1 An Introduction to International Aspects of Fiscal Policies

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This introduction provides a reader's guide to the book. It contains a summary of each chapter and an outline of the discussants' comments.

In chapter 2, Malcolm D. Knight and Paul R. Masson apply an investment-savings framework to the analysis of the effects of fiscal changes in the United States, the Federal Republic of Germany, and Japan. They start the analysis by noting that the sharp rise in the U.S. budget deficit from 1981 to 1985, and the contemporaneous moves to fiscal restraint in Germany and Japan, constitute an important shift in the pattern of fiscal positions among the largest industrial economies. During this same period, the international economy has been characterized by three "stylized facts": the persistently high level of real interest rates in international financial markets; the sharp rise in the current account deficit of the United States and the increased surpluses of Germany and Japan; and the sustained appreciation in the real effective exchange rate of the U.S. dollar. Knight and Masson examine the extent to which the three major developments that characterize the international economy over the years 1981–85 may be related to these fiscal shifts.

Their analysis emphasizes the basic point that the fiscal changes of recent years constitute major disturbances to net saving and investment flows. Thus, following the work of Laursen and Metzler, Sachs and Wyplosz, and Frenkel and Razin, they model the overall current account in terms of intertemporal decisions regarding private saving and investment and the government fiscal deficit. Specifically, they

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show that, if "full Ricardian equivalence" of government debt and taxes does not hold, then the three stylized facts referred to above are yielded by a simple neoclassical model in which two large countries borrow and lend in an integrated world capital market. The reason for this result is readily discernible. Unless changes in the stock of government debt leave private wealth unaltered, an autonomous increase in, for example, the U.S. fiscal deficit means that the United States must use more (or provide less) of the flow of net savings vis-à-vis the rest of the world, so that the world interest rate has to rise. In order for the increased flow of foreign savings to enter through the capital account, the U.S. current account must be pushed into deficit via an appreciation of the real exchange rate and a loss of international competitiveness.

Given these implications of simple neoclassical theory, several interesting empirical questions arise: Is "Ricardian equivalence" consistent with the data for major countries? If not, what fraction of the overall movements in real interest rates and exchange rates can we attribute to changes in fiscal policy as opposed to other factors? To address these questions, Knight and Masson specify and estimate an empirical model, based on simple theory, in which the determinants of both stocks of private sector assets and flows of private saving are specified so as to allow any proportion of government debt to be viewed by the private sector as part of its net wealth. Parameter estimates obtained from annual data over the period 1961–83 for the United States, Germany, and Japan suggest that, although *full* Ricardian equivalence does not hold, a substantial fraction—perhaps nearly half–of any increase in public sector saving is likely to be offset by induced declines in private saving at unchanged real interest rates.

Simulation experiments with the model are used to analyze several important policy issues. First, what is the effect of an autonomous reduction of the fiscal deficit in each of the three largest industrial countries separately? If the results for the United States are taken as an example, the simulations suggest that a permanent reduction in the fiscal deficit of 1% of U.S. capacity output produces a large decline (nearly 3 percentage points) in U.S. (and world) real interest rates and that this effect will appear quite quickly after the fiscal change is implemented. The simulations also suggest that such a fiscal change would lead to a large initial depreciation in the U.S. dollar, but its real value could be either above or below the preshock level in the long run, depending (among other things) on the degree to which the private sector regards changes in the stock of domestic government debt as part of its net wealth and on the interest responsiveness of private saving and investment. Thus the model suggests that fiscal shifts may cause the real exchange rate initially to "overshoot" the value that would be sustainable in the longer run.

It is, of course, quite clear that changes in the pattern of fiscal positions, taken in isolation, can provide only part of the explanation for the movements in real interest rates, exchange rates, and current account positions of the largest industrial economies over the period 1981–85. Relative shifts in the degree of monetary restraint were obviously important, particularly at the beginning and end of this period; cyclical effects were certainly a factor, especially in 1984, when U.S. output growth was unexpectedly rapid. These monetary and cyclical factors have intentionally been excluded from this model. Thus the question arises whether the neoclassical effects of fiscal shifts that are emphasized by the analysis account for a large proportion of the changes that actually took place or whether other factors have been predominant. The second set of simulation experiments assesses the extent to which the pattern of fiscal shifts that has been observed among the largest industrial economies since 1981 helps to explain the direction and magnitude of the net movements in interest rates and exchange rates during this period.

The simulation results suggest that, excluding cyclical and monetary effects, fiscal changes like those that occurred during the period 1981–85 might have increased world real interest rates by nearly 4 percentage points relative to what they would otherwise have been, and the U.S. dollar is also simulated to increase substantially. While fiscal shifts appear to be quite important quantitatively in the net changes in interest rates, exchange rates, and current accounts, they do not help to explain their timing. Like other models that focus on fiscal effects, the model analyzed by Knight and Masson suggests that the fiscal changes occurring from 1981 onward, if correctly anticipated, should have induced a large initial appreciation of the U.S. dollar followed by a subsequent depreciation, whereas its value rose nearly continuously from 1980 to early 1985. Part of the explanation for this difference in timing may be shifts in the degree of monetary restraint and cyclical effects that are excluded from the analysis. It may also be that the extent of the increase in the U.S. fiscal deficit during the first years of the period was consistently underestimated by market participants, leading to repeated fiscal "surprises."

