Introduction

Albert Ando, Richard Herring
and Richard Marston

I. Introduction

The Conference of the International Seminar on Public Economics on International Aspects of Stabilization Policies was fortunate not only because authors contributed 11 excellent papers, but also because all discussants and participants came to the conference well-prepared, and the discussion at the conference was unusually well-structured and lively. In these conference proceedings, the editors wanted to preserve in some way the spirit and atmosphere of the conference, but the obvious procedure of reproducing oral discussion at the conference from.recorded transcripts proved to be impractical. We have therefore adopted the compromise solution of presenting here a fairly lengthy introduction which contains not only summaries of papers and formal discussions but also some comments by the editors. We have done our best to incorporate in our comments the essence of the discussion that took place at the conference, but these comments inevitably reflect our own biases, and the editors of this volume are solely responsible for the content of this introduction.

There is an extensive literature on stabilization problems in a "closed" economy setting. Although papers in this tradition do not ignore the external sector entirely, the usual set of assumptions are quite restrictive: export quantities and import prices are taken as exogenous, and the effects of the balance of payments on domestic monetary conditions are ignored. Thus, in these models, it is usually assumed that the government can control the domestic monetary base, or that it can set the short-term rate of interest without regard for the levels of foreign interest rates. Works of American economists are particularly rigid in this respect, mostly because the closed economy model seemed to provide an adequate description of the U.S. economy until recently.

Albert Ando is Professor of Economics, Richard Herring is Assistant Professor of Finance and Richard Marston is Assistant Professor of Economics at the University of Pennsylvania, Philadelphia, Pennsylvania.

On the other hand, the international economic literature on stabilization problems in an "open" economy setting often spells out more or less explicitly how the effects of stabilization policy depend upon external relations of a country: whether the exchange rate is fixed or flexible; whether movement of reserves can be sterilized or not; to what extent foreign goods compete with domestic production and so on. But these models are generally not well suited for empirical work because they contain too simplified a description of the domestic aspects of the economy, making it difficult to establish the correspondence between variables used in these models and available data. In addition, they are usually formulated as completely static models, making their correspondence with data even more remote. While these models are helpful in providing a framework for evaluating in qualitative terms the effects of alternative policies, they provide no precise quantitative information, and often even the qualitative results become questionable once the models are broadened to admit more complex forms of behavior.

As the trade and financial links among countries in the world became stronger through the 1960s, a host of policy questions that used to be of mainly theoretical interest have gradually assumed practical importance, even for a "closed economy" like the United States. Thus, it is now of utmost importance to know how an economic disturbance in one country will affect both that country *and* other countries, taking into account the trade and financial linkages between these countries. And it is important to know how stabilization policy in one country will alter the effectiveness of stabilization policy in another country. The monetary policy pursued in Germany, for example, may be an important factor in determining the effectiveness of fiscal stabilization policy in France or in any other country with close ties to Germany. For these types of questions, the traditional models described above provide few useful answers.

Some efforts to deal with these increasingly important questions have emerged recently. On the empirical side, two very large-scale efforts stand out among others. One is the so called "LINK" project, which combines econometric models for most of the countries of the world in one interdependent dynamic system which describes the behavior of the world economy. While the project is of enormous scale and has not yet been developed to the satisfaction of those directly involved, it has already yielded a number of useful results, some of which will be reported in this volume.

The second is the work of John Helliwell and his associates in Canada to link up the RDX2 Model of Canada and the MPS Model of the United States. While this work confines itself to only two countries, the models involved, particularly the RDX2 Model, have much more elaborate trade and financial sectors which provide considerable insight into the channels through which the two economies are linked with one another. Other projects, though smaller in scale, have also made significant contributions in this area.

On the theoretical side, progress has been less dramatic, although recent studies have dealt with specific aspects of stabilization problems in the international context, such as those of Branson and the Scandinavian School of economists which are represented in this volume. This pattern of fairly rapid progress in empirical work and the slow evolution of theoretical formulation is not surprising. Analysis of stabilization policies in an international context involves questions of the dynamic behavior of a very large system, and until we learn to summarize the essential features of this large system in relatively small models, theoretical development in this area will be limited. Before we can attack general propositions, we must be able to describe the large system itself in some detail, and the empirical work cited above and others similar to them may be thought of as attempts at such a detailed description. But in order for such a detailed description to be acceptable, every component of the large empirical model must have a sound theoretical basis. Thus further progress in analyzing international stabilization problems depends upon the interaction between theoretical and empirical work in this area.

