earnings. During 1955-58, increasing use was made of monetary measures to stabilize the country's payments position.

The new cotton-pricing policy contributed to the decline in exports in 1954 and the substantial accumulation of cotton stocks. Imports were kept relatively high by the large expansion of credit, and the payments balance deteriorated. In July 1955, the OGL was canceled, and in November 1955 measures were adopted to restrain the credit expansion.

²⁵ The NBEK terminated its activities in the Sudan when the Bank of Sudan began operating in February 1960.

²⁶ This figure does not include small advances (LSd 0.11 million at the end of 1951) by the NBEK to the private sector.

²⁷ The cotton-pricing system adopted by the Gezira Board replaced sales by private contract by auctions conducted in Khartoum five days a week. Minimum reserve prices were fixed and announced by the Board. At first, the reserve prices were not declared, but as it was not difficult for buyers to find out these prices by starting with very low bids which were raised gradually, the Gezira Board began to announce a list of prices in advance. The unusually slow movement of the crop in 1958 induced the authorities to require private growers not to sell below minimum reserve prices, fixed in line with those of the Gezira Board. In 1959, however, this restriction on private growers was lifted and the Gezira Board, while continuing to sell cotton at auctions, abandoned its rigid pricing policy in favor of a more flexible one. In defense of its pricing policies in 1958, the Gezira Board maintained that its reserve prices were in line with international quoted prices, but that bilateral arrangements entered into by competing exporters of long staples placed the Sudan at considerable disadvantage.

Quantitative credit restrictions were applied, with the voluntary agreement of the commercial banks. By the end of March 1956, advances in the "restricted categories"²⁸ were to be reduced by 10 per cent of their level on May 31, 1955; and by the end of July 1956, they were to be reduced by another 10 per cent. These measures were, however, of limited usefulness, because the categories of credit covered accounted for a small percentage of total bank credit to the private sector, and the ability of banks to control the use of credit was limited.

The upturn in exports in 1955 and the export boom in 1956 again resulted in substantial improvement in the balance of payments and in the fiscal position of the Government. In 1956, the net cash position of the public sector improved by LSd 14.8 million, of which official entities accounted for LSd 7.4 million.²⁹ There was a small decrease in credit to the private sector, and the expansionary effect of domestic credit declined from LSd 8.6 million in 1954 to only LSd 2.1 million in 1955; in 1956, it was contractionary to the extent of LSd 13.6 million. These changes were sufficient to offset much of the expansionary impact on the money supply of the increase in foreign assets. Responding to the improvement in the balance of payments, the authorities in September 1956 reintroduced the OGL on all items except 19, and, as a price control measure, banned the export of certain essential foodstuffs. They placed, however, greater reliance on fiscal and credit policies. Customs and excise taxes on a number of items were raised in June 1956, and the limit on bank advances in the restricted categories was maintained at 80 per cent of their level in May 1955.³⁰

The liberalization of imports, combined with the effect of higher incomes earned in 1956 and with the need to rebuild inventories, led to a sharp rise in imports soon after the Suez Canal was reopened for traffic in mid-1957. Imports rose from LSd 57.0 million in 1956 to LSd 80.0 million in 1957, in part, perhaps, because the velocity of circulation of money rose as a result of increased activity related to the resumption of shipping through the Suez Canal and of the lifting of import controls late in 1956.

As in 1952, the authorities viewed the rise in imports in 1957 as a normal adjustment to the high incomes and exports in the preceding two years, and no measures were taken to curb the demand for imports until late in the year. A number of considerations favored this policy. A record cotton crop was being harvested in 1957, and, although cotton

²⁸ These included credit for imports, retail trade, and personal use.

²⁹ The Cotton Boards, of which the Gezira Board was by far the largest single entity, account for most of the deposits of official entities.

