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WITHDRAWN

**UNORGANIZED MONEY MARKETS AND 'UNPRODUCTIVE'  
ASSETS IN THE NEW STRUCTURALIST CRITIQUE OF  
FINANCIAL LIBERALIZATION**

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and  
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*Discussion Paper*

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#### ABSTRACT

The new structuralists' critique of financial liberalization emphasizes the role of informal credit markets in financing firms' residual credit demand in LDCs and the relevance of households' portfolio substitution patterns. The sensitivity of their policy conclusions is demonstrated in the context of a representative model developed by van Wijnbergen; the relative efficiency of intermediation in the formal and informal credit markets crucially affects the outcome of the portfolio allocation effects generated by higher bank deposit rates. An anomaly in the characterization of 'unproductive' assets in defining credit supply is also examined.

## 1. Introduction

The influential analysis of financial repression initiated by McKinnon (1973) and Shaw (1973) emphasizes the complementarity of money and capital in less developed countries (LDCs) characterized by 'shallow finance' (a low ratio of financial assets to income) as a result of a historical lack of monetization, constraints on the determination of market interest rates, and high inflation rates. They predict that raising or abolishing maximum limits on bank interest rates would increase financial saving and, in particular, holdings of bank deposits. Banks could then increase the supply of credit to finance investment both in short-term working capital (e.g. intermediate inputs, raw materials, labour) and longer-term fixed capital, thus increasing output and growth and lowering inflation. The McKinnon-Shaw analysis of financial liberalization, has, however, been strongly criticized recently by the 'new structuralists', in particular van Wijnbergen (1982, 1983a, 1983b, 1985), Taylor (1983, Ch.5), Buffie (1984), Khosaka (1984) and Lim (1987). New structuralists emphasize the supply-side effects of contractionary monetary policy arising from credit financing of working capital needs. With mark-up pricing, increased interest costs incurred in financing working capital lead to a cost-push effect on prices, and under monopolistic market structures, to lower output. For restrictive monetary policy, the working capital/credit/cost-push supply-side mechanism intensifies the contractionary effects on output and can reverse the favourable impact on inflation due to reduced demand, hence imparting a stagflationary bias to such a policy.

A key feature of the new structuralist critique is the emphasis on informal credit markets as an important source of residual financing. They argue that if this important institutional characteristic of LDCs is taken into account the effects of increasing real bank deposit rates, particularly the short-run 'stock-shift' effects, depend crucially on the degree of

substitutability in households' portfolios between bank deposits, loans to the UMM, and what are labelled 'unproductive' assets (usually envisaged as cash, gold or commodity stocks). If portfolio substitution leads to an increase in the UMM loan rate, output falls and inflation increases in the short run and, even if allowance is made for the positive effects of higher deposit rates on the savings rate, medium-term growth may be reduced.

The aim of this paper is to provide a critical examination of some aspects of these arguments. In line with their 'realist' methodological approach (Jameson, 1986) new structuralists lay great stress on the fact that their explicit recognition of the existence of UMMs provides a much more appropriate description of the institutional characteristics of the financial structure of most LDCs than the McKinnon-Shaw analysis. However, their characterization of the UMM as a perfectly efficient, market-clearing intermediation system 'providing more rather than less intermediation than the banking system' (van Wijnbergen, 1983b, p.434) is crucial for the results obtained but is a highly questionable description of reality.

In Section 2 we briefly outline the key aspects of the new structuralist arguments on the implications of the UMM and asset substitutability for the results of a policy of raising bank deposit rates. Although we concentrate in particular on the analysis of van Wijnbergen (1983b, 1985) this is representative of the other new structuralist studies' treatment of the issues raised in this paper. In Section 3 we compare the nature of UMMs in LDCs with the way in which they are modelled by the new structuralists and examine the sensitivity of their policy conclusions when allowance is made for a more general characterization of the 'productivity' of bank versus UMM intermediation. In Section 4 we examine an anomaly in the classification and treatment of so-called 'unproductive' assets in defining the supply of available credit in the economy. Section 5 contains some conclusions.

## 2. The new structuralist critique of financial liberalization

Van Wijnbergen's (1983b) analysis is developed in the context of a simplified Tobin-style portfolio approach which concentrates on the balance sheets of households (surplus units), firms (deficit units), banks (operating in the 'organized' or 'formal' credit markets) and the central bank. The analysis of asset market behaviour, especially substitution effects in the households' portfolio is the key to the policy implications.

