"Monetary Policy, Rudimentary Financial Markets and Rapid Goods Market Adjustment"

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November 2002

Presented to the

XXXIV Annual Monetary Studies Conference

Caribbean Centre for Monetary Studies

Georgetown, Guyana

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Abstract

In designing monetary (and exchange rate) policy, central banks should consider the relative speed of adjustment in the markets for goods and assets. Contrary to the standard assumptions, goods markets may adjust more rapidly than asset markets in developing countries whose financial markets are rudimentary; and adjustment may not be as dichotomous as is usually assumed, with output and the interest rate being determined in the goods and asset markets, respectively. This means that a monetary injection will lead to an increase in income and output *greater* than that predicted in the standard *IS-LM* analysis; and interest rates will either remain constant or will fall by *less than* what is predicted in the standard *IS-LM* framework. This kind of adjustment is associated with an *LM* whose slope exceeds unity, but may even occur in countries with highly developed markets.

I. INTRODUCTION

Adjustment in countries that have chronic balance of payments problems has been a theme of the literature for decades now, but no sooner is a new model of adjustment proposed than is it discarded in what seems to be an 'elusive quest' for a program of adjustment that will foster economic growth and improved livelihoods. This article suggests that adjustment programs fail because they overlook one of the most important features of developing countries: that goods market adjustment may actually precede and be faster than asset market adjustment to real or financial shocks, i.e., that there may be *relatively* rapid goods market adjustment in most developing countries. It is further argued that such adjustment may be the natural consequence of two key structural features of developing countries, to wit that financial markets are undeveloped and the goods markets are dominated by the production of primary goods that usually entail high inventory costs. While both of these structural features are seen to be important, the former (the state of financial market development) is given greater emphasis in this paper.

The idea of relatively rapid goods market adjustment may be a new way of thinking about macroeconomic adjustment in the many developing countries that are characterized by the relevant structural features; and it may also be a new way of thinking of adjustment in the standard *IS-LM* framework - one that is inspired by the monetarist idea that excess balances may be used not only to purchase bonds but also to purchase goods and services, thereby restoring money market equilibrium by increasing prices and/or output. While monetarists routinely make this assumption, Mundell [1968] actually used it to express classical, quantity theoretic adjustment ideas in the language of the Keynesian goods market equilibrium condition that planned expenditure be equal to income. Moreover, without this device Mundell would have been unable to successfully incorporate money into real models of international trade.

In this paper the analysis is conducted in a closed economy context, beginning with a re-examination of the economy's adjustment to monetary shocks as envisaged by the standard *IS-LM* framework. In the spirit of Mundell [1968] it is assumed that the public could hold goods and money, but that the goods market is dominated on the production side by primary goods that entail high inventory costs, and that there are so many distortions in the financial markets that these markets can be best described as undeveloped or *rudimentary*. A simple but important extension of Mundell [1968] is that, though the relevant transactions are rudimentary the financial markets involve both money and securities (especially government bonds). As such an excess demand in any two markets is by Walras' Law accompanied by an excess supply in the third.

The proposed view of adjustment contrasts with the conventional Keynesian view that the *LM* will shift outwards, and output will increase (somewhat) and the interest rate will fall in response to an injection of money (due for example to unsterilized capital inflows). In the proposed view of adjustment a monetary injection will lead to an increase in income and output that is *greater* than that predicted in the standard *IS-LM* analysis; and interest rates will either remain constant or will fall by *less than* what is predicted in the standard *IS-LM* framework. This kind of

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adjustment occurs because of the aforementioned structural features of the economy: in response to injection of money, the *LM* will shift outwards, and there will be an excess supply of money relative to the original equilibrium; and the *IS* will also shift outwards. The latter (non-standard) shift occurs when financial markets are rudimentary because the public will not respond to excess liquidity by buying bonds, increasing price and reducing the interest rate. Instead, the public will increase spending as predicted in monetarist models, and the *IS* will also shift outwards.

Rudimentary financial markets are associated with low interest sensitivities of money demand and more specifically, relatively rapid goods market adjustment is taken to be more probable when the slope of the *LM* function is greater than one. This conjecture can be inferred both from simple geometry and from a number of empirical estimates of money demand functions for countries whose states of financial development are fairly well known. Relatively rapid goods market adjustment also has implications for the determination of output and the interest rate. While it is often taken for granted that output and the interest rate are determined dichotomously in goods and asset markets respectively, this might not be the case for many developing countries.

The paper is organized as follows. Section II discusses the importance of the state of financial market development to the adjustment mechanism. It is argued that the *IS-LM* framework makes the critical assumption that financial markets are significant and well developed, and that only in economies where this assumption is valid can the mechanism of macroeconomic adjustment be innocuously ignored. In Section III a fairly extensive review of the standard Keynesian adjustment mechanism is presented and the determination of output and the interest rate is discussed. The main idea of the paper, that of relatively rapid goods market adjustment when financial markets are rudimentary and also when inventory costs are high, is presented in Section IV. Section V concludes the paper with some comments on the potential applicability of the analysis to the open economy and even to developed countries, especially in the wake of recent corporate accounting scandals.