³⁰ Capital movements changed from an inflow of LSd 1.3 million in 1955 to an outflow of LSd 2.9 million in 1956.

prices had fallen somewhat, they were still high. Exchange reserves had been built up in 1956 to an amount that the authorities considered rather on the high side. Furthermore, the withdrawal of Egyptian pounds from circulation, beginning in April 1957, was expected to result in some additions to free exchange reserves.³¹

But because of the sharp decline in exports,³² the deterioration in the balance of payments position in 1957 was greater than had been anticipated, and the authorities decided to curb the demand for imports. At first, they relied heavily on credit restrictions. In September 1957, the commercial banks agreed to reduce their advances for all purposes by 8 per cent within a period of six to nine months, and within this over-all ceiling to reduce their advances in the "restricted categories" by 33 per cent. The NBEK raised its discount rate by 1 per cent, to 4 per cent, and the banks were allowed to raise from 5.5 per cent to 6.5 per cent the minimum rate of interest which they charged. Cash margin requirements on documentary credits for imports were raised from 20 per cent to 33½ per cent. These measures were effective in curtailing imports somewhat, and a considerable improvement in the trade position might have been achieved in 1958 had there not been a further sharp decline in exports resulting from a further decline in cotton prices and from the fact that, with the lowest yields on record, the 1958 cotton crop was poor. Consequently, in April 1958 the OGL was canceled and import restrictions were imposed, with a view to reducing commodity imports to an annual rate of LSd 40 million. Toward the same end, and with a view to balancing the budget, the Government increased customs duties and excise taxes on a wide range of items. Additional credit restrictions in the "restricted categories" were introduced in November.

The measures adopted succeeded in reducing the rate of expansion of bank credit to the private sector from nearly LSd 5 million in 1957 to about LSd 0.5 million in 1958, and the latter was more than fully offset by the increase in private time deposits. On the other hand, the Government's net fiscal position deteriorated sharply both in 1957 and 1958, and the official entities had substantial deficits, especially in the

³¹ Sterling securities with a face value of LSd 19.5 million were transferred by the United Arab Republic to the Sudan as part of the currency settlement. Of this total, LSd 12.6 million was turned over to the Sudan Currency Board as part of the currency coverage. Because the currency law of 1956 required the securities held by the Currency Board to be entirely short-term, it became necessary to reshuffle the portfolio handed over by the United Arab Republic. Interest rates in London were high at the time, and the effect of the reshuffle, which included the sale of a substantial portion of the securities to meet the payments deficit, was a loss of LSd 3.6 million. Thus, the net addition to the free exchange reserves of the Sudan was approximately LSd 3.3 million.

³² Less than 50 per cent of the 1957 cotton crop was exported.

earlier year. Combined, these factors resulted in a net expansion of domestic credit of LSd 21.3 million in 1957 and of LSd 16.9 million in 1958. In 1957, the sharp decline in exports contributed to a trade deficit³³ of LSd 21.7 million, but since much of this deficit was covered by net capital receipts of LSd 17.3 million, arising largely from the currency settlement with the United Arab Republic, the decline in foreign exchange reserves amounted only to LSd 4.4 million. In 1958, however, the capital accounts were almost balanced, and the larger expansion of credit resulted in a decline of LSd 13.2 million in foreign reserves.

A problem that began to assume major importance during this period was the quality and distribution of the country's foreign exchange reserves. Part of these reserves were held by official entities and were therefore not available to the monetary authorities. While the currency settlement with the United Arab Republic resulted in a substantial addition to total reserves, it resulted in a relatively small addition to free reserves. Thus, of LSd 19.5 million in sterling assets received from the United Arab Republic, only LSd 3.3 million became freely available to finance payments deficits.³⁴ Another LSd 10.5 million was received in Egyptian pounds, but the use of this amount was restricted to purchases of goods of U.A.R. origin and to certain capital payments, and the total amount to be used was not to exceed LSd 2 million annually.

THIRD PHASE, 1959-62

The deterioration in exports was finally reversed in 1959 after the authorities had decided, early that year, to abandon the cotton-pricing policy of the Gezira Board. Imports—under the impact of the restrictive policies adopted in 1957 and 1958 and of a contraction of LSd 26.2 million in domestic credit in 1959—continued to decline, despite the surplus of LSd 3.0 million in the capital account, compared with a deficit of LSd 0.3 million in 1958. A cautious policy for the relaxation of import and credit restrictions was therefore initiated as soon as the payments position showed signs of improvement early in 1959. In March 1959, 15 items were added to the OGL list; by July 1960, a new list was issued, containing 298 items; and a month later 20 more items were added. The ceiling on bank advances in the "restricted categories" was raised in stages from LSd 3.3 million to

³³ The excess of imports over exports as defined in Polak's model. See footnote 19, page 162.