Given the absence of significant markets for non-monetary government debt, government deficits are financed by issuing high-powered money thus increasing the monetary base (MR) used as currency and bank reserves.<sup>1</sup> Markets for equities and commercial paper are also largely non-existent so money, made up of cash (C) and bank time deposits (TD), forms a significant proportion of households' financial assets. Surplus households can also lend directly on the UMM to deficit firms; such lending ( $L_{UMM}$ ) consists of a direct transfer of high powered money in exchange for an IOU. Households have no liabilities reflecting the relative lack of bank lending for consumption in LDCs. Households' real wealth (W) is allocated via the demand functions

$$C = f^C(p, i, r_{td}, y)W \quad (1a)$$

$$TD = f^{TD}(p, i, r_{td}, y)W \quad (1b)$$

$$L_{UMM} = f^{UMM}(p, i, r_{td}, y)W \quad (1c)$$

where  $y$  is real income,  $r_{td}$  is the nominal time deposit rate,  $i$  is the nominal UMM rate, and  $p$  is the inflation rate (assumed exogenous in the simplest short-run model). The households' balance sheet constraint implies

$$\sum_j f_k^j = 0 \quad j = C, TD, UMM; \quad k = i, r_{td}, y, p \quad (2)$$

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<sup>1</sup>The summary of the arguments follows the model and notation in van Wijnbergen (1983b, Section 2). Unless otherwise stated, references in this section to van Wijnbergen are to his 1983b paper.

Own-rate effects are assumed to be positive and cross-rate effects negative.

$f_y^C$  and  $f_y^{TD}$  are assumed to be positive, implying  $f_y^{UMM}$  is negative.

Banks' only liabilities are households' time deposits (TD). Banks' assets are loans to firms ( $L_b$ ) and reserves. With a required reserve ratio  $\rho$

$$L_b = (1-\rho)TD \quad 0 < \rho < 1 \quad (3)^2$$

Deposit (and loan) rate ceilings are fixed by the monetary authorities at below market levels. Hence, TD, the volume of bank deposits, is demand determined and constrains the supply of loans banks can make.

Firms' demand for working capital ( $D_f$ ) is assumed to be a function of the real product wage ( $w$ ) and output:

$$D_f = D_f(w, y) \quad (4)$$

with  $\delta D_f / \delta w, \delta D_f / \delta y > 0$ .  $D_f$ , somewhat awkwardly, is modelled as a stock demand to fit in with the stock allocation model outlined in (1). Working capital is entirely credit financed. Firms take up all available bank loans since they are offered at below market rates. Firms' residual credit demand is assumed to be met by the curb market, with  $i$  adjusting in order to equate  $(D_f - L_b)$  with households' demand to hold curb market IOUs ( $L_{UMM}$ ). The market clearing equilibrium condition is:

$$f^{UMM}(p, i, r_{td}, y)W = D_f(w, y) - (1-\rho)f^{TD}(p, i, r_{td}, y)W \quad (5)$$

As van Wijnbergen argues (pp. 436-7), with the volume of time deposits demand determined, (5) is not independent of the equilibrium condition for the market

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<sup>2</sup> For simplicity, we assume banks do not hold free reserves, following Taylor (1983, p.92) Buffie (1984), Khosaka (1984) and van Wijnbergen (1983a). Van Wijnbergen (1983b) allows banks to hold free reserves in his simplest short-run model; the banks' choice between lending to firms and holding free reserves is influenced by the bank lending rate,  $r_L$ , and it is through this channel that increases in  $r_L$  have an expansionary effect on bank loan supply and on output.

in high-powered money. However, the market clearing conditions for the UMM and high-powered money in his Table 1 are incompatible as can be demonstrated by comparing the different expressions obtained for  $di/dy|_{LM}$  (where  $LM$  denotes the combinations of the UMM rate,  $i$ , and income,  $y$ , that satisfy asset market equilibrium). In order to maintain compatibility the market clearing equation for high-powered money (with no free reserves) has to be specified as

$$D_f(w, y) + f^C(p, i, r_{td}, y)W + \rho f^{TD}(p, i, r_{td}, y)W = MR \quad (6)$$

i.e. all loans to finance working capital ( $L_{UMM} + L_b$  in equilibrium) are implicitly held as high-powered money, as in Buffie (1984).<sup>3</sup> Van Wijnbergen concentrates explicitly on (5) and demonstrates (p.438) that  $di/dy|_{LM} > 0$ . This is combined with a crude fixed-price Keynesian output mechanism which gives an IS curve with the property  $di/dy|_{IS} < 0$ . Within this framework the short-run portfolio stock adjustment effects on asset market equilibrium of changes in  $r_{td}$  can be evaluated. The direction of shift of the LM curve, given by the sign of  $di/dr_{td}|_{LM}^{y=y}$ , and the consequent effect on economic activity depends on the relative sensitivity of demand for currency and supply of UMM loans in the households' portfolio to changes in deposit rates, i.e.