In discussing Knight and Masson's paper, Olivier Blanchard and Rudiger Dornbusch address the theoretical as well as the empirical issues. Both discussants elaborate and clarify the channels of the international transmission mechanism highlighting the critical role that interest rates play in intertemporal modeling of the open economy. In this context a special emphasis should be given to the distinction between short run and long run and between transitory and permanent policies. In commenting on the empirical applications, the discussants focused on the authors' specification of the saving and the investment functions that are central to the forward-looking character of the model.

In the third chapter Warwick J. McKibbin and Jeffrey D. Sachs analyze the question of coordination of monetary and fiscal policies in the Organization for Economic Cooperation and Development (OECD). They note that discontent with the functioning of the world monetary system has led to many proposals for international monetary reform. These proposals range from enhanced consultations under the current regime of floating exchange rates to a regime of fixed exchange rates, as proposed by Ronald McKinnon. The authors examine the implications of several alternative monetary arrangements for fiscal policy in the world economy. In particular they focus upon two issues, first, the effects of alternative monetary arrangements on the international transmission of fiscal policy, and second, the implications of the alternative regimes for strategic aspects of fiscal policymaking.

They consider four alternative monetary regimes. The first is a floating exchange rate regime in which countries independently choose monetary and fiscal policies. The second is a dollar standard in which non-U.S. countries intervene in their domestic money markets to maintain a fixed exchange rate pegged to the U.S. dollar. The third regime is that proposed by Ronald McKinnon, in which each country intervenes in its domestic money market to maintain a fixed exchange rate with the additional constraint that the weighted sum of the money stocks remains fixed. In the fourth regime they again assume a fixed exchange rate but with the weighted sum of world money stocks no longer fixed but determined cooperatively by the countries.

McKibbin and Sachs use a static Mundell-Fleming model to derive multipliers for the international transmission of fiscal policy under each regime. They find that under a fixed exchange rate, fiscal policy can be negatively transmitted. To quantify the channels of transmission the authors use the McKibbin-Sachs Global (MSG) model, which is a general equilibrium macroeconomic simulation model of the world economy. They find that under a flexible exchange rate a fiscal expansion in one country raises output in the rest of the world, raises world interest rates, and appreciates the currency of the expanding country. Under a dollar standard, however, a fiscal expansion in the U.S. is negatively transmitted to the other regions because of an endogenous contraction of monetary policy in these regions that is necessary to stabilize their currencies. A fiscal expansion outside the United States, on the other hand, is positively transmitted to the United States since under a dollar standard the U.S. has no obligation to contract its money supply. The McKinnon regime removes this asymmetry, so that a fiscal expansion in each region is negatively transmitted to the other regions.

The second part of the chapter deals with the strategic implications of fiscal policy under the alternative monetary regimes. Again the authors use the static Mundell-Fleming model to illustrate the key issues involved. In the case of an inflation shock under a floating exchange

rate, they show that each country attempts to appreciate its currency in order to reduce domestic inflation. In the symmetric Nash equilibrium, the result is no change in any exchange rate, but an inefficiently low level of output and high fiscal deficits in all countries. By imposing a fixed exchange rate (assuming symmetry of countries and shocks and an optimally chosen world money stock), McKibbin and Sachs illustrate a case where the monetary regime removes the inefficiency of policymaking, even when fiscal policies are still chosen noncooperatively.

Techniques of dynamic game theory are then applied to the MSG model in an attempt to consider the issues in a more general framework. The authors first calculate a set of cooperative policy rules under flexible exchange rates as well as rules where each country chooses its fiscal policy noncooperatively under each of the alternative regimes. They then consider the short-run response to a global inflationary shock and find that the McKinnon rule leads to an outcome close to the cooperative equilibria.

In an attempt to measure the average operating characteristics of each of the regimes when governments are choosing fiscal policy strategically, McKibbin and Sachs add stochastic shocks to the behavioral equations for aggregate demand, prices, and money in the United States and the rest of the OECD. They next calculate the stochastic steady state variances of various macroeconomic targets (e.g., output, inflation, current account) assuming that shocks are independently distributed. In this case the McKinnon rule performs poorly (in terms of higher variance of target variables) relative to the noncooperative floating regime and relative to the cooperative regime. In the cooperative regime the policy response is a form of managed exchange rates. Finally, the authors consider a case in which money velocity shocks are negatively correlated across countries. In this case, the McKinnon rule performs extremely well.