³⁴ See footnote 31.

LSd 6.3 million. In an effort to lower the prices of essential items and to stimulate private investment, some reductions in excise taxes, which were expected to cost the Government LSd 1.5 million in revenue annually, were made in July 1960.³⁵ The improvement in economic conditions resulted in a rise in the domestic revenues from LSd 42 million in 1958/59 to LSd 67.5 million in 1959/60. Since much of this improvement had not been expected when the 1959/60 budget was drawn up, and ordinary and development expenditures were maintained at the same level as in 1958/59, the result was an over-all budgetary surplus of LSd 10.2 million in 1959/60, compared with a deficit of LSd 14.5 million in 1958/59. The net cash position of the Government improved by LSd 18.8 million in 1959. Also, there was an increase of LSd 2.5 million in the cash position of official entities, and a decline of LSd 2.6 million in credit to the private sector. The contraction of total domestic assets nearly offset the increase in foreign assets, and the money supply increased by only LSd 0.5 million in 1959.

While the money supply thus showed little change in 1959, bank liquidity rose rapidly. During the first nine months of the year, the cash holdings (currency plus deposits in the central bank) of commercial banks rose from LSd 4.4 million to LSd 15.6 million, while foreign liabilities and credit from the Bank of Sudan were reduced by LSd 2.7 million and LSd 0.7 million, respectively. The fact that commercial banks were in a liquid position was a factor in the credit rise which began in September 1959 and continued into 1960; credit to the private sector rose from LSd 22.3 million in September 1959 to LSd 36.8 million in June 1960. Although by then the cash holdings of the banks had been reduced to LSd 8.7 million, they still were comparatively large.

When a seasonal decline in advances to the private sector during the third quarter of 1960 resulted in an addition of LSd 2.7 million to the cash holdings of the commercial banks, the Bank of Sudan decided to reduce these reserves by absorbing part of the deposits of the Cotton Boards.³⁶ This was the first time that the monetary authorities had attempted to influence directly the reserve positions of commercial

³⁵ Import duties and excise taxes had been raised in July 1959 to provide additional revenues for financing development. These measures were expected to generate LSd 3.5 million a year in revenues.

³⁶ This was done at first on an ad hoc basis; but subsequently the policy of shifting most of the deposits of the cotton Boards from the commercial banks to the Bank of Sudan was formalized, and a formula was worked out in February 1961 under which the Gezira Board transferred to the Bank of Sudan time deposits and any current deposits in excess of those made during the preceding two months.

banks.³⁷ Inasmuch as this decision resulted in a reduction of the deposits of official entities with commercial banks, from LSd 14.8 million in September 1960 to LSd 6.2 million in September 1961, it achieved its immediate objective. During the same period, however, the Bank of Sudan permitted its advances to commercial banks to increase by LSd 6.1 million, thus offsetting much of the contractionary impact of the shift in reserves. The increase in central bank credit is explained in part by the fact that in April 1961 the Bank of Sudan decided to accept, as collateral, paper originating in the export of Sudanese produce other than cotton, whereas in the past advances had been made only against foreign securities and cotton in warehouses. To provide credit facilities for the exports, the aggregate ceilings of advances to all commercial banks were raised from LSd 8 million to LSd 17 million. In November 1961, similar credit facilities were extended to promissory notes of certain industrial customers. Since the rediscount rate of the Bank was higher than the rate paid by the banks to official entities, the net effect of these measures was to increase the cost of funds to the banks, and possibly to increase interest rates in general. On the other hand, the substitution of central bank credit for deposits of official entities may have been expansionary for two reasons. First, the higher cost of funds was probably an incentive for banks to reduce their cash reserve ratios; this ratio for all banks fell from about 42 per cent in December 1960 to 35 per cent in December 1961.³⁸ Second, whereas the deposits of official entities were concentrated mostly in a few of the more conservative banks, central bank advances tended to be more evenly distributed among the banks operating in the Sudan. The redistribution of loanable funds from banks that normally maintain high cash reserve ratios to banks that maintain low ratios amounted to a reduction in the average cash reserve ratio of all banks.