II. FINANCIAL MARKET DEVELOPMENT AND MACROECONOMIC ADJUSTMENT

Though it is rarely made explicit in the literature, the state of financial market development and the mechanism of macroeconomic adjustment to shocks are closely related to each other because both real and financial shocks generate changes in desired and/or available liquidity in the economy that disturb money market equilibrium, and more generally, asset market equilibrium. It is not that economists are unaware of this relationship but rather that the theoretical discussion of macroeconomic adjustment has been conducted in an institutional framework where financial markets were so developed that this element of the mechanism of macroeconomic adjustment could have been taken as a premise of the analysis. Analogously, economists who write on developing country issues usually do point out the rudimentary state of financial markets, but do so only to identify it as an impediment to economic growth. Hardly ever do developing country economists recognize the relationship between financial market development and macroeconomic adjustment, and when they do they too stop short of attempting to integrate this reality in their

models of macroeconomic adjustment. Furness [1975, p. 191] for example notes without any elaboration that:

> ... the enormously important role assigned to the rate of interest [in Keynes' analysis], not only as a determinant of investment but also as a key link with monetary influences, assumes numerous and sophisticated financial operators and speculators, a wide variety of financial assets, and a market highly responsive to changes in the supply of and demand for such assets.

If development economists merely note that financial markets are rudimentary in developing countries while conventional macro-theoretic discussions appear to beg the question of the role of financial market development in macroeconomic adjustment, they are doing so within an accepted paradigm. In the early literature simple models of income determination were pushed to the limits to derive complicated multipliers that made macroeconomic adjustment seem almost mechanical. When the models were later refined, for example by the addition of the money market in the Hicks-Hansen *IS-LM* model, the adjustment mechanism was so taken for granted that the singular focus seemed again to be the effect of including the money market on the size of the relevant multipliers. This literature subsequently developed by subjecting several other unrealistic assumptions (such as the formation of expectations, the flexibility of the labor market, the costliness of information, the degree of competition, and so forth) of this model to further scrutiny, without at any stage contemplating the importance of the state of financial market development to the model's implicit adjustment dynamics.

There were indeed some later Keynesian models such as Holmes and Smyth [1972], Mankiw and Summers [1984], Mankiw and Summers [1986], and Feldstein [1984], which used appropriately specified money demand functions to show that expansionary fiscal policy may actually produce contractionary or at least non-standard results. But if any of these extensions to the basic *IS-LM* model seems appealing in a developing country context, it is important to note that all of them have taken the mechanism of macroeconomic adjustment as given. Put differently, both the standard *IS-LM* framework and the extensions assume that financial markets are relatively developed, and therefore that there is a virtually instantaneous asset market adjustment to asset market disequilibria, much as is the case in most industrialized countries.

While there has undoubtedly been significant theoretical progress in macroeconomics for countries with highly developed financial markets, the discussion of adjustment in developing countries, despite its voluminousness, is still in its infancy. Admittedly the literature on how and why financial market development may (or may not) foster growth and development in such countries is well developed, but this discussion usually revolves around the hypothesis that financial markets support the efficient allocation of capital in an economy. Extensive reviews of this literature are undertaken in Levine [1997], and Khan and Senhadji [2000], while arguments for and against financial development as a contributor to growth and development are contained in Fry [1997], Singh [1997] and Arestis and Demetriades [1997]. But understanding whether and in what way financial development is related to growth and development in no way clarifies the

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Figure 1

IS_0 IS_1 LM'

i

i_1'

i_1
i_0

LM

Y_0 Y_1' Y_1

Y
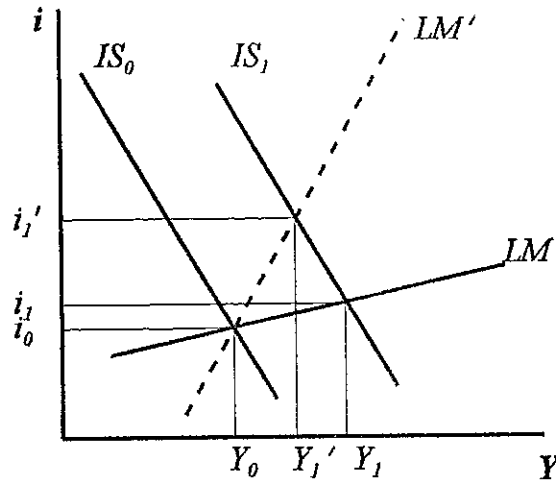
It is clear from Fig. 1 that for any increase in government expenditure or any reduction in taxes that shifts the *IS* curve outwards from IS_0 to IS_1, the increase in output would be greater the flatter the *LM* curve. The diagram shows that after the expansionary fiscal policy the equilibrium would be (Y_1, i_1) if the *LM* curve were relatively flat and (Y_1', i_1') if the *LM* curve were relatively steep. The slope of the *LM* curve is generally given as k/h, where k and h are the income and interest sensitivities of money demand, respectively. Thus the *LM* is relatively flatter (the slope is smaller), and fiscal policy is relatively more effective in raising output, the greater the interest sensitivity of money demand h and the smaller the income sensitivity of money demand k. Fiscal policy is relatively effective when the speculative motive for holding real balances is relatively 'strong' and the transactions motive is relatively 'weak.' Conversely, the *LM* is relatively steeper (the slope is larger), and fiscal policy is relatively ineffective in raising output, the smaller the interest sensitivity of money demand h and the larger the income sensitivity of money demand k.