$$f_{rtD}^{UMM}/f_{rtD}^C \gtrless (1-\rho)/\rho \Rightarrow di/dr_{td}|_{LM}^{y=y} \gtrless 0 \Rightarrow dy/dr_{td} \lessgtr 0 \quad (7)$$

The intuition behind these results is outlined in van Wijnbergen (pp.439-440); crucial to their derivation and interpretation is the assumption that the curb market 'provides one for one intermediation (no reserve requirements)

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<sup>3</sup>Taylor (1983) and van Wijnbergen (1983a) assume that firms hold bank deposits equal to  $D_f$ . These rather mechanical formulations avoid having to specify separate demand functions for deposits and/or cash held by firms which would complicate the analysis but would be more realistic, particularly as the focus of attention is portfolio adjustment; automatic 'writing up' of firms' holdings of cash or deposits would only be appropriate in the very short run. Note that in van Wijnbergen's (1983b) setup total deposits held by households constrain bank loans; bank loans do not create additional deposits so the possibility of a textbook credit multiplier effect is ruled out.

[while] ... the banking system ... provides only partial intermediation: partial because a fraction is syphoned off into ... reserves rather than passed on to firms'. (van Wijnbergen, 1983b, p.439; emphasis added).

In an extension to this analysis van Wijnbergen (pp.441-5) includes an aggregate demand function incorporating a real interest rate effect on saving, an explicit inflation equation, an aggregate supply function incorporating a supply-side cost of credit effect on output, and credit financing of physical as well as working capital. Shifts in the LM curve describing financial market equilibrium are still determined by the same considerations; in the extended model, however, if the increase in  $r_{td}$  increases  $i$  there will not only be a decrease in output but also an increase in inflation in the short run. In a further extension analysing the medium-term effects van Wijnbergen shows that it is feasible for the portfolio effects that increase  $i$ , reduce output and increase inflation to dominate the positive effects of an increased savings rate, hence resulting in lower growth.

The models analysed by the other new structuralists cited in the introduction, follow essentially the same approach with regard to the role and treatment of the UMM, and the emphasis on the 'stock-shift' effects arising from households' portfolio reallocation.<sup>4</sup> The outcome of liberalizing deposit rates depends crucially on whether deposits are close substitutes for 'unproductive assets' (supposedly including cash, gold and commodity stocks)

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<sup>4</sup>In Taylor's (1983) model households hold 'gold', bank deposits and UMM loans, but not cash [see also fn. 15]. In Buffie's (1984) model households hold currency, UMM loans, deposits and foreign bonds and the analysis is extended to examine the implications of devaluation for the financial markets. Khosaka (1984) fixes output at full employment and concentrates on the relationship between  $r_{td}$  and the price level. In particular, note that Taylor's equation (5.11) and Khosaka's equation (6) correspond closely to (5) above.

or close substitutes for 'productive assets' such as UMM loans. In this context 'productive' or 'unproductive' are defined in terms of more or less 'pass through into capital' (van Wijnbergen, 1983b, p.450).

Van Wijnbergen (1982, 1985) presents evidence for S. Korea which suggests that the substitutability between UMM loans and time deposits is much stronger than between M1 (currency and demand deposits) and time deposits, a result which favours the anti-McKinnon and Shaw outcome. Note, however, that the estimates provided by van Wijnbergen relate to  $f_i^{TD}$  and  $f_p^{TD}$  rather than  $f_{rtd}^{UMM}$  and  $f_{rtd}^C$  which are not equivalent since symmetry of interest rate and inflation responses need not hold [see, for example, Owen (1986, p.25)], particularly in asset demand functions estimated on an equation - by - equation basis.<sup>5</sup> However, while van Wijnbergen's evidence does not provide direct estimates for the key parameters of interest, simulation results for his quarterly macro-econometric model (which incorporates a working capital/credit/cost-push supply-side effect) suggest that increases in time deposit rates have contractionary effects in the short run which are intensified if banks are subject to limits on credit extended.<sup>6</sup>

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<sup>5</sup>Van Wijnbergen (1982) does not explicitly estimate a private sector demand function for UMM loans, but argues that 'a reasonable supply equation for loans on the curb market [is implied] via the wealth constraint' (p.157). However, since the M1 and time deposit equations are log-linear formulations while the adding-up restrictions are linear it is not possible to derive the implied coefficients and standard errors in the UMM equation. It is clear, however, that the UMM equation has many of the usual undesirable features of residual equations [see Brainard and Tobin, 1968] and includes lagged stocks of time deposits and M1 but no own lagged stock. Moreover, given the specification of the equations and the different estimation methods used for the two explicit equations, the results obtained are clearly not invariant to the choice of the residual equation [see, for example, Owen (1986, pp.65-66)].