As is generally the case in the discussion of exchange regimes, McKibbon and Sachs find that the choice of the monetary system is crucially dependent upon the source and nature of the shocks hitting the world economy. In this chapter they show that the monetary regime also has important implications for the transmission of fiscal policy in the world economy and for the nature of the strategic games played by fiscal authorities. However, fixed exchange rates do not necessarily eliminate the inefficient equilibria that can occur when fiscal authorities behave noncooperatively.

In his comments on the McKibbin and Sachs chapter, William H. Branson provides a guide to the MSG model and helps to place the McKibbin-Sachs paper within the broader body of research on coordination of macroeconomic policies. He notes that the research strategy followed by McKibbin and Sachs is a simulation study that takes the

empirical parameters and the institutional framework as given. Branson suggests that a useful extension would lead to the understanding of the design of institutions and regimes that offer policymakers the incentives to coordinate.

Commenting on the same paper, Robert P. Flood starts by listing some caveats concerning the simulation exercise. He then proceeds to discuss the rationale underlying the specification of the loss function used by the authors, and finally he raises some methodological issues concerning the use of the model for policy evaluation.

In the fourth chapter Willem H. Buiter uses a small analytical two-region model (the United States and the rest of the industrial world) to analyze three issues concerning international economic interdependence and macroeconomic policy coordination that have been central to recent academic and official discussions. The formal model is the two-country Mundell-Dornbusch model, with a floating exchange rate, perfect international capital mobility, rational expectations in the foreign exchange market, and sluggish adjustment of gross domestic product (GDP) deflators in the short run. The long-run properties of the model are classical: Output is at its exogenously determined capacity level; a country's inflation rate equals the proportional rate of growth of its money stock; and real competitiveness is independent of monetary policy. Expansionary fiscal policy at home and contractionary fiscal policy abroad cause a long-run real exchange rate appreciation, as do adverse shocks to domestic capacity output and positive shocks to foreign capacity output. Expansionary fiscal policy in either region and negative shocks to capacity output in either region will raise the real interest rate equally in both regions.

Most of Buiter's analysis is conducted on the assumption that the two regions have identical structures, which permits considerable simplification in the algebraic analysis and allows for a very transparent graphical description of the adjustment dynamics.

The three policy issues raised are: (1) What should be the monetary and/or fiscal response in the rest of the industrial world to a tightening of U.S. fiscal policy and what should be the U.S. monetary response? (2) What should be the monetary and/or fiscal response in the United States and in the rest of the industrial world to a "collapse of the U.S. dollar"? The paper emphasizes the importance of determining the causes of such a "hard landing" for the U.S. dollar, as the appropriate policy responses are very sensitive to this. (3) What should be the macro-economic policy response both in the United States and in the rest of the industrial world to a disappointing real growth performance? Again the correct identification of the reason(s) for this disappointing performance is shown to be crucial.

A unilateral U.S. fiscal contraction is shown to cause a temporary slowdown of world economic activity as well as a sudden drop in the

nominal and real value of the dollar. Merely preventing the nominal exchange rate from adjusting through nonsterilized foreign exchange market intervention does not reduce the magnitude of the global recession or alter the real long-run adjustment that takes place in response to the U.S. fiscal contraction. It would redistribute the unchanged global unemployment and excess capacity burden toward the United States and away from the rest of the industrial world. If the United States (but not the rest of the industrial world) sterilized its foreign exchange losses when fixing the nominal exchange rate, the effect on global and regional economic activity is ambiguous, as there now are two policy changes (contractionary U.S. fiscal policy and expansionary U.S. monetary policy) working in opposite directions. The long-run effects of these policy changes are independent of the monetary policy and the exchange rate regime. In the long run, a U.S. fiscal contraction lowers real interest rates at home and abroad and improves U.S. competitiveness.

A compensating fiscal expansion in the rest of the industrial world would permit the desired traverse to a better level of U.S. competitiveness without a global slump, but it would be inconsistent with a reduction in the global real interest rate. A combined expansionary monetary policy move in both regions can help achieve the desired improvement in U.S. competitiveness and reduction in the world real interest rate at full employment. These monetary stimuli could but need not be permanent increases in the rate of money growth. Once-off credible open market purchases raising the levels of the nominal money stocks suffice.

Buiter argues that if a sudden drop in the dollar reflects the bursting of a speculative bubble, there are no obvious monetary and fiscal policy implications. Collapses reflecting perceived changes in fundamentals do in general call for stabilization policy responses. A "direct currency substitution" shift in liquidity preference out of the dollar calls for open market sales in the United States and open market purchases in the rest of the industrial world. The adverse consequences of the emergence of a real risk premium on the return from foreign investment in the United States can be neutralized by raising the rate of taxation by the United States on interest income from abroad or by appropriate monetary and/or fiscal responses.

If a slowdown in global economic activity reflects an adverse global aggregate supply shock, demand-reducing measures are called for in both countries to avoid stagflationary consequences. If deficient private effective demand is the culprit, appropriate fiscal and/or monetary stimuli are called for.