The Conference on International Stabilization Policy, the proceedings of which are reported in this volume, brought together two groups of economists: (1) econometricians who have developed empirical models for analyzing stabilization policy in individual countries and who are attempting to integrate such models for analyzing stabilization problems in an international context, and (2) international economic theorists who have focused on the analysis of stabilization policy in open economies. The conference was organized in the hope that these two groups would engage in a mutually beneficial dialogue. In particular, it was hoped that the econometricians would benefit from a critical review of the theoretical structure of their work by theorists, and that the theorists would benefit from an assessment of the empirical implication of their work by econometricians. The participants felt that the conference was successful from this point of view, and it is hoped that readers of this volume will find the papers and discussions contained in it to be both useful and stimulating.

This volume contains 11 papers and discussions, divided into three groups. The first group consists of papers by Branson, Gelting, Fleming, and Dosser, which are more or less theoretical in nature. The second group consists of papers by Klein and Johnson, Hickman, Helliwell, and Waelbroeck and Dramais. Each is based on econometric models of national economies linked together to represent an international economic system, and the behavior of these linked economies are studied by numerical, simulation analysis. The third group of papers, those by Behrman, Bajt, and Tatemoto are special studies of stabilization problems in institutional contexts that are less familiar to American and West-European economists; less developed countries, East-European socialist economies, and Japan.

In the remainder of this introduction, we will provide very brief summaries of the papers, and some comments on them by the editors of the volume.

II. Theoretical Studies

In a series of recent papers, Branson has attempted to analyze the impact of monetary and fiscal policies on balance-of-payments conditions in a model where the portfolio behavior of wealth-holders affects the capital account of the balance of payments. In his contribution to this volume, Branson expands on his earlier work, and develops a model of an open economy which incorporates both the stock-adjustment view of capital flows and an endogenously determined real sector. Employing an expanded IS-LM framework, he analyzes the impacts of various shocks to the economy on both the flow and stock equilibria.

Branson finds that once the real sector is treated endogenously some of the impacts of monetary and fiscal policy on capital flows become ambiguous. For example, an expansionary fiscal policy will yield a stock-shift capital inflow, but the sign of the continuing-flow effect is unclear. If there is a negative transactions demand for foreign securities, the sign of the stock-shift effect of monetary policy on holdings of foreign securities is in principle ambiguous, but the sign of the continuing-flow effect is clear. Branson also notes that if there is an asset which is not internationally traded, monetary policy will be an effective tool for stimulating or depressing the level of aggregate demand.

In his comment on Branson's work, Giorgio Basevi regrets that Branson did not model the impact of foreign interest payments on the current account. He notes that the induced impact on interest payments has been shown to be an important factor in determining the net balance-of-payments impact of various policies to influence capital flows, and thus should not be neglected. Basevi also urges that Branson incorporate the wealth impact of exchange rate changes and a mechanism for determining the market value of the real stock of capital. Finally, Basevi argues that Branson should specify a transactions demand for foreign assets analogous to the transactions demand for money, in which the demand for foreign assets depends, in part, on the volume of external transactions.

Branson's formulation and his results are highly suggestive, and should provide a starting point for anyone attempting to analyze stabilization problems in the international context. Much more work will be required, however, if such a model is to be used as a guide for the econometric modeling of integrated economies. One of the most critical problems to be faced concerns the dynamic adjustment process, for which the theory as developed by Branson offers little guide. Based on past experience, empirical estimation of such adjustment processes in models involving international capital transactions will prove to be particularly difficult.

The central concern of Gelting in his contribution to this volume is the *direct* influence of prices of goods and services abroad on the domestic prices of a small, very open economy. This linkage is quite distinct from that associated with the general demand pressure, and has been the subject of investigation by Scandinavian economists in recent years. In

the model studied by Gelting, the prices of traded goods are determined in the international market, and wages in *both* exposed and shielded sectors of the economy are determined by prices and productivity in the *exposed* sector. If productivity grows faster in the exposed sector, then prices in the shielded sector will rise through time inducing adjustments in domestic absorption of tradeable goods and a deterioration of the balance of trade. Fiscal expenditure policies whether directed at the exposed or shielded sectors will likewise lead to a deterioration of the balance of trade. Gelting concludes that the model implies a natural level of unemployment, determined by the rate of productivity growth and the rate of inflation imported from abroad.