An appreciable rise in bank credit to the private sector did, in fact, take place in 1960 and 1961, and continued into 1962. The rise was from LSd 24.0 million at the end of 1959 to LSd 34.8 million at the end of 1960, LSd 38.9 million at the end of 1961, and LSd 46.6 million at the end of 1962.

In 1960, an improvement in the position of the public sector more than offset the expansion of bank credit and produced a decline of LSd 9.2 million in total domestic credit. As a result, a sharp increase in foreign assets resulted in a monetary expansion of no more than

³⁷ Some years earlier, ceilings had been applied by the NBEK on its advances to the various banks, but these had invariably been fixed so high that their effectiveness as an instrument of credit policy was greatly diminished.

³⁸ Ratio of cash to total private deposit liabilities.

7 per cent. In 1961, however, both the Government and official entities incurred cash deficits and, although the rate of bank credit expansion was considerably reduced, there was a total credit expansion of LSd 10.0 million. Since this was not completely offset by a reduction of foreign exchange reserves, the rate of monetary expansion increased to 19 per cent. A similar pattern prevailed in 1962. There was a substantial expansion of credit to the Government and the private sector, only partly offset by an increase in time and savings deposits and other liabilities of the banking system and a reduction of foreign assets. The money supply increased by about 16 per cent.

In view of the increasing liberalization of import policy, the high rate of monetary expansion appears, on the whole, to reflect an increase in the demand for liquid funds by the private sector. However, some rise in domestic prices resulted. During the two years 1960/61 and 1961/62, the growth in gross domestic product (GDP) amounted to 14 per cent (Table 7), compared with a monetary expansion of 27 per cent. Furthermore, an extension of the money-using sectors of the economy is indicated by the higher rate of growth of the modern sectors, compared with the traditional sectors, in the national income estimates,³⁹ and by the higher rate of growth of imports and credits compared with that of GDP.

Conclusion

Few countries have experienced as sharp fluctuations in their foreign trade as did the Sudan between 1947 and 1962. From less than LSd 17 million in 1947, exports rose to nearly LSd 80 million in 1951 (increasing by almost 120 per cent in 1951 alone) and then declined by more than 40 per cent in 1952. The swings in other years in the 1950's were also wide. Lagging by approximately one year, imports fluctuated considerably, but they were generally more stable than exports. These fluctuations were experienced while the trend of both exports and imports was upward. For the period as a whole, exports rose by about 370 per cent. Imports rose at an even faster pace, being about 440 per cent higher in 1962 than in 1947.

It was inevitable that such large fluctuations in foreign trade should have important repercussions on domestic stability. Fluctuations in the trade balance resulted in sharp variations in the exchange reserves

³⁹ The modern sector is defined as that part of the economy in which modern techniques are applied and modern types of investment goods are used. See Sudan Ministry of Finance and Economics, *Economic Survey, 1962*.

TABLE 7. SUDAN: GROSS DOMESTIC PRODUCT, CONSUMPTION, AND INVESTMENT,
FISCAL YEARS 1955/56-1961/62¹

	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62 ²
<i>Millions of Sudanese pounds</i>							
1. Government sector ³							
a. Consumption	22.2	24.0	29.0	29.0	32.0	34.5	39.3
b. Fixed investment	11.4	12.6	21.3	22.9	22.9	26.0	34.3
Total	33.6	36.6	50.3	51.9	54.9	60.5	73.6
2. Private sector							
a. Consumption	251.0	271.2	282.0	281.1	302.3	313.4	339.9
b. Fixed investment	9.8	12.3	18.2	13.1	15.4	20.2	24.9
Total	260.8	283.5	300.2	294.2	317.7	333.6	364.8
3. Change in inventories	-5.5	18.2	-5.4	-5.6	4.1	3.8	22.4
4. Total national expenditure (1 + 2 + 3)	288.9	338.3	345.1	340.5	376.7	397.9	460.8
5. Deficit (-) or surplus (+) on goods and services account	13.0	-6.8	-14.5	0.9	5.5	-7.6	-22.8
6. Gross domestic product (4 + 5)	301.9	331.5	330.6	341.4	382.2	390.3	438.0
7. Consumption (1a + 2a)	273.2	295.2	311.0	310.1	334.3	347.9	379.2
8. Fixed investment (1b + 2b)	21.2	24.9	39.5	36.0	38.3	46.2	59.2
<i>Percentage of gross domestic product</i>							
9. Fixed investment	7.0	7.5	11.9	10.5	10.0	11.8	13.5

Source: Ministry of Finance and Economics, *Economic Survey, 1962*.