In the final section of the chapter Buiter discusses and qualifies the activist policy conclusions derived from the formal analysis. The alleged "ineffectiveness" of anticipated (and/or correctly perceived)

monetary and fiscal policy is not an obstacle, as it occurs only in a very restricted and implausible set of models. Uncertainty about the nature of the true model greatly complicates optimal policy design but does not affect the superiority, in principle, of contingent (or feedback) policy rules. Credibility problems (the reversibility of expansionary "temporary fiscal stimuli"; the ability to commit the monetary authority to a policy of not attempting to use inflationary surprises to stimulate output or amortize non-index-linked government debt in real terms) are potentially serious but have political and institutional solutions.

Commenting on Buiter's analysis, Maurice Obstfeld questions the assumptions that policymakers know precisely the nature of disturbances and that the effects of policy actions are readily predictable. Obstfeld notes that uncertainties about the nature of shocks and the effects of policies preclude sophisticated fine tuning and yield instead simple policy rules. In this regard he compares the consequences of purely floating exchange rates and fixed exchange rates, highlighting considerations of risk sharing.

Stephen J. Turnovsky's comments on Buiter's analysis deal with the specification of the model, the effects of anticipated future shocks, and strategic aspects of the analysis. Turnovsky concludes his comments by advocating the use of an alternative optimizing model. The latter extension is especially important since, as Turnovsky notes, the replacement of the postulated model by an optimizing model provides the basis for an analysis of the welfare implications of policies.

In the fifth chapter David Backus, Michael Devereux, and Douglas Purvis provide a positive theory of fiscal policy in open economies. They first note that when consumers have infinite horizons, the timing of taxes has, to a first approximation, no effect on the allocation of resources. The question arises: Why do governments appear consistently to set taxes so that both tax rates and tax revenues vary directly with current income? In answering this question, the authors argue that consumers with finite lives (and no bequest motive) provide an incentive for governments to redistribute income over time in order to smooth utility across generations. This argument for income-smoothing, made in the context of an overlapping-generations economy, has a number of implications for the dynamics of aggregate time series.

First, the government in a small, open, pure-exchange economy can exploit its access to long-term capital markets to smooth fluctuations in private agents' income streams. In this case government deficits coincide exactly with balance of trade deficits.

Second, when goods are storable, they provide an alternative method for smoothing income. In an open economy, however, consumption and investment decisions are separable; the exact identity between

government deficits and trade deficits is broken, although they remain correlated.

Third, in a world composed of many economies there are no policy conflicts if all countries are small in the sense of being price-takers. The equilibrium that results when each country smooths its own income stream is efficient from a global viewpoint.

Finally, the theory implies that tests of the Ricardian equivalence theorem based on aggregate time series have no power: if the government redistributes income optimally, aggregate consumption behaves as if it were chosen by a single, infinitely-lived household.

In commenting on the Backus, Devereux, and Purvis paper, Stanley Fischer provides an intuitive explanation of the results and discusses their relevance to "real world" fiscal policy. He notes that in general the correlations among endogenous variables depend upon the underlying shocks. In this regard, Fischer points out that the analysis in the paper is especially applicable to situations in which the disturbance is a transitory productivity shock.

Commenting on the same paper, Kenneth Rogoff discusses some extensions and elaborations of the analysis. He points out that there are many plausible reasons why the Ricardian equivalence may not hold: finite lives, tax distortions, imperfect capital markets, uncertain fertility, and the like. Although many different reasons may imply that the timing of taxes "matters," they do not imply the same positive or normative conclusions. Rogoff notes that it would be worthwhile to examine the sensitivity of the main results of the paper to alternative assumptions underlying the departure from the Ricardian equivalence.

In the sixth chapter Alan C. Stockman analyzes the effects of fiscal policies in an open economy when international financial markets are well enough developed that consumers can use them to hedge against the risk of adverse changes in future government policies. When consumers choose portfolio allocations to combine risk and return in an optimal fashion, they can be interpreted as hedging against risks due to underlying disturbances to the economy. In equilibrium, both portfolio allocations and the returns on financial assets reflect these underlying disturbances.

Stockman notes that disturbances to the economy may come not only from nature (as shocks to production, population, or tastes), but also from government policies. (Alternatively, changes in government policies may be treated as endogenous responses to underlying disturbances from nature.) Optimal portfolio diversification entails hedging risk due to possible future changes in policies. Some examples of this phenomenon are common: consumers may hold real assets (such as housing) as a hedge against inflation (monetary policy), or firms engaged in international trade may hedge their assets against the pros-

pects of exchange controls by diversifying across countries and holding less in assets with a greater risk of being controlled. Similarly, equity prices (such as prices of oil company stocks) theoretically reflect risks of changes in the corporation income tax, investment tax credits, or other taxes (such as fees on imported oil).