To investigate the role of capital mobility in such open economies, Gelting introduces a simple two sector model and analyzes the effects of monetary and fiscal policy on employment and prices. His analysis suggests that an increase in fiscal expenditure on the shielded sector output is more effective in raising total output than increased expenditure on the exposed sector output, and more effective under flexible than fixed rates (since monetary policy does not have to be directed toward maintaining external balance). Gelting concludes with a brief analysis of the harmful effects of prolonged inflation in an open economy, including a discussion of the distorting impact of nominal income taxation on the returns from financial and real assets.

In his comment, Stanley Black points out that Gelting's model can be more accurately described as a monetarist than a structuralist model in the Scandinavian tradition. The cost functions for traded and nontraded goods depend not on wages and productivity but on the quantity produced as in the neoclassical theory of production. Black would prefer a full employment model with flexible wages, or one in which a Phillips curve relationship explains wage changes as a function of both unemployment and productivity growth.

There were a number of comments on Gelting's paper from the floor, some of which are recorded here. Basevi and Waelbroeck suggested two conditions in which the application of Gelting's model would be inappropriate. First is the case in which domestic producers of exportables have sufficient oligopoly power to impose discriminating prices in foreign and domestic markets for their products. Second is the case in which there is substantial international mobility of labor so that, even though industries producing non-traded goods may be shielded from price competition with foreign goods in output markets, they may nonetheless be competing with foreign producers for internationally mobile labor. Musgrave called attention to some ambiguities of the differential impact of the tax system under inflation. He pointed out that, since the personal income tax is usually progressive, and the same nominal income is paid to all lenders, lenders in higher tax brackets will lose relative to lenders in lower brackets. In addition, since the tax system normally allows depreciation only at the original cost and fails to allow for increases of replacement

costs under inflation, the effective rate of tax on equity capital is increased. Hence, it is not obvious which type of capital (debt or equity) is discriminated against under inflation in existing tax systems.

Marcus Fleming* presents an analysis of the stabilization implications of recent proposals to reform the international monetary system. He focuses on three aspects of the proposals sketched in the June 1974 Outline of Reform: (i) international liquidity; (ii) adjustment to long-term external imbalance; and (iii) adjustment to short-term external imbalance.

Fleming suggests that academic economists may have attached too much importance to the impact of increases in the stock of international reserves on national demands for goods and services. He asserts that the more important impact is likely to be a reduction in the extent to which trade and capital controls and exchange rate variations are used to deal with short-term payments imbalances.

Fleming notes that most of the discussion regarding long-term imbalances focuses on how to improve the adjustment process for the major reserve currency country, the United States. He explains that this problem has two essential features: (i) how to make sure that the United States is not absolved from making adjustments by its ability to finance its deficits through expansion of reserve liabilities to other countries, and (ii) how to prevent other countries from frustrating changes in the dollar exchange rate by continuing to peg their currencies against the dollar. More generally, he notes that various reform proposals seek to ensure that countries in fundamental surplus adjust their exchange rates as readily as countries in fundamental deficit.

Fleming's analysis of the problem in adjusting to short-term external imbalance is an extension of his pathbreaking work on the impacts of monetary and fiscal policy in an open economy. Fleming examines the impacts of three different policies directed at temporary external imbalances — reserve financing, capital controls and flexible exchange rates. He asserts that the ideal policy: (i) would disperse domestic demand disturbances widely over many nations; (ii) would shield the domestic economy by offsetting external shifts in demand; and (iii) would maximize the domestic impact of changes in monetary and fiscal policy. Under these criteria Fleming concludes that, for countries with a high degree of capital mobility, floating rates are the best policy for dealing with short-term imbalances.

In his comments on Fleming's paper, Peter Kenen suggests that Fleming should have focused more on the impacts of various reform proposals on the trade-off between unemployment and price stability. Kenen believes that we need to know much more about how the choice of exchange rate systems influences price stability in order to evaluate various proposals for reform. With regard to the stabilization implications of the stock of international reserves, Kenen maintains that the salient point is

*Mr. Fleming was unable to attend the conference. His paper was summarized by Professor Kenen.

not so much the *size* of the stock, as *how* additional reserves are created. Increases of international reserves which stem from the U.S. balance-of-payments deficit lead to increases in commercial bank reserves in the corresponding surplus countries, while increases due to a rise in the monetary price of gold or new issues of Special Drawing Rights do not affect domestic liquidity directly. The former means of reserve creation may lead to internal inflationary pressures while the latter need have no impact on domestic stabilization policies. Finally, Kenen takes exception to one of Fleming's criteria for evaluating policies toward short-term external imbalances. He does not think that one should prefer policies which would spread out domestic instabilities to foreign partners. Moreover, he notes that this criterion is necessarily inconsistent with the desire to maximize the domestic impact of stabilization policies.