¹ Fiscal year ends June 30.

² Provisional.

³ Including official entities.

and in the fiscal position of the Government. Despite these sharp fluctuations, the rate of growth of the economy was highly satisfactory, as is indicated by the growth in exports, imports, money supply, and GDP (estimates for the last being available since 1955/56 only). During the six fiscal years 1955/56 to 1961/62, a rate of growth in GDP of approximately 7 per cent per annum was achieved, in the face of a decline of about one third in the price of long-staple cotton, the country's major export. Resources permitting a high rate of growth were generated by the Government's willingness to raise tax revenues and by the favorable investment climate created by sound fiscal and monetary policies. Through such policies, the Sudanese authorities were fairly successful in avoiding the dangers of inflation in an economy which was subject to wide fluctuations, and in liberalizing restrictions on trade and payments.

Developments since 1959 indicate that the pattern in this recovery phase has been different from that in earlier periods, when high receipts from exports were accompanied by government cash surpluses and a building up of reserves. In the 1959-62 phase, particularly after 1960, the Government ran a deficit, while there was a considerable increase in bank credit to the private sector. Moreover, exchange reserves declined, as noted above. Hence, it might be expected that any considerable shortfall in export receipts in the future would lead to a substantial reduction of reserves, unless in the meantime there were a tightening of fiscal and monetary policies. Also, maintenance of a relatively liberal exchange system might be placed in jeopardy. Although the reserve position at the end of 1962 was relatively strong,⁴⁰ part of the increase between 1958 and 1960 represented prepayments received for development expenditures to be incurred at a later date.⁴¹ A review of developments during the period 1947-62 shows, however, that the Government reacted promptly whenever an excessive loss of reserves was threatened, enforcing import restrictions as a last resort.

⁴⁰ At the end of 1962 the foreign assets of the Bank of Sudan amounted to LSd 55 million. However, in 1963, they declined by LSd 13 million.

⁴¹ Until the end of 1962, the Sudan had received from the United Arab Republic LSd 11 million in compensation for the resettlement of the Wadi Halfa population out of a promised total of LSd 15 million. The Sudanese Government has estimated the total cost of the project at LSd 20 million and the direct foreign exchange cost at more than LSd 12 million. Hence, about 80 per cent of the foreign exchange received from the U.A.R. is earmarked for the resettlement. It is assumed that total expenditure on the scheme up to the end of 1962 amounted to LSd 1.7 million, of which about LSd 1 million was in foreign exchange. Thus, about LSd 8 million (80 per cent of LSd 11 million minus LSd 1 million) of foreign exchange should be deducted to arrive at a more meaningful picture of the movement of foreign assets during the period 1959-62.

Politiques intérieures et problèmes de paiements du Soudan,
1947-62*Résumé*

Peu de pays ont subi des fluctuations aussi marquées de leur commerce extérieur que le Soudan entre 1946 et 1962. Le chiffre des exportations est passé de moins de 17 millions de livres soudanaises en 1947 (1 livre = 2,87 dollars des Etats-Unis) à près de 80 millions de livres en 1951 (accusant une augmentation de près de 120 pour-cent pour la seule année 1951), puis a diminué de plus de 40 pour-cent en 1952. Les fluctuations enregistrées au cours des années 1953-1959 ont également été importantes. Avec un retard d'environ un an sur les exportations, les importations ont, elles aussi, accusé des fluctuations considérables, mais elles se sont montrées en général plus stables que les exportations. Ces fluctuations ont eu lieu alors que la tendance était à la hausse tant pour les exportations que pour les importations. Pour l'ensemble de cette période, les exportations ont augmenté d'environ 370 pour-cent. Les importations ont progressé encore plus rapidement, le chiffre de 1962 dépassant d'environ 440 pour-cent celui de 1947.