The rudimentary state of financial market development in developing countries is generally reflected in low interest elasticities of money demand, and therefore relatively steep *LM* curves. Debate on the slope of the *LM* is not new, though most of the time and effort have been spent on the assumptions about this slope implied by various schools of thought, as against various states of financial market development. Thus most macroeconomics textbooks repeat, probably for expository purposes, the Keynesian claim that the quantity theory, and therefore monetarism, assumes a vertical *LM* in the sense that it relates the demand for money to income (e.g., in the famous Cambridge cash balances equation $M = kPy$) and not to the interest rate as was done by Keynes. This claim is of no trivial theoretical significance. Friedman [1974, p. 138] actually addressed this issue and rejected the Keynesian view:

In my opinion, no 'fundamental issues' in either monetary theory or monetary policy hinge on whether the estimated elasticity [of demand for money with respect to the interest rate] can for most purposes be approximated by zero or is better approximated by -.1 or -.5 or -2.0, provided it is seldom capable of being approximated by $-\infty$.

It is not clear if this debate recognizes that the slope of the *LM* curve is not a datum, and moreover that it may even depend on the prevailing economic policy framework. Could it not be for example that the demand for money is relatively more or less sensitive to the interest rate as financial markets are more or less developed, but that the state of financial market development is the *consequence* of the economic policy framework? Under the monetarist inspired adjustment programs recommended for developing countries many of the strictures such as high tax rates may very well restrict the development of financial markets and may well contribute to a low measured interest sensitivity of money demand.

But whether or not this is the case the slope of the *LM* is not a datum and there is at least one good *a priori* reason for believing that the *LM* is indeed steep, namely the rudimentary state of local financial market development. In countries with highly developed financial markets any excess balances would immediately be jettisoned by rational economic agents, resulting in a fall in the price of bonds and a rise in the interest rate. The measured interest sensitivity of money demand would therefore be high, as long as persons can economize on money balances *by turning to the markets for bonds and equities*. Conversely, the absence of such markets would place institutional constraints on the ability of agents to dispose of excess balances, constraints that would manifest themselves in low measured interest sensitivities of money demand, even if preferences for liquidity were identical to those of economic agents in countries with developed financial markets. This is an important qualification to the commonplace observation that developing countries are 'cash economies' in which persons choose to hold cash and other components of money in large amounts, because it means that such behavior is not so much a reflection of peculiarly developing country preferences as it is a statement about the (institutional) constraints on agents' choice. Injections into the money stock are potentially large and almost endemic in developing countries[1] but agents are unable to economize on money holdings because of these institutional constraints. As such, a low value for *h* found for developing countries will be reasonable, and consistent with their reality of rudimentary financial markets.

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[1] This is particularly so because of the degree of openness of the economy. While this article assumes a closed economy, it should nonetheless be noted that as long as a country attempts to keep its exchange rate stable surpluses (deficits) on the Balance of Payments will result in injections to (withdrawals from) the money stock, and therefore generate excess (deficient) balances. Private unilateral transfers (remittances), which are significant on the current account of most Caribbean countries as the financial counterpart of migration, can be a major source of excess balances; as can official transfers, especially for highly indebted countries that are now benefiting from debt write-off plans such as the HIPC Initiative. Other potential sources of excess balances when exchange rate stabilisation policies are being pursued include a boom in exports (as will attend the depreciation of previously overvalued currencies, even if the rates are not actually liberalised); and portfolio inflows on the capital account, as happened in many developing countries in the period 1973 - 1981. Note too that the logic applies symmetrically to imports and capital outflows, which lead to excess money demand that cannot be satisfied by turning to the financial markets in developing countries. While all of these injections (positive or negative) can be measured or inferred, there are other sources, largely related to money-laundering and other criminal activities, that are also 'endemic.' A useful line of research would be to model the components of these injections, separating those that are statistically predictable, even if random as in the case remittances, from those that are not.

Money demand functions have recently been estimated for several developing countries, while studies of money demand in industrialized countries have been conducted for decades now. Of the developing country studies, some consider if financial liberalization affects (for example) the stability of money demand and its reciprocal, the velocity of circulation, and others simply estimate money demand functions in an effort to refine the modeling and estimation techniques. For both sets of countries the money demand functions are estimated for a variety of monetary aggregates and with different scale and opportunity cost variables. Whatever the reason, whatever the technique and whatever the statistical strength of the results, the estimates of money demand for developing countries seem to suggest that the interest elasticity of money demand might increase with financial market development, and conversely that the *LM* function will be relatively steep for most developing countries. Admittedly only Deckle and Pradhan [1997] mention the possible relationship between financial market development and the size of the interest elasticity of money demand, and they do so merely in passing. Nonetheless, low interest elasticities for developing countries and high interest elasticities for developed countries may infer the relationship that is being suggested.

Of the developing country estimates of money demand, Egoumé-Bossogo [2000] estimates for the period January 1990 to September 1999, the interest elasticity (h) and the income elasticity (k) of money demand in Guyana to be -0.046 and 0.8 respectively. Deckle and Pradhan [1997] found statistically significant interest and income sensitivities of (narrow) money to be -0.076 and 1.18 respectively for Malaysia, over the period 1976 - 1995; and -0.079 and 1.0 respectively for Thailand over the period 1978 - 1995. Similarly, Sánchez-Fung [2000] found h and k to be -0.04 and 1.0 respectively for the Dominican Republic money demand function estimated for 1950 - 1999; and Ahmed [2001] found the corresponding coefficients to be -0.036 and 0.8 for Bangladesh, for the period 1974 - 1995. Financial markets are all quite rudimentary in the countries referred to, though they range from virtually absent in Guyana to having a relatively long-standing stock market in Malaysia. The estimates clearly suggest a relatively steep *LM* (and ineffective fiscal policy).

