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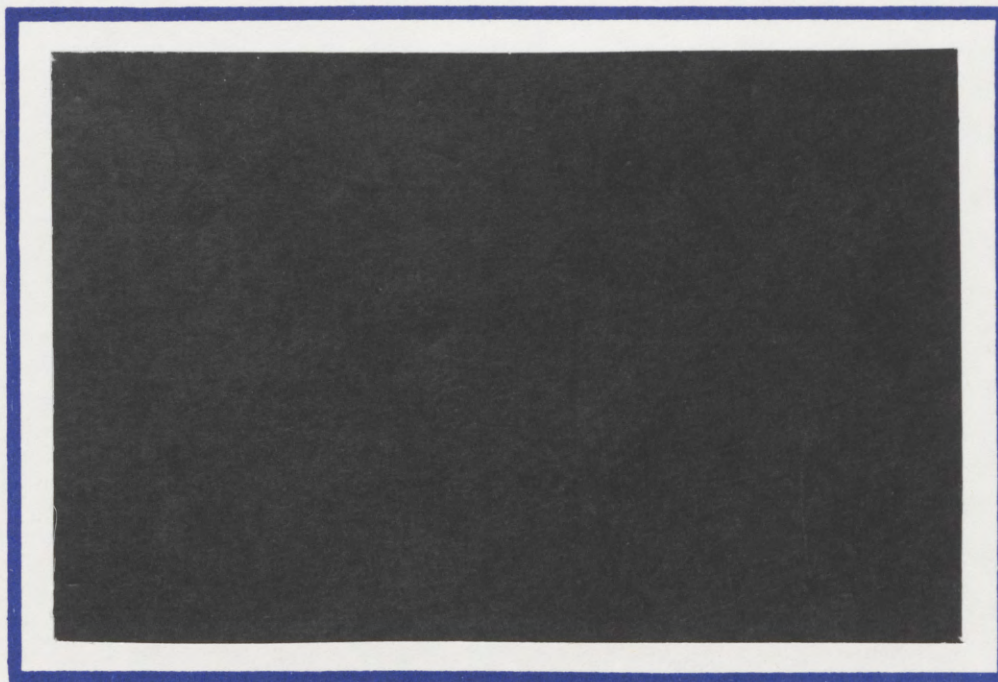
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A REVIEW ESSAY

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Working Paper No.14-89

May, 1 9 8 9

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The notion that exchange rate policy plays a key role in determining economic performance in less developed countries (LDC's) is commonly known to observers of these countries. While in principle exchange rates could be left to be determined by free market forces, this has typically not been the case in LDC's. Instead, exchange rates are determined under heavy government and central bank intervention, and a variety of arrangements have been observed such as a crawling peg, fixed exchange rates, and multiple exchange rates. The importance of exchange rate policies in LDC's can be highlighted with the following three considerations. First, there is evidence in support of the idea that in many countries exchange rate policies have resulted in real overvaluation of the domestic currency, and have consequently contributed to balance of payments difficulties, to capital flight, and to the emergence of foreign debt crises. Most proposals for resolving LDC's foreign debt crisis emphasize the need to adopt specific changes in exchange rate policies. Second, exchange rate policies have differentially affected various sectors in the economies. For example, the deterioration of the agricultural sector in the last two decades in some African and Latin American economies has partly

been attributed to exchange rate policies that effectively worsened the terms of trade of this sector. Third, recent disinflation plans, e.g. in Israel, Argentina, and Mexico, have given a central role to a policy of fixing the exchange rate. It was argued that since the exchange rate is a key nominal anchor in the system, its fixity over time would help to stop any existing inertia in the inflationary process and to stabilize inflation expectations.

The volume Economic Adjustment and Exchange Rates in Developing Countries, edited by Sebastian Edwards and Liaquat Ahamed (The University of Chicago Press for the National Bureau of Economic Research, Chicago, IL, 1986) attempts to provide systematic analysis of aspects of exchange rate policy in LDC's. It contains eleven articles that were presented at a joint NBER-World Bank conference held in Washington D.C. in November of 1984. Each article is followed by comments from discussants. The volume is dedicated to the memory of Carlos Diaz-Alejandro, one of the leading researchers in the field of economic development and a participant at the conference, who died in 1985.