Richard Herring notes that econometric evidence for the Canadian economy suggests that an assumption of low capital mobility may be more appropriate than Fleming's assumption of high capital mobility for the short-run analysis. He shows that under the former assumption, Fleming's results regarding domestic demand disturbances and policy changes are reversed. In addition, he shows that Fleming's short-run analysis is inconsistent with the stock-adjustment view of capital flows and that it therefore may lead to questionable results in analyzing floating exchange rates.

Emil-Maria Claassen sets out a monetarist model to analyze policies toward short-term external imbalances as an alternative to Fleming's Keynesian model. He finds that Fleming's results are reversed completely under monetarist assumptions.

In a rejoinder, Fleming asserts that Claassen's results differ only because he has examined a different problem. Fleming analyzed an autonomous change in investment, while Claassen focused on an autonomous change in liquidity preference.

The paper by Dosser is quite different from the three preceding ones in that he analyzes the stabilization problems which arise when national governments agree to share stabilization responsibilities with a supranational entity. This is a largely unexplored aspect of stabilization policy. Simply to define the optimum degree and form of policy coordination proves to be a very complicated problem. Dosser focuses on the coordination of tax systems in the European Economic Community where both the central authority (EEC Commission) and national authorities share powers of taxation.

In abstract theory, there is a presumption in favor of complete unification of all tax systems under the control of the central authority inasmuch as this arrangement may be expected to yield the most efficient allocation of resources. But the political reality is that each national government still retains the ultimate responsibility for its own citizens' welfare. Thus, under conditions in which external shocks, unemployment and other cyclical problems may have very different national impacts, it is natural that each country wish to retain some measure of autonomy in its

stabilization policies. Thus, a number of questions immediately arise. Which taxes should be controlled by the central authority, and which others should be retained by national authorities? Should national authorities be free to design taxes under their complete control or should they be required to adhere to the specific form of taxes, being free only to determine the rates? Should there be coordination in the use of these taxes among countries and the central authority, and if so, to what extent?

The decisions on these questions are gradually being made by members of EEC with or without careful analysis, and to a lesser extent, by all countries of the world. In his paper Dosser speculates on how the detailed arrangements are likely to develop within the EEC, and presents an agenda for research to analyze the consequences of such developments on the effectiveness of stabilization policies in the EEC.

In their comments, Cooper and Corden analyze the problem of coordination of stabilization policies from a somewhat different, and more abstract framework. Corden identifies the conditions under which coordination of stabilization policies is necessary among countries. Corden concludes that maintenance of fixed exchange rates is the most important single factor making the coordination of stabilization policies necessary. Cooper reviews his own past work in the context of recent experience and Dosser's speculation of how events are likely to unfold in the EEC. Cooper concludes that if monetary unification is a serious objective, then it implies fixity of exchange rates and hence the strict harmonization of national monetary policies. If this step is taken before free and easy movement of labor among member countries is assured, then, in the short run, it is important that each country be left free to use national fiscal policy for countercyclical purposes. Over the course of time, the national economies will become more closely linked through markets for goods and services, and conventional fiscal policies for each country will become less and less effective, thus necessitating more and more reliance on regional policies of tax incentives and subsidies. Eventually, it will become necessary to coordinate these regional policies because otherwise the income distribution will become very skewed in favor of the mobile factors of production for which different regions are competing.

III. Econometric Studies

Papers in this part are all based on analysis of national econometric models linked together into an integrated system, although there is a substantial diversity among the systems used by four sets of authors. Papers by Johnson and Klein, and by Hickman are based on the "LINK" system. This system integrates 12 structural models of the principal industrial economies and several smaller regional models to form a single system simultaneously determining output and trade levels in every country. Helliwell reports an analysis based on the system which links the RDX2

Model of Canada and the MPS Model of the United States, while Waelbroeck and Dramais analyze a system consisting of fairly small, symmetric models for EEC countries.