In contrast the estimates of money demand for countries with fairly developed financial markets return high interest sensitivities of money demand. Blundell-Wignall, Rondoni and Ziegelschmidt [1984] estimated money demand equations for a number of OECD countries using quarterly data from 1973 to 1983 and found the interest and income sensitivities respectively to be -0.1 and 0.04 for the United States; -0.38 and 0.08 for Japan; -0.66 and 0.42 for Germany; -0.14 and 0.21 for France; and -0.49 and 0.11 for Canada. Sriram [2001] reports on a number of more recent studies which generally confirm that the interest sensitivity of money demand is relatively high for developed countries with highly developed financial markets. In other words, one may expect a relatively flat *LM* in countries with highly developed countries, and though the evidence is very thin, it may even be that liquidity traps may arise from 'too much' financial market development.

To the extent then that the state of financial development is reflected in low interest sensitivities of money demand and relatively steep *LM* curves, macroeconomic adjustment will

clearly depend on whether or not financial markets are developed.

III. The Dichotomous Determination of Output And The Interest Rate

In the *IS-LM* model the goods and money markets are distinct. This in itself is natural because the *IS* function is specific to *flows* of goods and services while the *LM* function is specific to *stocks* of money and interest bearing assets that are in equilibrium. What is more important but less obvious is that in the *IS-LM* model it is not merely that the markets are distinct but also that each market is responsible for the determination of a particular variable, i.e., that output and the interest rate are disjointly determined in the goods and asset markets respectively. The *adjustment* in the markets is therefore dichotomous, and moreover the goods market is the arena of goods-quantity (output) adjustments while the money market is the arena of asset-price (interest rate) adjustments. Put differently, the goods market takes the interest rate as given, quantity (output) adjusting to any excess demands or excess supplies of goods; while the money market takes output as given, the interest rate[2] adjusting to any excess demands or excess supplies of money.

A form of dichotomous adjustment was indeed known before Keynes, but Keynes' innovation was the reversal of the markets in which output and interest rate are determined. W. T. Newlyn [1972, pp. 98-99] notes that

> In contrast with Keynes' purely stock approach to the rate of interest, classical economists had a purely flow approach. ... [The] classical theory of the rate of interest ... was that the rate of interest was determined by the equilibrium of the flow of savings and the flow of investment demand.

One of these pre-Keynesian economists was Pigou, who according to Solow [1980, p. 4],

> [tended] to think of the interest rate as being determined in the goods market (by Savings = Investment) and nominal income [i.e., *output* times the price level] as being determined by the demand for money. Today we take simultaneity seriously, but the *General Theory* more or less speaks as if real output is determined in the goods market and the interest rate by liquidity preference.

In the last sentence of this quotation Solow acknowledges the dichotomous nature of the adjustment even though it may happen simultaneously, but he does not question the assignment of output and interest rate adjustment to the goods and asset markets respectively, by the *IS-LM* framework.

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[2] It is true that it is the adjustment in the quantity of real balances that triggers the interest rate changes in inverse relation to changes in the price of bonds, but the adjustment in the money and goods markets is still dichotomous.

Both the dichotomy and the reversal of the markets in which output and interest rates adjust have been given rather scant treatment[3] in the literature on the special features of 'Keynesian' adjustment, the focus being instead on the assumption that it is *quantity* rather than price that adjusts more rapidly to macro-disturbances. That alone was quite a paradigm shift at the macro level considering the dominance of the Marshallian view of a price-led adjustment mechanism in individual markets;[4] though Keynes did follow Marshall in assuming discrete rather than continuous adjustment and in assuming that one variable adjusted much more quickly than did the other - albeit for the reversal of the roles of price and quantity in that discrete process.[5] 'Momentous' though this reversal of the role of prices and quantities was for countries with developed financial markets,[6] it is rather the recognition that the dichotomous adjustment of output and the interest rate is assigned specifically to the goods and asset markets respectively that deserves attention when studying countries with undeveloped financial markets. This is not to gainsay the importance of the *IS-LM* framework in the context of price rigidities though it should be noted that price fixity has been captured in models that do not rely on this framework. Instead, the dichotomous and variable-specific qualities of the adjustment mechanism in the markets for money and goods point to aspects of macroeconomic adjustment that are yet to be recognized, with potentially significant implications for the design and analysis of macroeconomic policy.

To bring the matter into focus, consider that the IMF-approved (effectively, IMF-designed)

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[3]An outstanding exception to the literature's tendency to take dichotomous adjustment for granted is Foley (1975). In this article Foley distinguished between what he called a 'beginning-of-period' equilibrium from an 'end-of-period' one in asset markets, or alternatively between stock and flow models of equilibria in asset markets that adjusted continuously. By doing so he recognised that however distinct they might be asset markets can actually overlap with the goods (and factor) markets. Thus he writes, "In the end-of-period equilibrium, demands and supplies are offered as of the end of the period. Agents can offer to sell capital, for instance, which does not exist at the trading moment but which they plan to produce during the period. Contracts are made for labour and capital services *and consumption* during the period and asset deliveries at the end" (p. 309); and "The ... '*IS-LM*' apparatus can be rigorously justified in the stock model, since asset market equilibrium is *separate from* the consumption goods market but no sense in the flow equilibrium model," p. 319, (emphases added). Though Foley recognises the possibility that the distinct markets may interact, he stops short of considering whether the adjustment mechanism is necessarily as dichotomous and variable-specific as envisioned by Keynes, i.e., whether and to what extent interest rates and output may also be determined in the goods and asset markets, respectively.