The effects of actual changes in government policies depend on the assets that were available to consumers and firms when their portfolio choices were made and on their expectations about the probabilities of various changes in policies. Stockman's paper, which assumes that people have rational expectations, examines the effects of fiscal policies in an open economy when there are complete international financial markets and contrasts the results with the effects of the same policies when international financial markets are more limited. These thought experiments are helpful in evaluating the impact of the rapid development of domestic and international financial markets currently taking place. The effects of government policies may be quite different in the emerging world of sophisticated asset markets than in past situations with more limited opportunities for trade in financial assets.

The first example in Stockman's paper involves a change in government spending in a large open economy (part of a two-country world) with two goods. Government expenditure is assumed to be productive in reducing real transaction costs associated with consuming the good that is exported by the domestic country, and lump-sum taxes are varied to maintain a balanced budget. Results are obtained in the neighborhood of the socially optimal level of government spending. The analysis shows that, in the absence of any international financial markets, changes in domestic government spending have indeterminate effects on international trade and domestic consumption of the importables. But the indeterminacies vanish in the presence of complete international financial markets, and the effects of a change in government spending on domestic imports may be reversed.

The second example concerns the effects of temporary changes in distortionary taxes in a simple two-period model with two countries. The domestic government is assumed to vary spending (on a public good that enters utility in an additively separable way) with changes in revenue from a tax on domestic consumption. In contrast to the results obtained when there are only limited international financial markets, a temporary increase in the consumption tax in the presence of complete asset markets reduces current domestic consumption but leaves all future prices and quantities unchanged. Complete financial markets, therefore, alter the dynamic responses of the domestic and foreign economies to changes in domestic fiscal policy. In addition, complete financial markets remove indeterminacies regarding the effect of higher domestic taxes on foreign production: domestic and foreign production move in the same direction in response to a change in domestic taxes.

The third example concerns the international effects of changes in government budget deficits brought about by changes in lump-sum taxes, in a model without Ricardian equivalence. The paper adds complete international financial markets to a two-country model of the world economy and studies the international effects of changes in deficits. When international financial markets are very limited, a deficit raises domestic wealth and aggregate demand but may reduce foreign wealth and demand. In contrast, domestic and foreign wealth must initially change in the same direction when there are complete international financial markets. In the long run, however, the results are independent of the menu of assets that may be traded.

Stockman concludes the analysis by noting that complete international financial markets alter the international effects of fiscal policies because they eliminate all income-redistribution effects of those policies. Only substitution effects and aggregate (world) wealth effects remain. Any models of fiscal policy in which income redistribution and the subsequent dynamics of asset accumulation play a major role are sensitive, therefore, to assumptions about international financial markets. The considerations in this chapter should grow in empirical relevance as international financial markets continue to develop in breadth and sophistication.

In his comments on Stockman's paper, Andrew B. Abel analyzes a simplified version of one of Stockman's models to illustrate the conditions under which international financial markets permit sharing of country-specific risk. Abel proceeds by analyzing the implications of regime changes. In this regard he illustrates Stockman's observation that the effectiveness of fiscal policy depends on the degree of availability of insurance against various changes in policy and/or policy regimes. Abel concludes his comments with an analysis of optimal domestic fiscal policies in the absence of international financial markets.

Commenting on the same paper, Patrick J. Kehoe expands on two main themes, stimulated by Stockman's paper. He explores the implications of deterministic and stochastic models for comparative-statics analysis, and he analyzes the implications of market completeness for stochastic comparative statics.

In the seventh chapter, Linda S. Kole examines the issue of international interdependencies in the context of fiscal policies. Her analysis investigates the effects of a large nation's fiscal expansion on the real exchange rate, real interest rates, and the balance of payments. Within a two-country macroeconomic model, the initial impact, dynamic adjustment path, and long-run changes associated with an increase in government spending are analyzed. It is shown that the dynamic and steady state effects of expansionary fiscal policy can be dramatically different if one relaxes the assumption that the expanding country is small relative to international capital markets. Two crucial factors in

determining the economic responses to fiscal policy are shown to be the size of initial cross-country bond holdings and the degree of sub-stitutability between domestic and foreign assets.

Kole notes that most economic analyses of fiscal policy have assumed that the country undergoing an expansion is small in the sense that it faces infinitely elastic demand for its goods and assets. In this setting, if international assets are close substitutes, a balanced budget increase in government spending causes an initial appreciation, followed by gradual depreciation and decumulation of net foreign assets through a current account deficit caused primarily by a decline in the domestic trade balance. But, if the country embarking on a balanced budget or bond-financed fiscal expansion is large enough on world capital markets to affect world interest rates, then different results may obtain. With a sufficiently large degree of international capital market integration or imperfect asset substitutability, initial appreciation may be followed by further appreciation, along with accumulation of net foreign assets mainly through persistent service account surpluses. This type of dy-namic adjustment is applicable to large countries such as the United States, where the trade balance deficits resulting from a fiscal expansion may be outweighed by service account surpluses because of the as-sociated increase in world interest rates over the short or medium run.