<sup>6</sup>Lim (1987) also provides empirical evidence which is consistent with the new structuralist views but no direct evidence on the crucial elasticities since the unobservable UMM rate is substituted out of the model prior to estimation.

### 3. Intermediation in the unorganized money markets

In line with their methodological perspective of explicitly modelling the institutional and structural characteristics of LDCs and evaluating their implications for resource allocation, the new structuralists' analysis of intermediation in the UMM is the only formal analytical treatment of UMMs in LDC macro modelling and, particularly given the absence of alternatives, is now an influential 'standard' exposition. However, in our view, the new structuralists have, to a considerable degree, traded off structuralist purity for analytical convenience. The UMM is modelled as a single atomistic perfectly competitive market achieving 100 percent intermediation of high-powered money from lender to borrower; a single uncontrolled interest rate clears the whole market for loanable funds. UMM intermediation in new structuralist models is therefore indistinguishable from direct finance [using Gurley and Shaw's (1960) terminology] in a perfectly functioning, highly developed financial market for primary securities. Moreover, all UMM lending is assumed to finance productive expenditure; the focus of attention throughout is on the quantity of intermediated household wealth (with no regard for the quality of either the intermediation process or the ultimate expenditure financed). All this may be analytically convenient but is in serious danger of throwing the baby out with the bath water.

The picture that emerges from the bulk of the (mainly descriptive) literature on UMMs is of a highly segmented inefficient market in which loans are of a relatively short maturity and with links between borrowers and lenders often based on close personal knowledge [e.g. see Wai (1957, 1977), Drake (1980), Basu (1984, Ch.11), Chandavarkar (1985) and the papers reprinted in Coats and Khatkhate (1980, Section III.2(a))]. Money lenders operate under quasi-monopoly conditions with each lender active in a small-scale spatially defined submarket in which there are limited opportunities for maturity

transformation or economies of scale in risk pooling, administration of loans etc. Secondary markets in UMM loans are non-existent and, while there may be some scope for excess demand for credit to spill over, linkages between the formal and informal sectors of the credit market are generally regarded as relatively weak. Due to asymmetric information based on local knowledge, a given UMM loan may be subject to lower transactions and information costs than a comparable bank loan [Akerlof (1970)] but the overall allocative efficiency of the system of fragmented informal markets is usually held to be extremely low. To model such a setup as virtually indistinguishable from a standard neoclassical 'bond' market does not appear to be 'externally consistent' to use Stiglitz's (1986) terminology.<sup>7</sup>

To demonstrate the sensitivity of the new structuralist policy conclusions we concentrate specifically on relaxing the restrictive assumption that every additional dollar allocated to UMM IOUs in the households' portfolio is channelled 100 percent into productive uses (i.e. working capital in van Wijnbergen's simplest model).<sup>8</sup> Consider first the distinction between the value of funds intermediated to firms through the UMM (or the banks) and the financing of working capital that occurs. Such a distinction is relevant if part (or all) of a UMM (or bank) loan is used for financing 'unproductive

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<sup>7</sup> If external consistency is accepted as a desirable criterion for evaluating alternative theories then 'theories whose assumptions seem unreasonable, i.e. whose assumptions themselves can be falsified or whose assumptions have other implications which seem unacceptable ... should be rejected.' [Stiglitz (1986, p.262)]. Such a criterion is perfectly compatible with the realist methodological approach adopted by structuralists.

<sup>8</sup> For the purposes of this sensitivity analysis we maintain the same basic framework and many features of UMM modelling which we regard as less than ideal, including the emphasis (formally at least) on the quantity of investible funds and the existence of a single UMM rate clearing the whole market for loanable funds.

expenditure'. New structuralists tend to concentrate (sometimes implicitly) on curb markets of the type found in some urban areas where there is more emphasis on lending for entrepreneurial activity and there are better developed linkages with the official markets; e.g. van Wijnbergen (1982) argues that, at least for Korea, urban UMM lending (and formal bank lending) for consumer credit is unimportant. By contrast, most of the literature on informal credit markets stresses that the proportion of UMM loans financing unproductive expenditure is relatively high (particularly when rural UMMs are taken into account). As well as consumption expenditure, UMM funds can be diverted into other unproductive expenditures (paying higher transactions costs or increasing money lenders' monopoly profits) as a result of informal malpractices of money lenders (Wai, 1957, 1977).<sup>9</sup> Wai (1977, Table 3) suggests that approximately one third of the demand for credit (based on credit surveys in rural areas for 15 countries) is for 'non-productive purposes', although there is a considerable variation across different countries. Clearly, data of this type are likely to be subject to a considerable margin of error and problems of interpretation. Nonetheless, they strongly suggest that it is not appropriate to constrain the proportion ( $\theta$ ) of UMM IOUs that finances productive expenditure to equal unity for all curb markets in all LDCs.