The reliability of any conclusion that one may obtain by working with these systems, then, depends on two factors: the ability of individual country models to approximate the behavior of the domestic economies individually; and the accuracy with which the linkages among countries are depicted in these systems. Models for some major individual countries have been in existence for some time, and their strengths and weaknesses are understood reasonably well. On the other hand, some of the country models, and especially the ways in which international linkages are described in these models, are comparatively new; their reliability under a variety of conditions has not been reviewed as thoroughly as, for instance, models for the United States and for Canada. For these reasons, with the exception of Helliwell's paper which is based on the coupling of two well-tested models, the results reported in this part of our conference should be viewed as still experimental in nature.

Johnson and Klein begin their paper by providing an informative discussion of simulation techniques for large-scale econometric models. The simulation experiments using the LINK system shed light on two different issues: (a) the effect of integrating a set of national models into a global one, and (b) the effects of changes in the "conditions of international trade." The authors discuss how different the results of national simulations can be when international repercussions are taken into account (through linkage mechanisms). Using the integrated system, they then analyze the effect of changes in international "conditions" on income, prices and trade in each country. The set of experiments conducted include changes in exchange rates, raw material prices, domestic wage rates, and restrictions on the supply of oil.

Anton Barten, commenting on the paper by Johnson and Klein, lists a number of questions for which a system like LINK may provide answers. He then reviews the results of experiments reported by Johnson and Klein, and attempts to assess their reliability by comparing them against his own expectation of how the present international economic system is likely to behave. He finds that, in general, the results obtained from LINK make the world economy more stable than he expected, particularly in its price behavior. We shall comment on this point a little later in connection with the paper by Hickman.

In a second comment, Alan Peacock wonders how the results of Johnson and Klein, and of Hickman would be altered if reactions of economic policy-makers of individual countries to external and internal conditions are explicitly taken into account. In their reply, the authors accept Peacock's suggestion as a possibility in future experiments, pointing out that it presents no technical difficulty.

There was lively discussion on this paper from the floor, some of which is recorded here. Barten observed in his comment that exchange

rate policy does not influence the balance of payments very much in the long run because prices and wages adjust to exchange rate changes. To Lindbeck, this implied that exchange rate policy is an effective way of influencing domestic prices. Lindbeck also disagreed with Barten's formulation that flexible exchange rates lead to a retreat in the internationalization and integration process. Lindbeck thinks of flexible rates as a method to sustain integration of markets with a minimum of integration of policies. Stanley Black observed that the effectiveness of exchange rate changes on the balance of trade must depend on the accompanying monetary and fiscal policies, and that the LINK simulations reported by Johnson and Klein, and Hickman, assumed a *neutral* monetary and fiscal policy. If the accompanying monetary and fiscal policy is more supportive, as it is likely to be in realistic situations, the effectiveness of exchange rate changes on the balance of trade should be greater.

Bert Hickman in his contribution analyzes the international transmission of income and prices using the LINK econometric model of the world economy. Hickman uses the system to calculate own and cross country income and price multipliers associated with changes in exogenous expenditure. The calculations yield a more variable response of prices, leading to a somewhat surprising result that in general the international propagation of price movements is weaker than that of real income.

The principal channel through which price changes are transmitted from one country to another within the LINK system is via foreign trade in merchandise. Hickman himself, and others at the conference, thought that, if there is any downward bias in estimates of the strength of international propagation of price movements, the major reason for it is the absence of the monetary linkages between countries in the current LINK system.

There were others at the conference, including the present editors, who thought that there is another serious source of downward bias in the results reported by Hickman. Hickman chose to use the implicit deflator of gross national product or of gross domestic product as the main indicator of prices. These deflators are perfectly valid indicators of prices in their proper role, but they are not well-suited for the measurement of international transmission of price movements because they are price indices of the value added. As the definitions in the Appendix to Hickman's paper show, the prices of imports are netted out of the value-added price index. Hence import prices cannot have a direct impact on the GNP deflator. In some larger, more elaborate models in the LINK system, such as the one for the United States, the GNP deflator and the price index of final goods are clearly distinguished from one another. In these cases, usually, the price index of final goods is explained as a function of the price index of some value-added quantity, and the price of raw materials. This is an acceptable procedure provided that extreme care is used in both estimation and simulation, since it is well known that in this formulation

downward biases can easily be introduced in the estimation of the impact of prices of raw materials and other imports on the final goods prices. It is quite possible that results reported by Hickman are subject to bias from this type of problem.