Although the papers in the volume cover a wide variety of topics, there are three themes that receive most of the attention: (i) the static and dynamic effects of currency devaluation on domestic output, inflation, and other key macroeconomic variables; (ii) the links between budgetary and exchange rate policies and their implications for the dynamics of the real exchange rate and the balance of payments; and (iii) the impact of economic reforms such as the liberalization and opening up of domestic capital markets. Most of the models presented are semi-structural, log linear versions of IS-LM-aggregate supply models for open economies. In some of the papers there is an explicit modeling and discussion of dynamics, mainly through assets'

accumulation over time, but in others the analysis is entirely static. This modeling strategy, that consists of specifying a collection of decision rules that are assumed to be fixed under various policy interventions, sharply differs from the intertemporal optimization framework that has been applied to open economy issues in recent years. In this latter approach, which has been surveyed recently by Kimbrough (1987) and Stockman (1987), decision rules are explicitly derived using intertemporal budget constraints as well as specific assumptions about tastes, technology, institutional arrangements, and agents' maximizing behavior. Existing tensions between these approaches in closed economy macroeconomics apply also to open economy analyses, and it is interesting to note that most of the authors with papers in this volume have advanced research contributions to both these approaches. Some of the perspectives derived from optimizing models on topics covered in the volume are discussed in what follows.

Topic (i) above is one of the oldest in open economy analysis. Traditional Keynesian analysis emphasized that devaluation improves competitiveness and therefore leads to an increase in the demand for domestically produced goods and services and thus to a potential expansion in output and employment. For an economy featuring high unemployment and a balance of payments deficit, this analysis implies that devaluation is a policy instrument that can be used to simultaneously restore internal and external balance. Modern versions of these models have questioned the hypothesis that devaluation causes an expansion in domestic output and employment and have elaborated on how devaluation may actually cause a contraction in demand for domestic goods and services, because of its effects on income distribution and on real balances.

While these previous analyses focused on the response of aggregate demand to a devaluation, several papers in the volume explicitly consider the possibility that devaluation may have a contractionary impact on domestic aggregate supply and thus lead to economic stagflation. In fact, van Wijnbergen identifies three main channels through which devaluation may result in an increase in variable costs faced by firms and thus may cause a reduction in the level of production. First, devaluation raises the price of imported inputs relative to the price of domestic final goods. Second, if domestic wages are adjusted upwards in response to devaluation, as it is the case when there is indexation to the consumer price index, devaluation causes an increase in real product wages. Third, the fact that devaluation raises the domestic price level implies, for a given nominal level of credit supply, that there is a decrease in real credit and thereby an increase in the real interest rate. Since many firms depend on bank loans to finance working capital requirements of the production process, this channel suggests a rise in the interest component of variable costs.

Clearly, this is a partial and static analysis of the impact of devaluation, with main emphasis on supply side considerations. Also, devaluation has been treated as a "ceteris paribus" or isolated event, while in reality it is typically one out of many components of stabilization plans that usually include also changes in taxes, in government subsidies, in prices of public utilities, etc. In dynamic optimization models, analysis of devaluation would begin by indicating that fixing the exchange rate at a given level imposes restrictions on central banks' intertemporal budget constraint, and in particular on the present value of monetary transfers or domestic

credit; see Helpman (1981). Under these circumstances, it would typically be the case that a devaluation is effected when it becomes clear that under the present and expected future monetary and fiscal policies the current level of the exchange rate cannot be sustained over time. Thus, the impact of devaluation is likely to depend on the the economy's "initial conditions," on the current and expected future policy adjustments that accompany it, and on whether it is perceived as a transitory or a permanent event.