In addition, even though UMM intermediation is a direct financing mechanism, a wedge may be driven between the value of UMM IOUs in the households' portfolio (relevant in (1)) and the stock of high-powered money actually received by firms (regardless of its final use); e.g. Wai (1957,

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<sup>9</sup> Excessive loan transactions charges or, in cases where money lending and trading are joint activities, additional charges for other services may be made; trader-moneylenders may charge higher prices for goods being sold and pay lower prices for goods purchased.

1977) notes that the actual cash transfer made may be below the face value of the borrower's IOU, or interest charges may be deducted when the loan is made.<sup>10</sup> These features can also be allowed for (with some complications noted in fn.13) by allowing  $0 < \theta \leq 1$ .<sup>11</sup> For banks, reserves act as an explicit wedge between deposits received and loan supply as in (3). In addition, although it is usually held that in most LDCs there is relatively little bank lending for consumption, to maintain greater generality we allow for the possibility that some proportion ( $1-\gamma$ ;  $0 < \gamma \leq 1$ ) of funds intermediated to firms with access to subsidized bank lending is used for non-productive purposes.

Under these (more general) assumptions the market clearing equilibrium condition for the credit market (5) becomes

$$E = D_f(w, y) - \gamma(1-\rho)f^{\text{TD}}(\hat{p}, \hat{i}, \hat{r}_{td}, \hat{y})W - \theta f^{\text{UMM}}(\hat{p}, \hat{i}, \hat{r}_{td}, \hat{y})W = 0 \quad (8)$$

where  $E$  denotes the excess demand for credit.<sup>12</sup> Loan supply ( $L_b + L_{\text{UMM}}$ ) must, in equilibrium, cover any discrepancies between UMM IOUs in the households' portfolio and required financing for capital expenditure in addition to

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<sup>10</sup> Note that if we allow for these features a distinction has to be drawn between the stock of UMM IOUs lenders wish to hold (relevant in (1)) and the stock of funds lenders wish to provide. Funds actually received by firms (which equal moneylenders' desired and actual lending) will be less than the corresponding desired and actual value of IOUs in the lenders' portfolio. This phenomenon is broadly analogous to the practice of requiring 'compensating balances'. Equivalently, both the use of funds for unproductive expenditure and the IOUs - actual lending distinction can be interpreted as requiring a higher effective UMM rate to generate target lending.

<sup>11</sup>  $\theta$  represents the mean proportion of  $L_{\text{UMM}}$  in 1(c) that passes through to finance working capital and is likely to vary considerably between countries and, within a given country, from region to region. For the purposes of the present analysis  $\theta$  is taken as parametric; ideally, it would be modelled as endogenously determined by the microeconomic characteristics of the UMMs.

<sup>12</sup> The addition of  $i$  as an argument explaining  $D_f$ , while adding more realism, does not change any of the conclusions obtained.

$D_f(w, y)$ .<sup>13</sup>

In this case the LM curve describing asset market equilibrium has a slope given by:

$$\begin{aligned} \frac{di}{dy}|_{LM} &= -[D_f y - (\gamma(1-\rho)f_y^{TD} + \theta f_y^{UMM})W]/[-\gamma(1-\rho)f_i^{TD} - \theta f_i^{UMM}]W \\ &= -[D_f y + (\theta f_y^C + (\theta - \gamma(1-\rho))f_y^{TD})W]/[(\theta - \gamma(1-\rho))f_i^{TD} + \theta f_i^C]W \quad (9) \end{aligned}$$

using (2). Let this expression be denoted  $N_1/D$ . Given the signs of the partial derivatives assumed in (1), both the numerator ( $N_1$ ) and the denominator are, without further restrictions, ambiguously signed.