Using a two-country model, Kole shows that the dynamic paths of the real exchange rate and the stock of net foreign assets between the time of anticipation and occurrence of a fiscal expansion depend cru-cially on the degree of international asset substitutability and the size of the expanding nation relative to world capital markets. The model is also used to compare the effects of tax vs. bond finance of an increase in government spending. Simulations are performed to illustrate the different dynamic and long-run effects associated with these two fi-nancing schemes.

The chapter briefly considers the U.S. experience with large bond-financed deficits and steady real appreciation in light of the above theoretical framework. Kole notes that, given the size of the U.S. fiscal expansion, it is not particularly surprising that we have witnessed real appreciation, high real interest rates, and unprecedented current ac-count deficits. What the author finds difficult to explain, however, is the precise magnitude of the changes and the pattern of events that occurred, especially the experience of steady appreciation along with a massive decumulation of net foreign assets that occurred from mid-1982 to the beginning of 1985. As a result, Kole concludes that other factors in addition to fiscal policy must have played a role in yielding the high world real interest rates, the strength of the dollar, and the deterioration of the U.S. external position.

Commenting on Kole's paper, Robert J. Hodrick extends the model by incorporating the monetary sector and reexamines some of the sim-

plifying assumptions. Among the considerations advanced by Hodrick's analysis are: the role of stochastic elements, the role of sticky prices, the role of investment, capital accumulation, and the real business cycle, and the role of the Ricardian equivalence.

In commenting on the same paper, Alessandro Penati remarks on some of the properties of the consumption function used by Kole and on the wealth effects induced by exchange rate changes. He expresses skepticism about the suitability of traditional portfolio models for the analysis of the evolution of the U.S. current account and the real exchange rate during the first half of the 1980s.

In the eighth chapter, Sweder van Wijnbergen provides an empirical analysis of the interrelations among fiscal policies, trade intervention and world interest rates. He develops a general equilibrium model designed to discuss the global effects on intertemporal and intratemporal trade of various fiscal policy measures and interventions in commodity trade.

The theoretical structure suggests two tests of debt neutrality, both of which, when applied to OECD data, reject the debt neutrality hypothesis. These two tests are then incorporated in an empirical version of the theoretical model. The empirical global model has a tightly focused structure, designed around questions concerning the impact of fiscal policy measures and interventions in commodity trade on intertemporal and intratemporal trade patterns and relative prices. The global general equilibrium structure is a distinguishing feature of the model, with the real interest rate and the structure of the terms of trade resulting from global current account balance and various commodity market–clearing conditions. Another feature that sets this model apart from many other empirical macromodels is its explicit incorporation of aggregate supply considerations. At the core of the industrial countries bloc, finally, is an explicit analysis of the interaction between private and public savings.

In the applied part of the paper van Wijnbergen first presents data demonstrating that government revenues net of social security outlays have remained remarkably constant as a share of national income from 1965 right up to 1984. On the basis of this observation he believes the fiscal policy debate has focused too much on tax cuts and not enough on deficit-financed increase in government expenditure. The author then assesses the effect of this deficit-financed increase in real government expenditure on real interest rates by running a simulation with the empirical model presented earlier under the assumption of a halving of that increase in government expenditure.

The results show, first of all, that fiscal policy explains only a negligible fraction of the rapid increase in real interest rates between 1979 and 1982. But since 1982 almost all of the increase in real interest rates can be ascribed to the pressure on world savings exerted by

increased fiscal expenditure and the fact that that increase was deficit-financed.

In the last section van Wijnbergen discusses various trade interventions designed to reduce fiscal deficits. He points out, and documents empirically through simulation runs, the importance of interactions between intertemporal and intratemporal trade. A tariff directed against Less Developed Countries' (LDC) exports (along the line of proposals under discussion in the U.S. Congress) is shown to cause significant deterioration in the LDC terms of trade. This in turn leads to a significant ex ante deterioration of the LDC's current account without an offsetting ex ante improvement in the OECD current account. The net result is an increase in the world interest rate to restore global current account balance, a possibility pointed out in the theoretical section. The simulation exercise demonstrates the empirical importance of this mechanism: after imposition of a 10% tariff against LDC exports, real interest rates rise a full 2 percentage points initially. They are still half a percentage point higher after five years. Protectionism directed against LDCs, therefore, not only shifts their intratemporal terms of trade unfavorably but also causes a deterioration of their intertemporal terms of trade.

In discussing van Wijnbergen's paper, Guillermo A. Calvo notes that the author assumes that taxes were transitory. Calvo claims that if a current tax cut induces expectations of a future cut in government spending then current consumption would depend positively on fiscal deficits. Accordingly, Calvo questions the robustness of the procedure employed in testing the Ricardian equivalence. In addition he indicates the desirability of a detailed theoretical specification of the assumptions regarding capital mobility and the type of assets available to portfolio holders.