If devaluation has indeed the potential of improving the economy's external deficit only at the "cost" of increasing unemployment and inflation, then the authorities may want to consider achieving the same external target with an alternative policy such as a cut in government expenditure. Although this policy may also cause an increase in unemployment, it would not result in increased inflation. These two alternatives are compared in Branson's paper using a two-sector model and hypothetical parameters for Kenya, a country that suffered a negative external shock in the form of deterioration of terms of trade in 1979-80. His results suggest that for several of the proposed configurations of the parameters, devaluation has stronger stagflationary effects than cuts in government expenditure, for the same drop in the balance of payments deficit. Branson then concludes that under the conditions of Kenya in 1979-80 the best program may well have been a reduction in government spending and not a devaluation of the domestic currency.

These results are likely to be sensitive to alternative assumptions about the role of government spending. The foregoing analysis relied on the implicit assumption that such spending is nonproductive. However, in many LDC's government expenditures play an important role in the process of

accumulation of nonhuman and human capital. Public expenditures generate externalities that may affect the savings and growth paths of the economy; see Barro (1988) for a model of endogenous growth that derives some of these effects. Branson's results are most likely to hold if government spending cuts are made on nonproductive items that also have a relatively high import content. In addition, a fuller analysis of the impact of changes in government spending would depend on the budgetary adjustments implied by them and on whether these changes are perceived as permanent or transitory; see Frenkel and Razin (1987).

The existence of wage indexation is an important channel for devaluation to have contractionary effects on aggregate output supply in the analyses by van Wijnbergen and Branson. The specifics of these effects importantly depend on the price index that is used in the wage indexation scheme. The paper by Aizenman and Frenkel examines the implications of indexing wages to the consumer price index, to a nominal GNP index, and to the value-added price index. The authors demonstrate how the ranking of these three alternative schemes in terms of their welfare effects depends on the type of shocks impinging on the economy and on the relative elasticities of labor demand and supply. Furthermore, they analyze the joint determination of the optimal degree of wage indexation and the optimal degree of foreign exchange intervention. The welfare criterion used in the paper is the minimization of the welfare-triangle loss in the labor market that results from the difference between the actual real wage and the real wage that would clear the labor market. More general equilibrium considerations such as how indexation affects the behavior of consumption over time or price variability are not

included in the welfare analysis. Another somewhat restrictive aspect of the analysis is that the proposed indexation formula contains no dynamics. In reality, formal indexation arrangements are mainly backward looking, in that the nominal wage that prevails at time t contains some compensation for changes in inflation in past periods; so that indexation exacerbates the persistence of shocks into the nominal side of the system. These differences may be of practical importance. In some countries, such as Argentina and Israel, wage indexation was suspended at the start of disinflation programs in an attempt to break the indexation-induced link between current wages (and inflation) and inflation rates in past periods, yet in the theoretical model indexation would in fact help speed up a monetary disinflation. In addition, periodic renegotiations of base wages usually contain an element of "ex ante" indexation, in that expected future increases in inflation are influential in determining this base level. The roles of ex ante and ex post indexation in the process of disinflation in an open economy have been analyzed by Fischer (1988). How exactly these elements affect the results and the welfare implications remains to be determined in future work.

Econometric analysis of some issues related to the short run impacts of devaluation is provided in two papers included in the volume. Edwards develops a simple monetary model to investigate the transmission mechanism for external changes in the price of coffee in the case of Colombia. As in previous analyses of the effects of external changes in the terms of trade, see e.g. Greenwood (1984), his framework predicts that an increase in the price of coffee (i.e., an improvement in Colombia's terms of trade) leads to a real appreciation of the domestic currency. His main emphasis, however, is on

the monetary implications of this change. That is, an increase in the price
of coffee is postulated to lead to an increase in central bank's international
reserves and in the monetary base, a channel that may well result in higher
inflation in the short run. Such increase in inflation, in turn, strengthens
the real appreciation trends that arise from nonmonetary considerations.
Edwards interprets his empirical results as generally supporting the model's
main hypotheses. One difficulty with the analysis is that the effects of
coffee prices on reserves are just being postulated, instead of being derived
as an endogenous response of reserves to an external shock. (See Blejer and
Leiderman (1981) for analysis of endogenous reserves' determination in the
context of a monetary model of a crawling-peg economy). In fact, the model
consists of a mix of some equations that can be interpreted as structural
(e.g., money demand) and others that are quasi reduced forms, such as the
above-mentioned relation expressing reserves as a function of coffee prices
and excess flow supply of money.