In order to evaluate the effects of a change in the regulated time deposit rate on asset market equilibrium consider:

$$\begin{aligned} \frac{di}{dr_{td}}|_{LM}^{y-y} &= [\gamma(1-\rho)f_{rtd}^{TD} + \theta f_{rtd}^{UMM}]W/[-\gamma(1-\rho)f_i^{TD} - \theta f_i^{UMM}]W \\ &= -[(\gamma(1-\rho) - \theta)f_{rtd}^{UMM} + \gamma(1-\rho)f_{rtd}^C]W/[(\theta - \gamma(1-\rho))f_i^{TD} + \theta f_i^C]W = N_2/D \quad (10) \end{aligned}$$

using (2). In addition  $N_2$  can also be expressed as

$$N_2 = -[(\theta - \gamma(1-\rho))f_{rtd}^{TD} + \theta f_{rtd}^C]W \quad (11)$$

Stability in asset market equilibrium exists if, and only if,  $\partial E/\partial i < 0$ . From (8) and (2):

$$\partial E/\partial i = [(\theta - \gamma(1-\rho))f_i^{TD} + \theta f_i^C]W \quad (12)$$

Given the assumptions on the signs of the partial derivatives in (1), a

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<sup>13</sup>Note that in the implicit market clearing equation for high-powered money all loans (through banks or UMM) used to finance unproductive expenditure are held in currency; in this respect, loans for unproductive purposes are treated in exactly the same way as loans for productive purposes in van Wijnbergen's original model (see (6)). To the extent that there is a wedge between UMM IOUs and actual funds intermediated, allocation of household wealth to UMM IOUs generates an automatic and instantaneous 'write-up' in wealth which is also implicitly held as currency in the same way as all loans are held as currency. While the existence of such a distinction is not essential to the following analysis its implications do serve to highlight the restrictive nature of a point-in-time stock allocation framework applied to household wealth with accommodating adjustment in other sectors' asset/liability stocks. As with most stock-allocation models there is no mechanism for dealing with the subsequent flow and stock implications, e.g. reallocation of cash holdings automatically tied to lending and allocation of current-period income flows including moneylenders' profits.

sufficient condition for  $\partial E / \partial i < 0$  is  $\theta > \gamma(1-\rho)$ , i.e. the 'productivity' (proportion of pass through into capital) of UMM intermediation is greater than the productivity of bank intermediation; this condition covers the case in van Wijnbergen's model where  $\theta = 1$ ,  $\gamma = 1$  and  $0 < \rho < 1$ . If  $\theta > \gamma(1-\rho)$  then in (9)  $N_1 < 0$ ,  $D < 0$  so  $di/dy|_{LM} > 0$ , i.e. the LM curve is upward sloping. In (10) since  $D < 0$ , the direction of shift of LM and, given a downward sloping IS curve, the effect on economic activity of changing  $r_{td}$  is determined by the sign of  $N_2$ , i.e.

$$f_{rtd}^{UMM}/f_{rtd}^C \geq \frac{\gamma(1-\rho)}{\theta-\gamma(1-\rho)} \Rightarrow di/dr_{td}|_{LM}^{y \rightarrow y} \geq 0 \text{ and } \Rightarrow dy/dr_{td} \leq 0 \quad (13)$$

i.e. a result similar to (7) for van Wijnbergen's model.

However, if  $\theta \leq \gamma(1-\rho)$ , i.e. the productivity of UMM intermediation is less than or equal to the productivity of bank intermediation, raising time deposit rates is unambiguously expansionary provided equilibrium in asset markets is stable. From (12), given that  $W > 0$ , a necessary (and sufficient) condition for stability is  $D < 0$ , i.e.

$$[\theta - \gamma(1-\rho)]f_i^{TD} + \theta f_i^C < 0 \quad (14)$$

If (14) holds the direction of shift of LM as a result of changing  $r_{td}$  is again determined by the sign of  $N_2$ . i.e. from (10) and (11)

$$-N_2 \geq 0 \Rightarrow di/dr_{td}|_{LM}^{y \rightarrow y} \geq 0 \text{ and } \Rightarrow dy/dr_{td} \leq 0 \quad (15)$$

Since  $f_{rtd}^C < 0$ ,  $f_{rtd}^{TD} > 0$  and, in this case,  $\theta \leq \gamma(1-\rho)$  then  $di/dr_{td}|_{LM}^{y \rightarrow y} < 0$  and  $dy/dr_{td} > 0$  unambiguously. Note that with stability in asset market equilibrium and  $\theta < \gamma(1-\rho)$  (and  $D < 0$ )  $N_1$  is not unambiguously signed and hence the LM curve can be upward or downward sloping. However, whatever the sign of the slope of LM, an increase in  $i$  and a fall in  $y$  are not compatible with a stable asset market equilibrium when  $r_{td}$  increases. Hence, when  $\theta \leq \gamma(1-\rho)$ , the relative sensitivities of the asset demand functions are not relevant (apart from their implications for the stability conditions).