It may be noted that the results reported by Waelbroeck and Dramais using their Desmos model, in which monetary linkages are also neglected, indicate that the transmission of price effects is stronger than the transmission of income effects. In the Desmos model, the representative price is a consumer price index rather than the GNP deflator, although one still suspects that the statistical estimates of the price equations are subject to biases discussed in the preceding paragraph. Since the LINK system contains a far larger number of countries than the Desmos model, the comparison is not very meaningful, but it is mildly suggestive, and reinforces our impression that the estimates of international transmission of prices reported by Hickman are probably biased downward.

In his contribution to this volume John Helliwell joins together and simulates two of the most fully articulated national econometric models: the RDX2 model of the Canadian economy and the MPS model of the U.S. economy. Helliwell describes a series of simulation experiments tracing the effects of stabilization policies (usually changes in government expenditures) initiated in either country or macroeconomic variables in both countries. Several of the simulation experiments are designed to demonstrate the relative importance of the three principal channels by which stabilization policies are internationally transmitted: trade flows, capital flows, and migration. Helliwell's results indicate that U.S. fiscal policy does have substantial effects on Canadian variables and that these effects vary depending on which channels of transmission are operative during the particular simulation experiment. In contrast, Canadian fiscal policy is shown to have rather small effects on U.S. variables.

Helliwell finds that in both the United States and Canada, monetary policy has a strong comparative advantage over fiscal policy in dealing with the balance of payments. This comparative advantage holds over the entire eight-year simulation period even though portfolio adjustment effects and induced interest and dividend payments are taken into account.

In his comment on Helliwell's paper, Stephen Goldfeld warns that some of the simulation results for the United States may reveal more information about the econometric model than the U.S. economy due to the rudimentary state of the international sector of the MPS model. On the other hand, he finds that the implications about the structure of the Canadian economy seem more plausible due to the comparative richness of the foreign sector in the RDX2 model. Goldfeld urges that Helliwell shift the historical period for simulation in future experiments in order to determine how sensitive the results are to the period simulated. He notes that in nonlinear models the multipliers may vary widely in different historical contexts.

Lawrence Klein commends Helliwell's simulation experiments for their careful design and makes several suggestions for additional studies. Klein proposes that in future work the two models be linked in long-run simulations. He also suggests that experiments be designed to estimate the effects on Canada and the United States of several of the special factors which influence the bilateral balance of payments such as the Interest Equalization Tax, EXPO, the U.S. draft provisions during the Viet Nam War, and the automobile trade agreement.

As indicated earlier, in contrast to the preceding three papers, Waelbroeck and Dramais base their results on simulations of a system of models of nine EEC countries which have been especially constructed to insure simple and symmetric specifications across all countries. Even so, their system contains 258 equations, indicating how easily an econometric model encompassing several countries can reach enormous size.

The model, Desmos, may be broken into four blocks of equations: a factor demand block, an income and expenditure block, a wage-price block and a trade linkage block. The factor demand block is noteworthy for its use of the Hickman-Coen technique to enforce consistency in estimation of capital and labor demand functions with the underlying production function. And the trade linkage block incorporates a refinement of the Hickman-Lau technique for explaining export market shares by including relative capacity utilization and relative production capacity as additional explanatory variables.

Waelbroeck and Dramais report simulation experiments showing the impacts on macroeconomic variables in the EEC of changes in the exogenous components of aggregate demand and of changes in exchange rates, interest rates and labor migration. There appear to be strong interactions among macroeconomic variables in each of the countries, and despite the underlying symmetry of specifications, each country demonstrates an individualized pattern of responses to exogenous shocks. Waelbroeck and Dramais conclude by showing how their model could be used to help negotiators from the nine EEC countries coordinate national policies to achieve common goals.

Keith Johnson suggests that the specifications of Desmos may be too simple to represent adequately the impacts of monetary and fiscal policy. In view of experience with the LINK models, he is especially skeptical about the way in which tax and transfer policies and the distribution of incomes between wages and profits are implicitly lumped together in the equation determining disposable income.

Johnson also questions the use of a capacity measure in the export share equations inasmuch as Waelbroeck and Dramais have assumed that capital is both variable and malleable in the short run. He notes that under these conditions, the traditional justification for defining capacity output by evaluating the production function at full employment with the capital stock fixed is no longer meaningful. Finally, Johnson warns that the analysis of the "controllability" of the Desmos model, which relies

solely on the signs of the policy multipliers, may be seriously misleading. He reworks the analysis assigning typical orders of magnitude to the policy responses and reaches different conclusions than did Waelbroeck and Dramais concerning the impacts of combinations of policy instruments.