Il était inévitable que des fluctuations aussi importantes du commerce extérieur aient de profondes répercussions sur la stabilité intérieure. Les fluctuations de la balance commerciale ont entraîné des variations prononcées des réserves de change et de la situation financière de l'Etat. En dépit de ces fluctuations considérables, le taux de croissance de l'économie a été très satisfaisant, comme le traduit l'augmentation des exportations, des importations, des disponibilités monétaires et du produit intérieur brut (on ne dispose d'évaluations de ce dernier élément que depuis 1955/56). Au cours des six exercices financiers de 1955/56 à 1961/62 (l'exercice financier se termine le 30 juin), le produit intérieur brut a atteint un taux de croissance d'environ 7 pour-cent par an, en dépit d'une baisse d'environ un tiers du prix du coton à fibres longues, qui constitue la principale exportation du pays. Les ressources qui ont permis un taux élevé de croissance ont eu pour origine d'une part la décision prise par le gouvernement d'augmenter les impôts et d'autre part le climat favorable aux investissements créé par de saines mesures financières et monétaires. Grâce à l'adoption de ces mesures, les autorités soudanaises ont assez bien réussi à éviter les dangers d'inflation dans une économie pourtant sujette à d'importantes fluctuations, et ont pu assouplir les restrictions de commerce et des paiements.

Políticas internas y problemas de pagos del Sudán durante el periodo 1947-1962

Resumen

Pocos países han experimentado fluctuaciones en su comercio exterior tan pronunciadas como las del Sudán durante el periodo 1947-1962. Las exportaciones, que en 1947 fueron de menos de 17 millones de libras sudanesas (LSd 1,00 = US\$2,87), aumentaron hasta alcanzar casi LSd 80 millones en 1951 (habiendo aumentado en casi un 120 por ciento tan sólo en 1951) y luego bajaron en más del 40 por ciento en 1952. Las fluctuaciones registradas durante otros años de la década de los cincuenta fueron también agudas. Las importaciones, que llevaban aproximadamente un año de rezago, fluctuaron considerablemente aunque tuvieron, por lo general, mayor estabilidad que las exportaciones. Esas fluctuaciones ocurrieron en época en la cual tanto las exportaciones como las importaciones mostraban una tendencia ascendente. El aumento observado en las exportaciones durante todo el periodo fue de alrededor del 370 por ciento. Las importaciones se elevaron a un ritmo aún más acelerado, y las de 1962 superaron aproximadamente en un 440 por ciento a las de 1957.

Era inevitable que esas fluctuaciones tan ingentes en el comercio exterior repercutiesen gravemente sobre la estabilidad interna. Las fluctuaciones experimentadas en la balanza comercial produjeron cambios bruscos en las reservas cambiarias y en la posición financiera del gobierno. A pesar de esas agudas fluctuaciones, la tasa de crecimiento de la economía resultó altamente satisfactoria, conforme lo indica el incremento habido en las exportaciones, en las importaciones, en el medio circulante y en el producto interno bruto (sobre el cual sólo existen cálculos aproximados a partir de 1955/1956). Durante los seis años fiscales comprendidos entre 1955/1956 y 1961/1962 (el año fiscal termina el 30 de junio) la tasa de crecimiento del producto interno bruto alcanzada fue más o menos del 7 por ciento anualmente, a pesar de que el precio del algodón de fibra larga, que es el principal producto de exportación, bajó aproximadamente en una tercera parte. La buena disposición por parte del gobierno a aumentar los ingresos tributarios y el clima propicio para las inversiones provocado por sanas políticas fiscales y monetarias engendraron recursos que a su vez posibilitaron una elevada tasa de crecimiento. Mediante semejantes políticas las autoridades sudanesas lograron bastante éxito en eludir los peligros de una inflación para una economía que estaba sujeta a fluctuaciones agudas, y también en liberalizar las restricciones sobre el comercio y los pagos.

In the tables throughout this issue, and in the English text of the papers

Dots (...) indicate that data are not available;

A dash (—) indicates that the figure is zero or less than half the final digit shown, or that the item does not exist;

A single dot (.) indicates decimals;

A comma (,) separates thousands and millions;

“Billion” means a thousand million;

A hyphen (–) is used between years or months (e.g., 1955–58 or January–October) to indicate a total of the years or months inclusive of the beginning and ending years or months;

A stroke (/) is used between years (e.g., 1962/63) to indicate a fiscal year or a crop year.

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