The same type of results are obtained if the same amendments are made in

van Wijnbergen's short-run model that considers the effects of liberalizing bank rates on inflation. If  $\theta > \gamma(1-\rho)$  whether inflation rises or falls as a result of increasing  $r_{td}$  depends on the relative substitutability of UMM loans and cash with respect to  $r_{td}$ . If  $\theta \leq \gamma(1-\rho)$  and asset market equilibrium is stable then  $\frac{dp}{dr_{td}}|_{LM}^{y=y} < 0$  unambiguously and the effect on economic activity is expansionary. The less likely it is that contractionary effects occur as a result of increasing the time deposit rate then the less likely it is that in terms of medium-run growth and financial deepening 'beneficial effects of a higher savings rate after an increase in time deposits rate will be thwarted by the contractionary impact of the portfolio reallocation the higher TD rates also cause' (van Wijnbergen, 1983b, p.451).

The above analysis, following van Wijnbergen, formally concentrates on the 'productivity' of different forms of intermediation in terms of pass through into capital. However,  $\theta$  and  $\gamma(1-\rho)$  could be interpreted as proxies for more broadly interpreted measures of efficiency of intermediation capturing at least some of the real-world features of UMMs (e.g. fragmentation and allocative inefficiency). New structuralists clearly have in mind curb markets more linked to new lines of entrepreneurial activity than the more traditional moneylender literature suggests. For some urban curb markets it is possible that  $\theta > \gamma(1-\rho)$  but for most LDCs curb markets are not likely to be nearly as efficient as a banking system so that  $\theta < \gamma(1-\rho)$ . In this case, at least in terms of the portfolio allocation effects emphasized by new structuralists, increasing deposit rates would unequivocally reduce UMM rates, increase output and decrease inflation provided asset market equilibrium is stable. Moreover, if the new structuralist characterization of the UMM were really representative of UMMs in the real world then why should policy makers in LDCs be so keen to encourage development of the banking system for the purpose of financing investment? Indeed, why bother to have banks at all?

#### 4. Cash and inflation hedges as 'unproductive' assets

The analysis in the previous section excludes inflation hedges such as commodity stocks. This reflects the new structuralists' treatment of inflation hedges as essentially similar to cash as far as the implications of households' portfolio behaviour for output, inflation and growth are concerned. Van Wijnbergen (1983b, p.435, fn.5) is quite unequivocal on this: 'What really matters is the existence of a group of assets more 'productive' (i.e. leading to more pass-through into capital) than time deposits, and a less 'productive' group. Whether the latter consists of cash, gold or commodity stocks is really not relevant'. Other new structuralists, though less explicit, follow the same basic approach. Taylor (1983, p.92) includes 'gold' as an asset in the public's portfolio. Gold is defined as 'a congeries of assets such as currency, precious objects, and land and real estate'.<sup>14</sup> Khosaka (1984), despite noting that inflation hedges are an 'unproductive' alternative to UMM loans for accumulating savers' funds, includes only cash, bank deposits and UMM loans in the households' portfolio. By contrast, Buffie (1984) allows households to hold currency, demand deposits, curb market loans and foreign bonds; part of the reason for including foreign bonds appears to be their role as inflation hedges (p.308, fn.5) though their main distinctive role is in the analysis of the effects of devaluation.

In our view, the treatment of cash and inflation hedges as similar categories of unproductive assets is misleading; there are important differences. Firstly, cash is distinctive because of its medium of exchange function, a feature which does not show up particularly well stock portfolio

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<sup>14</sup> However, in his financial balance sheets (p.93) high-powered money is held entirely as bank reserves, and the money supply is synonymous with total bank deposits, i.e., effectively, 'gold' does not contain cash.

models; see Tsiang (1982). While some types of inflation hedges could be used in barter transactions, most of the transactions envisaged in new structuralist models would take place through cash and/or deposit transfer; the proportion of transactions financed in this way will generally rise as income rises. Hence, one distinction hinges on the advantages of money transactions over barter transactions; since the LDC's economy is not fully monetized the marginal productivity of money is likely to be positive.