An econometric analysis of some of the differential impacts of large vs.
small devaluations is contained in Katseli's paper. Suppose that a given
central bank has decided to devalue its currency by x percent over the next
year. Does it matter for real exchange rate behavior whether this x percent
is spread out over the year in the form of crawling peg monthly devaluations
or whether it is effected as a one-time large discrete devaluation? Katseli's
analysis provides a positive answer to this question. She hypothesizes that a
large discrete devaluation provides a strong inflationary signal to price
setters and therefore results in a higher speed of adjustment of domestic
prices and a higher frequency of price changes than under the alternative

policy of a gradual crawling peg. The main tests reported in the paper are based on price autoregressions and are not very powerful (especially in the presence of nonstationarity). While the model used in the paper is not explicitly derived from microeconomic foundations, it seems possible to derive Katseli's main hypothesis from formal microeconomic models in which firms adjust their prices using (s,S) pricing policies; see e.g. Sheshinski and Weiss (1983). However, the level of aggregation becomes important in these models, and as shown by Caplin and Spulber (1987) price stickiness may vanish in the aggregate, despite the presence of nominal price rigidity and imperfectly synchronized price revisions by individual firms.

Explicit focus on dynamics and coverage of topic (ii) are mainly provided in the papers by Obstfeld and Mussa. Obstfeld develops a tradables/nontradables model for a small open economy that operates under a crawling peg regime and short run rigidity of nominal wages. There are two sources for dynamics in his model. First, accumulation of net foreign assets through private saving. Second, the response of wages to labor market pressure. When analyzing the effects of a devaluation, Obstfeld shows that regardless of whether devaluation has an expansionary or a contractionary impact in the short run, it causes a real exchange rate appreciation in the long run. Specifically, an unanticipated discrete devaluation lowers private wealth and sets in motion a process of accumulation of foreign assets. The new long run equilibrium features a higher level of foreign claims, a higher level of national income (central bank reserves earn interest), and an appreciated real exchange rate. This long-run nonneutrality of devaluation is at variance with the long-run results stressed in monetary models, and is

mainly a consequence of the assumptions that central bank reserves earn interest and that there is no Ricardian equivalence of government borrowing and taxation. This lack of Ricardian equivalence is not derived in the paper from explicit microeconomic considerations. In a recent contribution, Helpman and Razin (1987) have studied real nonneutralities of exchange rate management that arise in a finite-horizon overlapping generations framework. Exchange rate changes generate, in their framework, capital gains or losses to the currently alive population that are not fully offset by changes in expected future tax liabilities, and thus result in changes in real consumption and in the trade account. Obstfeld (1981) has also considered these and other aspects of devaluation in the context of models of intertemporal maximization. More generally, explicit modeling of the sources for deviations from Ricardian equivalence is important an attempt to identify the specific channels through which exchange rate policy impacts real allocations; see Frenkel and Razin (1987), Leiderman and Blejer (1988), and the empirical tests of two such channels presented by Leiderman and Razin (1988).

The dynamic interactions between monetary, fiscal, exchange rate and commercial policies are analyzed by Mussa using a two-commodity model. Mussa's model can be used to assess the effects of a variety of policy changes such as temporary or anticipated future changes in commercial policy and in the level or distribution of government spending, imposition of capital controls, etc. An interesting, and relevant for many LDC's, application of his analysis is to the case of nonsustainable policies that fix, for some period of time, both the path of the nominal exchange rate and the path of the nominal money supply. To support such a policy combination, the government