Commenting on the same paper, John T. Cuddington proposes that a more refined aggregation of countries would reveal insightful effects of intra-OECD differences. He then raises several measurement issues related to "inflation-adjusted" deficit, "full employment" deficit, and the treatment of transfer payments. Cuddington believes that while the paper explains why real interest rates stayed high in the early 1980s, it does not provide an explanation of why these rates rose in the first place. For this he believes that one needs to recognize the role played by monetary policy.

In the ninth chapter, Kent P. Kimbrough provides an analysis of optimal tax policy for balance of payments objectives. He notes that much work has been done in international economics on the proper role of tax policy in open economies. One major strand of this literature deals with the optimal use of taxes to offset distortions and to achieve noneconomic objectives. The main policy prescription emerging from

this literature is that in both instances the optimal policy requires directly influencing the relevant marginal rate of substitution or marginal rate of transformation. The literature on the optimum structure of taxation for attaining noneconomic objectives has focused exclusively on microeconomic goals such as a target level of output in a certain sector of the economy or target levels for imports and exports. Yet, many practical policy questions concern the use of tax policy for attaining various macroeconomic objectives. For example, the most pervasive and persistent argument for tariffs and other impediments to international trade in goods and assets is that such policies are useful devices for coping with balance of payments or trade balance difficulties. The recent large U.S. trade balance deficits and the policies suggested to remedy them attest to the fact that such protectionist sentiments are alive and well today.

With this background Kimbrough examines, from the perspective of the literature on noneconomic objectives, the optimal tax policies for achieving various balance-of-payments–related objectives. The aim is to provide a general welfare theoretic framework for studying optimal policies concerning balance of payments and other international finance–related objectives. Kimbrough considers a general equilibrium model of a monetary economy, and uses the cash-in-advance, exchange economy setup extended to a two-good, production economy. The resulting framework is used to characterize the optimal tax structure for four balance-of-payments–related objectives: a trade balance target, a wealth target, an international reserve target, and a balance of payments target.

The optimal tax policies for attaining trade balance and wealth targets are quite similar, the latter being the stock accumulated through the flows associated with the former. A key feature of the optimal tax structures for these goals is that within-period consumption and production decisions are left undistorted (i.e., marginal rates of substitution and transformation between goods at a point in time are set equal to the world relative price). In both instances the objective is optimally achieved by levying a tax on international borrowing. The intuition here is straightforward: trade balance targets and wealth targets can both be attained by an appropriate shifting of intertemporal consumption patterns. It is therefore optimal to put into place a tax structure that strikes directly at intertemporal relative prices while leaving within-period relative prices undistorted. This rules out traditional import substitution and export promotion strategies, both of which drive a wedge between domestic and world within-period relative prices, as part of the optimal tax package for achieving trade balance and wealth targets. The main difference between the optimal policies for trade balance and wealth targets is shown to be the time profile of taxes on international borrowing. Generally speaking, a sequence of trade bal-

ance targets calls for a tax on international borrowing that varies over time while a wealth target calls for a tax on international borrowing that is constant across periods. Kimbrough also points out that, as an empirical matter, from the viewpoint of the permanent income hypothesis, the enactment of such policies will result in consumption exhibiting what appears to be excess sensitivity to current income.

The optimal policies for the other two objectives that are studied by Kimbrough, an international reserve target and a balance of payments target, also have much in common with one another. In both instances the first-best policy is to devalue or cut back on domestic credit creation. This follows from the fact that, as a consequence of Ricardian equivalence, exchange rate management policies have no real effects. Hence undertaking such policies does not reduce welfare from its distortion-free level. Kimbrough notes that despite advice along these lines from economists, countries experiencing balance of payments difficulties often resort to tariffs, export subsidies, and other trade interventions. A practical question then concerns the optimal tax policy, i.e., the second-best policy, for achieving an international reserve target or a balance of payments target. With money holdings being motivated by the cash-in-advance constraint, the demand for money, whose intertemporal behavior is fundamental for the balance of payments, is simply the value of domestic output at consumer prices. Hence the optimal tax policy for building up international reserves through an improved balance of payments calls, when starting from an initial steady-state equilibrium, for a set of consumption taxes and production subsidies to increase the demand for money. Therefore, unlike the optimal policies for trade balance and wealth targets, those for international reserve and balance of payments objectives can be structured to include tariffs, export subsidies, or equivalent trade interventions that introduce a wedge between domestic and world within-period relative prices. Additionally, the optimal tax structure also calls for a supporting set of subsidies to international borrowing so as to shift consumption toward those periods when it is taxed most heavily and thereby minimize the associated welfare loss.

In commenting on Kimbrough's paper, Joshua Aizenman extends the analytical framework by allowing for departures from Ricardian assumptions. He discusses Kimbrough's methodology as well as the specification of the cash-in-advance formulation underlying the monetary sector. Aizenman casts Kimbrough's analysis in terms of the traditional analysis of commercial policies; he examines the implications of limited access to capital markets and allows for the possibilities of cost of tax collection and revenue targets.