[4]Recall that in Marshall's 'market period' exogenous changes in demand would trigger immediate adjustments in price to maintain quantity demanded at the level prevailing before the disturbance. This (price adjustment) effectively converts what would have otherwise been an excess demand (supply) into an excess supply (demand). In the short run, *producers* would respond by adjusting quantity supplied accordingly, until in the long run supply itself changed following adjustments in the capital stock. Keynes essentially lifted this adjustment mechanism out of the particular market context and inserted it, without any alteration other than the aforementioned reversal of the roles of price and quantity, into the market for all goods that is represented by the *IS* goods-market equilibrium *schedule*. It is the dichotomous adjustment in the market for assets that then picks a particular price-quantity combination in equilibrium. In the market for assets, it is again quantity that adjusts, so that if there is an excess supply of money persons will buy bonds, thereby raising the price of bonds and lowering the interest rate. The crux of the matter is that in the dichotomous adjustment, persons with excess money will buy bonds, and not *goods*!

[5] "In general equilibrium flow models, *prices* are the only endogenous variables which enter as arguments into the demand and supply functions of individual households.... In "Keynesian" flow models the corresponding arguments are *real income* and the interest rate. Of these real income is a measure of *quantity*, not of price.... In the short run, the "Classical" system adjusts to changes n money expenditures by means of price-level movements; the Keynesian adjusts primarily by means of real income movements," Leijonhufvud (1968) p. 51.

[6]"Keynes followed Marshall in assuming that one variable adjusted so quickly that the adjustment could be regarded as instantaneous, while the other variable adjusted slowly. Where he deviated from Marshall, and it was a momentous deviation, was in reversing the roles assigned to price and quantity," Friedman (1974), p. 18.

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macroeconomic adjustment programs being followed by developing countries place heavy emphasis on potential excess balances in the economy, with the result that almost every Central Bank has adopted a tight monetary policy stance. What the IMF fears is that excess money balances will be used, not to purchase bonds (a short hand for stocks, treasury bills, etc.) as assumed by Keynes, but instead to purchase *goods and services*. This is a key concern in an open-economy context, but for now it is the assumed adjustment mechanism that warrants further elaboration.[7]

The traditional Keynesian view of the adjustment process is depicted in Fig. 2. In the first panel of Fig. 2, the economy is in equilibrium at point **E**, the intersection of the curves labeled *IS* and *LM*. If instead the economy were at **A**, there would have been an excess supply of both money and goods, warranting some form of adjustment. The *excess supply of money* would lead to the purchase of bonds, which in turn would increase the price of bonds and reduce the interest rate; and the *excess supply of goods* would lead to an increase in inventories and a decrease in production and output. In other words, if the economy were at a point like **A**, forces would have been set up to reduce both the interest rate and output, as indicated by the orthogonal arrows, and to move the economy to **E**. Moreover, if the asset markets adjusted rapidly, money market equilibrium would be established much more quickly than goods market equilibrium, with the economy first being put on the *LM* curve at **B**, after which the goods market would adjust 'downwards' along the *LM*, until full equilibrium is established at **E**.

This view of adjustment has important implications for our understanding of the effect of monetary policy on output. In particular, it implies that a monetary injection will lead to an increase in income and output that is *greater* than that predicted in the standard *IS-LM* analysis; and that interest rates will either remain constant or will fall by *less than* what is predicted in the standard *IS-LM* framework. Consider the adjustment from some initial equilibrium point such as **A** in the second panel of Fig. 2, *after* some injection of money shifted the *LM* out to *LM '* thereby rendering **A** a point of excess balances. After the *LM* shifts out, the economy would have excess liquidity, but in response to this persons will increase their spending on *goods and services*.[8] In contrast to the Keynesian adjustment mechanism, the *IS* curve will shift outwards to *IS '* and output will increase to Y_1 rather than to Y_0; and the interest rate will remain constant instead of falling to i_0. (N.B. that henceforth, we shall assume that excess balances are jettisoned by increasing spending; and the implications of using excess balances to purchase real assets or to increase 'lending' to commercial banks will only be mentioned in footnotes).

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[7]To the extent that it happens, absorption will increase and this will in turn increase the current account deficit unless there is a corresponding increase in output.

[8]Clearly, there is a real-balance, Pigou-type effect in Guyana. In contrast, Keynes would have argued that goods and services are almost as liquid as money so that persons with 'too much' liquidity would not buy goods and services. Keynes could not have contemplated a real balance effect because his money demand function only featured liquidity preference.