Secondly, for inflation hedges, expected inflation is the own rate of return. The derivation of a positive slope for the LM curve in van Wijnbergen's (1983b) equation (17) assumes  $f_p^C$  and  $f_p^{TD}$  are both negative. Hence, from (2),  $f_p^{UMM}$  is constrained to be positive, which is not an obviously appealing restriction. Explicit treatment of inflation hedges separately from financial assets brings out more clearly the potentially non-Fisherian nature of LDCs where the limited range of nominal interest rates need not necessarily adjust adequately for expected inflation so that hoarding of real goods can be an important aspect of portfolio allocation. Moreover, as noted by Mólho (1986, p.104) a high variability of inflation may lead to inflation hedges taking on the role of 'safe' assets relative to cash, deposits and physical capital because of large fluctuations in the latter's real returns.

Thirdly, there may be implications of different asset composition for the total credit supply in the economy. Accumulation of inflation hedges 'uses up' current period output, diverting output into non-productive uses. In addition, while inflation hedges act as stores of value in households' portfolios (and are likely to be better stores of value than cash), cash holdings are a financial asset; inflation hedges are not. As with any financial asset, cash is a liability of some sector in the economy and therefore a component of the asset counterpart of the total supply of credit; inflation hedges, on the other hand, have no credit counterpart. Since cash

(high-powered money) or, for that matter, government bonds are government debt they are not necessarily unproductive. Issue of high-powered money or bonds enables the public sector to make a claim on output. Whether the ensuing cash or bond holdings are regarded as more or less productive depends on the division of the corresponding government expenditure between productive and unproductive categories. This is essentially just a feature of the relevant accounting identities; to argue that in fact capital investment and, say, changes in cash holdings are causally related would require a fully specified behavioural model.<sup>15</sup> However, van Wijnbergen's approach entirely rules out the possibility that accumulation of cash could, even in principle, be compatible with increases in the productive capital stock.

The discussion above also emphasizes that inflation hedges have a dual role. Since they act as stores of value in the households' portfolio they have implications for asset equilibrium. Since they are a component of total output they have implications for goods market equilibrium. New structuralist models follow the usual convention of juxtaposing an LM curve describing asset stock equilibrium with an IS curve describing goods market flow equilibrium, a strategy which Tobin (1982) has criticized as an 'implausible bifurcation'. Recognition of a dual role for inflation hedges highlights the need for integration of the portfolio, expenditure and output aspects of the model. Development of such a system is beyond the scope of the current paper; however, the arguments above serve to demonstrate that inflation hedges and financial assets such as cash, government bonds etc. should not be treated as interchangeable in analyses of the effects of financial liberalization.

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<sup>15</sup>This is beyond the scope of the current paper though note that Molho's (1986) intertemporal characterization of McKinnon's argument on the complementarity of deposits and physical capital is also broadly applicable to cash.

## 5. Conclusion

The new structuralist critique of financial liberalization emphasizes the role of UMMs in financing firms' residual credit demand and concentrates on households' portfolio substitution patterns in evaluating the effects of increasing bank deposit rates. However, their modelling of UMMs as 100 percent efficient in channelling funds through to finance working capital is not consistent with widely held views of how UMMs work nor, therefore, with the new structuralists' 'realist' methodological approach. By allowing more generality in the specification of the productivity of different forms of intermediation in van Wijnbergen's (1983b) model we show that the relative efficiency of intermediation in the formal and informal credit markets can crucially affect the outcome of the portfolio allocation effects generated by higher time deposit rates. In particular, if intermediation through the banking system is more efficient than UMM intermediation and asset market equilibrium is stable then the effects of increasing bank deposit rates are unambiguously expansionary; even in the short-run, output increases and inflation falls. Given the sensitivity of the new structuralist results to the modelling of intermediation in the UMM, further work examining the implications of micro behaviour in UMMs for macro policy is clearly desirable. Potentially fruitful areas of emphasis are likely to include explicit allowance for the differences between the UMMs and banks in terms of risk, information structures, accessibility, and the quality of projects financed.

In addition, we argue against the categorization of cash as necessarily an 'unproductive' asset equivalent to inflation hedges for the purpose of macro analysis and suggest that further work should consider the wider implications of asset composition for credit supply. Also, the new structuralist critique puts particular emphasis on the short-run effects stemming from reallocation of the households' portfolios (with accommodating

changes in firms' and banks' portfolios) when bank interest rates are freed; analysis of these effects is likely to be important but does not constitute an exhaustive coverage of all the significant effects of liberalization.<sup>1</sup> The new structuralists' warnings over the dangers of financial liberalization may well be justified on other grounds but their modelling of the workings of the UMMs and their labelling of cash and inflation hedges as equivalent 'unproductive' asset run the risk of 'misdirecting future work in this area.

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<sup>1</sup>See for example, Cho (1986), Ize (1986), Molho (1986) and Kähkönen (1987).

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