typically must intervene in the foreign exchange market on a sterilized basis. This intervention may lead to an exponential expansion of the stock of government debt, an expansion that may affect the economy's real sector in the absence of Ricardian equivalence. More importantly, however, since this policy is not viable on a permanent basis, there is a point in time at which market participants begin to expect a change in policy and a discrete devaluation, and these expectations alter the dynamics of the system. In particular, Mussa shows how these expectations lead to rising domestic nominal interest rates, to a fall in the demand for domestic real balances, and thus require larger government borrowing to support the nominal exchange rate. These dynamic elements are present in both fixed exchange rate and crawling peg regimes. The notion that nonsustainable exchange rate policies give rise to expectations about their eventual abandonment, and that these expectations, in turn, have an important role in determining the dynamics of the real exchange rate and other key variables has been the focus of numerous recent studies, such as Krugman (1979), Obstfeld (1984), Calvo (1986), Drazen and Helpman (1987), and many others. As shown by Drazen and Helpman (1987), the dynamics of the system also depend on expectations about how exactly budgetary imbalances induced by exchange rate management are expected to be resolved in the future. In particular, expected future increases in taxes have a different impact on the economy's dynamics than expected future increases in monetization, or expected future decreases in government spending. Helpman and Leiderman (1988) have recently applied some of ingredients of these analyses to the understanding of recent disinflation plans implemented in Israel, Argentina, Brazil, and Bolivia.

A third major topic studied in the volume deals with the effects of liberalization attempts in LDC's. The dynamic effects of a complete removal of barriers to financial capital movements are analyzed by Obstfeld. He shows that under typical LDC's conditions, this liberalization reduces the cost of credit in the economy and generates a real appreciation in the short run. In the long run, however, the current account deficits that characterize the process of adjustment result in a lower level of external claims and thus lead to a real exchange rate depreciation. While Mussa's analysis conforms with this view that capital controls (and their removal) can influence the long run equilibrium real exchange rate, he advances the view that the principal effect of these controls is to influence the responsiveness of the real exchange rate to various disturbances. In particular, he shows how capital controls may increase the sensitivity of the real exchange rate to disturbances that shift spending between domestic and foreign goods, but may decrease its sensitivity to disturbances that affect the general level of spending relative to income. Several studies have recently examined these issues in the context of intertemporal optimizing models; see Kimbrough (1987) for a survey. A key emphasis in these models is on explicitly specifying the set of monetary and fiscal policies that are supporting a given set of controls. In fact, the functioning of the system has been shown to depend on the specific policies that are backing it. For example, Greenwood and Kimbrough (1985) have shown the very different implications for the international transmission process of taxes on foreign borrowing vs. binding quotas on private sector capital market transactions. Though most of these studies focused on the impacts of imposing capital controls, similar considerations apply to an analysis of elimination

of these controls. While uncertainty played no important role in the foregoing discussion, in the real world there is usually uncertainty about the timing and specific form of liberalization policies. Stockman and Hernandez (1988) provide a general equilibrium, rational expectations, analysis of how uncertain prospective changes in taxes or controls on acquisitions of foreign currency may affect real allocations. These prospective changes give rise to attempts by the private sector to self insure against the risks of future changes in government policies, which in turn affect both current behavior and the effects of those policies. Last, the welfare implications of financial liberalization are examined in Calvo's contribution, using an overlapping generations model of an open economy under different specifications for the banking sector. Assuming no distortions in the capital market and that the central bank maintains its reserves in the form of an international bond, Calvo shows that complete liberalization of the domestic banking sector is optimal even in the presence of a foreign demand for domestic money, as long as the latter is stable. Obviously, when attempting to apply this analysis to LDC's, the assumption that there are no other distortions in the economy is very restrictive. Yet, as indicated by the author, his is a "minimum framework" for analysis of welfare implications, and one would hope that it can possibly be extended to accommodate more realistic scenarios.

Overall, this is a useful volume for researchers and analysts interested in LDC's and in open economy macroeconomics, and in addition to the papers mentioned above the volume includes contributions by Dornbusch (on multiple exchange rates), by de Macedo (on the West African Monetary Union), and by Harberger (on the real exchange rate). As usual, the passing of time poses

serious challenges to theories and ideas. Since the time that the papers for this volume were written, there are two aspects of exchange rate policies in LDC's that have attracted an important degree of attention: the role of these policies in inflation stabilization programs and their role in resolving the foreign debt crisis. These aspects will probably be analyzed in more detail in future research, conferences, and volumes dealing with exchange rate policies in developing countries.

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