Figure 2
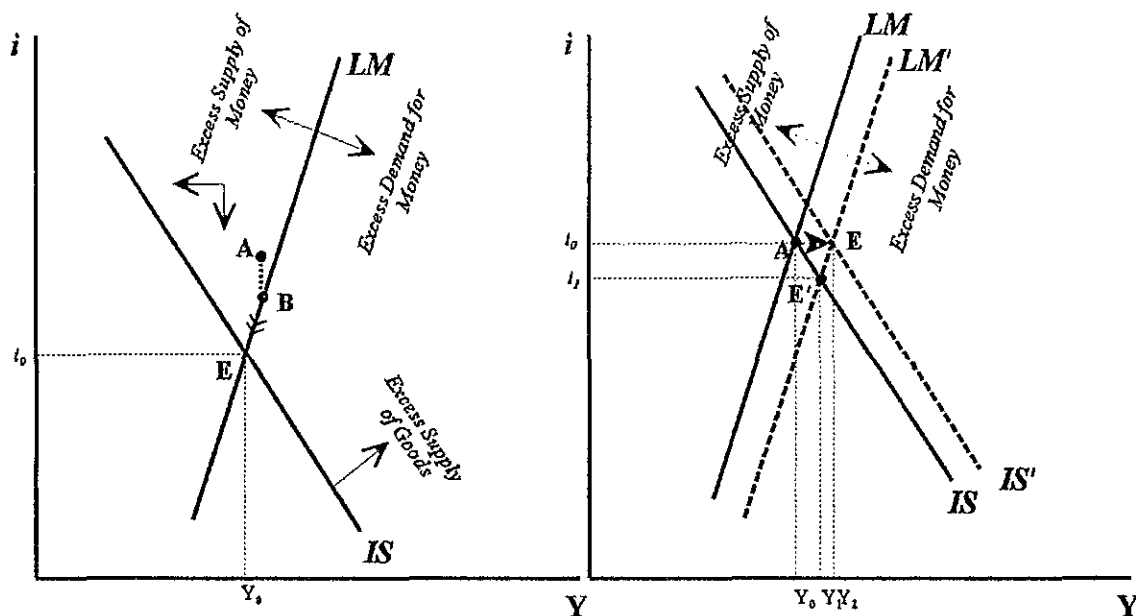
To the extent that this is the mechanism of macroeconomic adjustment, an increase in the money supply that creates excess balances will lead to an increase in output *despite* a relative stickiness in the interest rate, i.e., without warranting a decrease in interest rates to increase investment demand, reduce inventories and trigger an increase output.[9] This adjustment mechanism therefore obviates the need for any prior portfolio adjustment, namely the purchase of bonds and consequent decrease in the interest rate as the price of bonds increases, as required in the traditional framework. Analogously, a decrease in the money supply that creates the effect of an excess demand for money will lead to a fall in output as consumers reduce their spending on goods and services to satisfy that demand; and analogously, there will be no need for any portfolio adjustment of the traditional kind. When Guyanese dispose of excess balances in the goods market, say by spending on new residential construction, they not only increase investment and cause an outward shift in the *IS*, but *ipso facto* they do not increase their deposits. Had they not adjusted by turning to the goods market, they would have purchased treasury bills, the price of bills would have increased and the interest rates would have decreased at every level of income. In other words, the *LM* would have shifted outwards, and equilibrium would have occurred at the intersection of the original *IS* and *LM'* as in the standard Keynesian analysis. Instead, the noted adjustment has the effect of keeping interest rates rigid and still increasing output, *via* a shift in the *IS* function.

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[9]Another possibility if prices were allowed to adjust, is that the attempt to jettison excess balances by increased spending may cause prices to rise to some extent. The *LM* will shift back in the direction of its original position, and the *IS* will not shift all the way out to *IS'*. It is therefore possible for the equilibrium to be re-established at the 'Keynesian' output level Y_0 and the interest rate i_p corresponding to the initial equilibrium A.

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Notwithstanding price fixity, it is quite unlikely that the traditional Keynesian adjustment occurs in developing countries, and the effects of a fiscal expansion may for that reason be quite different as well. Though it is still quantity rather than price that will adjust, it is more likely that most of the adjustment will take place in the market for goods than in the market for assets, or at any rate that the goods market adjustment would precede and be faster than the adjustment in the market for assets.

In the first instance, financial markets are rudimentary, i.e., they are 'repressed,' undeveloped or riddled with distortions. The interest sensitivity of money demand will therefore be low, and it may even be smaller in absolute terms than the income sensitivity of money demand. When the interest sensitivity of money demand is less than its income sensitivity the slope of the *LM* is greater than one, and economic agents may be more inclined to 'behave as monetarists,' jettisoning excess money balances by increasing spending in the goods markets rather than in the asset markets or satisfying any excess demand for money by reducing spending in the goods markets rather than in the asset markets. When this happens there may be a phenomenon that can best be described as a 'goods market adjustment to asset market disequilibria.'

An examination of the estimates of money demand functions that were given earlier reveals that for every developing country for which estimates are reported, the absolute value of its interest sensitivity of money demand is smaller than the absolute value of the corresponding income sensitivity; and for all the OECD countries (other than France) for which estimates are reported, the absolute values of the interest sensitivities are all greater than the corresponding income sensitivities. This empirical pattern ought to be interesting, as indeed it is; and to the extent that the estimates are valid, it might not merely be an awkward result that would be best ignored because existing theory cannot explain it.