Large scale econometric studies covering more than one country and linkages among them have a very short history. Those who are engaged in these studies face much more formidable difficulties than those who are working with national models not so much because of the size of the system but because of uneven availability of data and unsettled conceptual problems. Three of the four papers presented in this part of the volume reflect this state of the art and despite enormous skill, ingenuity, and hard work on the part of authors, the reliability of the results of these studies are somewhat less than the comparable results obtained from national models.

The exception to this statement is the paper by Helliwell. There are three basic reasons why his paper is an exception. Helliwell began his work with two models which are not only better articulated and tested than many others and have more careful specification of financial sectors, but are rather similar in their general conceptual framework. Second, the data bases for the United States and for Canada are more broadly compatible with each other than for any other pair of countries. Third, for these countries it has proved feasible to formulate monetary sectors which take into account the most important international monetary linkages. In the case of the U.S. economy, it has been generally possible to sterilize external flows of capital, and control domestic monetary and financial conditions. Conditions in the United States, in turn, have tended to dominate monetary and financial conditions in Canada, so the two economies can be treated as a single system largely independent of the rest of the world. In the RDX2 model, Helliwell and his associates have formulated an elaborate financial sector to incorporate linkages between the U.S. and Canadian economies. Thus, in contrast to the other studies, Helliwell's study has succeeded in explaining national monetary conditions by explicitly treating monetary linkages between the countries in his system.

Even with these special advantages, it was a formidable task for Helliwell and his associates to bring the coupled system to the stage where it is functioning as well as it is. That they have been so successful is a clear indication that it is possible to perfect linked econometric models of several countries to the level where conclusions based on them are as reliable as those from the best national models. We are all well aware of the difficulties and uncertainties associated with numerical estimates of the behavior of an economy based on an econometric model, even a very good one like RDX2. Subject to the same difficulties and uncertainties, the day when we shall be using these linked econometric models for stabilization purposes will not be too far away.

IV. Special Case Studies

The papers in preceding parts of this volume are primarily concerned with western industrialized countries, although the LINK system includes

less developed parts of the world and the socialist countries in a somewhat cursory manner. Some would contend that this focus on western industrial countries is entirely appropriate arguing that socialist countries with central economic plans do not have economic fluctuations, and that the problems of less developed countries are not those of cyclical fluctuations but of production bottlenecks and supply constraints. While there may be some truth in these propositions, the reality cannot be quite as simple as it suggests. Unless the central planning is absolutely perfect, and capable of responding to all unforeseen contingencies effortlessly, there will be occasions, even in centrally planned economies, when the production and final demands do not match. And certainly less developed countries must also experience difficulty in managing the level of final demands in such a way as to utilize fully the available resources and to maintain external balance. In what follows, Bajt and Behrman examine the nature of short-run economic fluctuations and policies to deal with them in centrally planned economies and less developed countries, respectively.

Aleksander Bajt investigates patterns of instability in the socialist countries through a series of quite distinct analyses. His first analysis centers on the question of which sectors in the socialist economies are responsible for generating medium-term cycles. He concludes on the basis of correlations between the rates of growth of investment and sectoral output that most instability arises from investment cycles generated by the planning process itself. The investment cycles, however, have declined in importance as planners have gained experience over the past two decades. The second analysis deals with short cycles, especially in Yugoslavia, which according to Bajt have been less important in the socialist economies than in the west. Finally, in the last section, the author tests a theory for the Yugoslav wage structure explaining intertemporal movements in relative wages across industries. The last analysis bears on the question of wage inflation in the socialist countries.

In his discussion of this paper, Richard Portes points out that the author has failed to discuss stabilization policy as it relates to economic relationships between socialist countries. Portes notes that the foreign trade sector may be important in transmitting fluctuations in expenditure from one country to another.

Jere Behrman observes that previous analyses of less developed economies have focused more on questions of growth than on short-run stabilization problems. In view of the difficulties which stabilization problems pose for the LDCs, however, interest recently has grown in the design and use of stabilization models analagous to those designed for developed countries. Behrman outlines the basic building blocks of a short-term macroeconomic model, comparing each sector within the model to its counterpart for a developed country. He shows that the determination of wages and employment is different in economies with both traditional and modern sectors, and that the investment and government sectors have distinct characteristics in economies with substantial foreign and public sectors. Finally, he emphasizes the potentially destabilizing role which the

foreign sector can play in economies dependent on critical raw materials, intermediate goods and capital imports.