In commenting on the same paper, Robert G. Murphy focuses on the implications of the monetary mechanisms underlying Kimbrough's

analysis and identifies the circumstances under which the main results are robust with respect to alternative specifications of the monetary sector. In this regard he notes that the choice of optimal policies aimed at the overall balance-of-payments target depends critically on the specification of the monetary mechanism.

The tenth chapter, by Lawrence H. Summers, concludes the volume. This chapter focuses on tax policy and international competitiveness. The author notes that international considerations are coming to play an increasingly important role in U.S. tax policy debates. Policy discussions of tax provisions bearing on foreign investment in the United States and American investment abroad have long focused on the competitiveness question. He notes that recently general reductions in taxes on business investment have been advocated on the grounds that they will increase American competitiveness. Excessive tax burdens are frequently blamed for the poor international performance of some American industries. Indeed the President's Commission on International Competitiveness recently urged business tax relief as a major element in strategy directed at improving the trade position of the United States. Tax increases to reduce looming budget deficits are often defended on the grounds that they will reduce trade deficits.

Against this background Summers provides an analysis of the impact of tax policy on international competitiveness, stressing the crucial role of capital mobility in determining the impact of tax reforms on an economy's trading goods sector. He begins by examining theoretically the relationship between tax changes and competitiveness under the assumption of perfect international capital mobility. This common assumption of free international capital mobility leads to striking conclusions regarding the short-run impact of tax policies. Tax measures that stimulate investment but do not affect savings will inevitably lead to declines in international competitiveness as long as capital is freely mobile internationally. Measures that promote investment attract funds from abroad, leading to appreciation in the real exchange rate and a reduction in the competitiveness of domestic industry. The accounting identity holding that the current account equals the difference between national savings and national investment insures that increases in investment *ceteris paribus* will be associated with decreases in the trade balance. Conversely, tax policies that promote savings and do not have a direct impact on investment will improve trade performance.

According to Summers, these results challenge the commonly expressed view that reductions in tax burdens on business will improve competitiveness by enabling business to undertake more productivity-enhancing investments. They also raise an interesting question in political economy. Why do firms in the trading goods sector, whose competitiveness will be hurt by the capital inflows associated with investment

incentives, lobby in favor of them? Consideration of this question leads naturally to an examination of the premise of free international capital mobility, which underlies the arguments in the previous paragraph. If capital is not internationally mobile, stimulus to investment will not lead to capital inflows and therefore will not be associated with trade balance deterioration. While there certainly is a large pool of internationally mobile capital, Martin Feldstein has pointed to an important puzzle raised by the hypothesis of international capital mobility. This hypothesis predicts that there should be no systematic relationship between domestic saving and investment rates so that the capital can flow freely. Yet looking across the OECD nations, there is in fact a very strong positive correlation between savings and investment rates. Over a long period of time, cumulative current account deficits or surpluses are quite small despite large variations in domestic savings rates. On a very consistent basis, high savings countries are also high investment countries while low savings countries like the United States have relatively low rates of investment.

The high correlation between domestic savings and investment rates raises difficult issues of interpretation. It can be argued that the high correlation suggests that it is likely to be impossible for tax policies to change domestic savings or investment in isolation without affecting the other quantity. Alternatively, some argue that the high correlation between domestic savings and investment rates is spurious, reflecting the impact of third factors. Yet another possibility is that capital is freely mobile across international borders but that nations consistently pursue policies which drive capital, saving, and investment into balance. These hypotheses have very different implications for international tax policies. Summers assesses the evidence on each of them and concludes that the maintained external balance hypothesis holding that national savings and investment rates are highly correlated because of policy actions by countries probably is the most important empirically.

This finding raises important questions. Given that policies to limit net capital mobility are frequently pursued, how should the effects of tax policy reforms which affect savings or investment be evaluated? Summers notes that if no other policy measures are undertaken, their effects should be analyzed under the assumption that capital is perfectly normal. Historical record suggests that current account imbalances are likely to be offset by other policy actions. Is this use of obvious relevance to the current American situation of business tax reductions, a period that has stimulated a significant amount of capital formation and drawn capital in from abroad in large quantity, but where the trade deficit is largely seen as the major problem?

In commenting on Summers's paper, Jeffrey A. Frankel reviews the statistical facts concerning the correlations between national savings

and investment and comments on some of the econometric procedures adopted by Summers. He then makes the central point that such correlations do not provide useful information concerning the degree of international capital mobility. The latter should be analyzed by international comparisons among expected real rates of return.

Commenting on the same paper, Roger H. Gordon proposes an alternative model that predicts a close association between savings and investment even in the absence of government restrictions on capital mobility. Moreover, in Gordon's framework such restrictions are desirable on welfare grounds.

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