Consider the adjustment that would be required to restore money market equilibrium if the economy were at point **A** in the first panel of Fig. 2. It is evident that more of an interest rate reduction is required than an output increase to restore money market equilibrium. Indeed, whenever the interest sensitivity of money demand is smaller than its income sensitivity in absolute terms, or whenever the slope of the *LM is greater than one*, the change in the interest rate required to move the economy back onto the *LM* is 'greater' than the change in output that would alternatively be required. Intuitively therefore rudimentary financial markets will stack the cards in favor of relatively rapid goods market adjustment.

In the traditional analysis, an increase in the money supply, shown as an outward shift in the *LM* curve to *LM'* in the second panel of Fig. 2, would move the economy from A to **E'**, but this is only because the traditional analysis assumes that the adjustment will be of the dichotomous, variable-specific, kind envisaged by Keynes. After the monetary injection there will be an excess supply of money relative to A. In a Keynesian world, agents at **A** would attempt jettison the excess supply of money by purchasing bonds; the price of bonds would rise, interest rates would

fall to i_j, and output would rise to Y_t, as noted above. But what if the slope of the *LM* were greater than one and persons instead attempted to jettison the excess supply of money by increasing spending? The Keynesian, *IS-LM* framework does not consider these possibilities. Indeed, it is the monetarist framework that envisages this kind of adjustment.[10] It is not at all clear though that this would justify the abandonment of the Keynesian framework and the adoption of the monetarist one. What may be required instead is a simple re-interpretation of the former to take account of the realities of adjustment in developing economies.

Regarding the adjustment to a monetary impulse, note that point **A** in the second panel of Fig. 2 is characterized by an excess supply of money relative to the original *LM* curve. Following the logic of the preceding paragraph, one may therefore expect that persons will now *increase* their spending on goods and services to correct this disequilibrium. After the shift in the *LM* the *IS* will also shift outwards to *IS'* in the second panel of Fig. 2. Output would therefore have increased relative to the original equilibrium, but it would have increased to Y_1, higher than the Y_1 predicted in the standard analysis.[11] At the same time, by choosing to increase spending persons are at the same time choosing *not to buy bonds* as in the traditional framework. In a developing country context this means that confronted with an excess supply of money after a monetary impulse, persons would not add to their deposits at commercial banks. Now, in countries with rudimentary financial markets most of these deposits are used to buy government securities, as pointed out by Ott [1961] and McKinnon [1973]. Had deposits increased, the demand for treasury bills would have increased and the interest rate would have fallen, just as would happen with a purchase of bonds by the public. But since the public does not add excess balances to deposits, there will not be an increase in the demand for treasury bills, and the interest rate will not fall - at least not to i_j.

Interest rates will therefore be relatively rigid, on account of two opposing forces: there may be a partial asset-market adjustment to the excess supply of money involving some increase in fixed deposits ('purchase' of publicly held bills), placing downward pressure on the interest rate; and, since output will be higher than Y_1 fixed deposits may increase relative to the pre-monetary stimulus level, and the demand for treasury bills will rise, placing downward pressure on the interest rate. To the extent that more of the adjustment takes place in asset-markets *after* the economy has moved to **E** as is most probable, the interest will fall, though not to i_j as in the case of rapid asset-market adjustment. Moreover, output would be even higher than Y_1, the amount to which it would have risen in a traditional Keynesian world. In other words, the economy will not move back to **E'** on the *LM'* curve but it will end up somewhere between **E** and **E'**.

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[10]See Meltzer (1995).

[11]If prices were flexible, another possibility is that the attempt to increase spending in the face of an excess supply of money would cause prices to rise, shifting the *LM'* inwards. With the *IS* shifting outwards and the *LM'* shifting inwards, the economy could even end up at output Y_1 and interest rate *higher than* i_0. Yet another possibility is that the excess supply of money could lead to a purchase of real assets (at home or abroad). The price of real assets would rise as in a pre-bubble real estate market. The relative price of new investment will increase, aggregate demand will increase and the *IS* will shift outwards, *à la* Tobin's *q*-theory of investment.

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The rudimentary state of financial markets, along with the relatively more rapid goods-market adjustment that it implies, therefore suggests that the variable-specificity of adjustment in traditional Keynesian models may be usefully informed by the pre-Keynesian view of adjustment, according to which the interest rate was determined in the goods market, and nominal output was determined by money demand. Moreover, adjustment in developing countries may not even be as dichotomous as that: For the goods market to have adjusted, or to have adjusted relatively more rapidly, in response to disequilibrium in the market for assets, it must be that the goods and asset markets do more than merely 'interact' and 'overlap.' The concrete implications of this alternative view of adjustment are that output may increase 'significantly' with a monetary stimulus, beyond the predictions of the standard *IS-LM* analysis; and that interest rates may tend to be more rigid than in the traditional models, or if they decrease with an increase in money, the decrease will be moderate.

There is at least one other argument that can be invoked to support this view of the adjustment process. To the extent that the slope of the *LM* is greater than one and goods markets adjust to asset market disequilibria, there will be disequilibrium in the goods markets. But if output responded to satisfy the change in desired spending the *IS* would have shifted as well. The probability that this output response will actually occur, and that the *IS* will shift, is greater the higher the inventory costs in goods markets and this is in turn more likely the more the goods markets are dominated by primary goods production. In other words high inventory costs may combine with rudimentary financial markets to cause goods market adjustment to precede and be faster than asset market adjustment.