Hansen criticizes Behrman for suggesting that the focus of aggregate demand stabilization is in the modern sector. Countries at the pre-industrial level may experience severe stabilization problems leading to inflation and balance-of-payments difficulties. With regard to the larger question of designing models for the less developed countries, Hansen question of reliance on Walrasian-type models of individual markets where suggest reliance on Walrasian-type models of individual markets where hard data exist in preference to the aggregate macro models common to developed countries. The Walrasian models permit more detailed specification of the manner in which policy instruments or exogenous disturbances affect the individual markets.

Japan is a special case. The structure of its economy and the government policies guiding its development appear to be different from those for other industrialized countries and are not well known to economists in the United States and Europe. Yet, because it is very large and it has grown very much faster than other countries, the impact of the behavior of the Japanese economy on world economic conditions is very substantial, creating an impression that some of the instability of the world economy before the Arab oil embargo was caused to some extent by the behavior of the Japanese economy.

Tatemoto* attempts to clarify the role played by the Japanese economy in the world and in particular the implications of the economic policies of the Japanese government on world economic conditions by reviewing the development of the 1960s. Tatemoto asserts that macroeconomic policy in Japan is better characterized as growth policy than as stabilization policy inasmuch as monetary and fiscal policy have been employed largely to affect the long-run growth path of the economy rather than to minimize fluctuations around the growth trend. In general, Japanese policy-makers have pursued an "easy money with surplus budget" policy, with occasional alterations in monetary policy to correct an external payments imbalance.

Tatemoto maintains that it is not very useful to distinguish between export- and investment-led growth in the Japanese context. He notes that, although part of investment was induced by exogenous shifts in export demand, a considerable amount of investment reflected a government policy of attempting to anticipate growth in export demand. Thus Japanese exports and investment are fundamentally interrelated.

Tatemoto rejects the notion that rapid Japanese growth was a cause of world economic instability observing that the total elasticity of Japanese exports with respect to import demand in the rest of the world is exactly twice the eleasticity of Japanese imports with respect to Japanese GNP. Thus, he concludes that Japan's large balance-of-payments surplus after 1968 was due to an *insufficiently high* Japanese

*Professor Tatemoto was unable to attend the conference. His paper was summarized by Mr. Krause.

growth rate (or to an excessive growth in import demand in the rest of the world). Although he faults Japanese policy for not having revalued the yen sooner, he asserts that it should not be criticized for stimulating excessively rapid growth.

In his comment on Tatemoto's paper, Lawrence Krause suggests that the Japanese government's consistent underestimate of the growth rate was itself a means of increasing the growth rate. Because the official estimates were used to estimate tax revenues for the purpose of balancing the budget, the government, in fact, was able to accrue a surplus which could be distributed as investment incentives to encourage growth. From an examination of the behavior of export prices, Krause concludes that Japanese growth *was not* export-led from 1960-68, but that it was export-led from 1968 through 1971 when the Vietnam-induced price inflation in the United States may have been the dominant factor. Krause closes by questioning whether the elasticity of Japanese exports with respect to import demand in the rest of the world should be regarded as a fixed parameter. Regarding it as endogenously determined, Krause asserts that investment-led growth and the consequent expansion of industrial capacity yielded the high Japanese export elasticity. In this sense, Krause believes that while the rapidity of Japanese growth may not have been a cause of world instability, the unbalanced structure of Japanese growth may have been a destabilizing factor.

With regard to export-led growth versus investment-led growth, Akihiro Amano suggests that the multiplier impact of a change in investment expenditure is smaller than that of an equal change in export demand in a fixed exchange rate system. He notes that this is especially true in Japan where empirical estimates indicate that the long-run export multiplier is several times larger than the investment multiplier. Amano suggests that the most serious problem Japanese growth has caused for the rest of the world has been one of the adjustment to payments imbalances. He believes, however, that greater exchange rate flexibility will reduce adjustment costs and enable the rest of the world to better share the fruits of Japan's rapid economic growth.

There are many questions of international economic stabilization policies which none of the papers in this volume addresses, and even for those questions with which this volume is concerned, no participant at the conference would claim to have definitive answers. Nevertheless, by bringing together several diverse strands of research activities, all of which are aimed toward the ultimate objective of more effective stabilization of international economic activities, we hope that this volume will provide some perspective of where we are, and that it will serve as a useful guide for economists and policymakers in highlighting where work is most needed in order to improve the performance of international stabilization policies.