In other words, a relatively more rapid goods market adjustment can be attributed not only to a stable, relatively steep *LM* curve, but also to an *IS* curve that is more likely to shift because the goods markets are dominated by primary commodities and agricultural goods which neither require heavy incremental investments, nor are particularly easy or cheap to store.[12] The cost of storing primary commodities and agricultural goods is so high that current output will have to increase in the case of an increase in demand or to decrease in the case of a negative shock. Moreover, the relatively labor-intensive nature of the production makes this quite feasible, especially if the economy is a labor surplus one. The implications of high inventory costs for adjustment was studied by Blinder [1982, p. 347], who noted that

> When output is not storable, firms can react to increases in demand only by raising prices or by boosting production. The more they do of one, the less they have to do of the other.... [Firms] with sharply rising marginal inventory costs will rely less on inventory changes and will exhibit larger price and output fluctuations.

When prices are rigid,[13] firms with high inventory costs will therefore respond to shocks by

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[12]A major part of this cost for poor, primary producing countries is the opportunity cost of stockpiling versus selling output. The high cost of inventories is why rich countries only can afford to stockpile, oil. gold, grains, etc.

[13]We can invoke the role of unions and labour market rigidity to rule out price fluctuations.

changing output. This is precisely what is required when the financial markets are undeveloped, because excess balances can only then be jettisoned by spending on goods and services. The attempt to increase spending in goods markets will lead to an increase in prices if output does not increase.

V. CONCLUSION

The key point of the paper is that if persons do not have access to developed financial markets, they may resort to the markets for goods and services to correct asset market disequilibria. The idea of relatively rapid goods market adjustment can easily and should urgently be extended to the open economy, especially to address the balance-of-payments problems of the many developing countries that are characterized by rudimentary financial markets and the high inventory costs associated with primary goods production. In a recent study, Naastepad [2002] uses a real-financial computable general equilibrium model to study how IMF-type adjustment programs, by reducing credit supply, may lead to a reduction in output and income when credit is used to finance working capital. In this case, monetary policy transmission is through the credit channel and not the interest rate, but the credit channel affects current production (income) and aggregate spending rather than investment. While this study employed more sophisticated techniques than most, the hypothesis that adjustment programs are not favorable to economic growth is not a recent one.

For this reason, Thomas (1982, 1984, 1989) referred to the need to reduce production bottlenecks as an *alternative* to the IMF's earlier prescriptions of fiscal discipline and demand deflation. In the wake of the large-scale nationalisations following independence it was possible to focus either on the ballooning public sector and the fiscal imbalances that attended it, or to focus on the production bottlenecks in major industries, albeit bottlenecks that were probably caused by the public sector's assumption of the ownership of those industries. Simply put, the IMF focussed on the former while developing country economists focussed on the latter. For the developing country economists, the production bottlenecks themselves, and not fiscal indiscipline, were identified with crises in the developing world precisely because the *only* available mechanism of adjustment (i.e., the goods market adjustment) was fundamentally vitiated when the large scale nationalisations in the immediate post-independence era ended in massive inefficiency and corporate failures.

Though IMF adjustment programs are usually presented in basic if somewhat disguised quantity-theoretic terms, they actually attempt to deal precisely with the consequences of relatively rapid goods market adjustment in developing countries. As noted earlier, this is because it is only the monetarist framework that admits the possibility that excess balances could used to increase goods market spending and therefore absorption. IMF adjustment programs are based on the well-known Polak model that makes the 'Keynesian' assumption that imports depend on income. But this is only a recognition that excess balances can indeed be jettisoned by increasing spending on goods and services because with a stable demand for money, increases in money

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supply will produce not merely excess balances but also increases in nominal income in order to correct the money market disequilibrium. This increases in nominal income increase imports in Polak's model.

The problem is that a quantity theoretic approach to the adjustment problems of poor countries leads almost invariably to the prescription that spending must be reduced, though more recently some attention has been given to increasing output. Unfortunately, as long as financial markets are rudimentary and as long as the goods markets are dominated by primary production and high inventory costs, goods market adjustment may continue to precede and be relatively faster than asset market adjustment, and fundamental adjustment may not take place. It may well be that a recognition of the issues discussed in this paper may well lead to the development of more successful models of adjustment for poor countries that have chronic balance of payments problems.

It may also be that the analysis can assist countries like Japan to understand their own crises, most recently presented (by Krugman) as a modern-day liquidity trap. To do so, one may have to consider the possibility that there may be 'too much' financial market development and competition in some countries, and that this may even precipitate a liquidity trap by flattening the *LM*.

Clearly, the insights that derive from the possibility of relatively rapid goods market adjustment are myriad, ranging from the view that adjustment may not be as dichotomous as is generally thought, to the view that expansionary monetary policy may increase spending without reducing the interest rate. True, the discussion has been limited by its concentration on the *IS-LM* framework.; and the insights of the rational expectations and the inter-temporal frameworks are yet to be incorporated into the analysis. Nonetheless the very recognition that the adjustment mechanism may be different from what is assumed should be useful to the various debates on adjustment in developing countries. The view of adjustment taken in this paper may even prove useful to developed countries, not only because of the re-interpretation of crowding out, but also because the recent accounting scandals at Enron and WorldCom may shatter the confidence of persons who would have otherwise wanted to jettison excess balances in asset markets.

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