Informal Credit Markets and Black Money

Do They Frustrate Monetary Policy?

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This paper deals with the issue of whether the existence of an informal credit market and 'black liquidity undermines the operation of official monetary and credit policy at the aggregate level

To address this issue the authors have formulated a simple model which characterises demand and supply in the formal and informal credit markets as well as the links between them.

The authors then identify those parameters of the model, the empirical magnitudes of which are crucial for assessing the efficacy of official monetary-credit policy, in altering the cost of funds in the informal market.

*Finally, these parameters have been estimated using anual time series data for the period 1951*52 to 1976-77.*

I

Background

IT has sometimes been argued that the markets for commercial bank credit and informal credit in India are quite distinct, with only weak links between the two.[1] Monetary policy impinges only on the former, with little, if any, effect on expenditures financed by the informal credit market [see Ghatak (1981), Ghosh (1964). Ghosh (1979) and Mody, (1974)]. An alternative view allows for stronger links between the two credit markets, but argues that more often than not these links operate in such a way as to destabilise monetary policy. More specifically, if the monetory authorities act to tighten the availability of commercial bank credit, borrowers are able to frustrate the restrictive aim of monetary policy by switching to alternative sources in the informal credit market to maintain prior levels of expenditure. Thus, if in the first view the presence of a sizeable informal credit market somewhat dilutes the effectiveness of monetary policy, in the second it can frustrate it altogether.

In recent years, a number of economists, [for example, Chugh (1978), Kabra (1982), Rangnekar (1982) and Sundaram and Pandit (1976)] have emphasised a variant of the second view, which accords a major role to the presence of "black money" or "black liquidity" in the Indian economy. These terms refer to eurrent and past savings from undeclared or illegally acquired incomes held in the form of currency and other readily convertible assets like gold and precious stones. According to Sundaram and Pandit (1976, p *126)* "this liquidity is immune to any monetary and fiscal policy." Chugh writes (1978. p *'295)* that "Black liquidity, by becoming an alternative source of finance, often conflicts with the credit-rationing policies of the monetary authority".

For those with a taste for historical ,analogy, we may note, in passing, that the destabilising potential accorded to the informal credit market (black or white) by these writers is strikingly similar to the role ascribed to non-bank financial intermediaries by the influential Radcliffe Report (Radcliffe. 1959) on the working of the British monetary system in the late 1950s. There, too. the "discovery" of (or at least the shift in analytical attention towards) non-bank credit institutions was initially associated with grave concern regarding their potential for destabilising official monetary policy.

None of the writers cited above articulate their views through formal models. Nor do they marshall systematic empirical evidence in support of their views. This does not. in any way, detract from the gravity of the issues involved. Rather, it argues for more systematic and empirical analysis. In this paper, we offer a preliminary attempt at modelling the two credit markets and the nature of the interaction between them. The model is tested against data from the Indian economy over the past three decades. To anticipate our conclusions, We find support for the view that the nature of the linkage between the two markets is such as to permit monetary policy to be effective at the aggregate level.- More specifically, a contractionary monetary policy works to raise the cost of funds in the informal credit market land thus, presumably, reduces expenditures financed by such credit. A corollary of our model and our empirical results is to cast serious doubt on the more extreme versions of the views, outlined above, alleging the ineffectiveness of monetary policy because of the existence of an informal credit market and/or black money.

We begin, in Section II by specifying the structure of supply of and demand for commercial bank credit and informal market credit. We go on to hypothesise a particular kind of linkage between the two markets. We then proceed to solve the model and obtain an equation for the interest rate in the informal market, in which the signs of the coefficients of the independent variables are derived from our *a priori* structural specification. In Section III we briefly discuss some aspects of the underlying data base, including the choice of variables, sample periods and sources, and then present and discuss the econometric results of estimating our model. In particular, we assess the validity of the alternative views, outlined earlier, in the light of our empirical findings. We summarise our conclusions in the final Section.

II

Model Specification

Formal modelling of the credit market in a developing economy, such as

Indiu, is an extremely difficult task beset with formidable problems. On the one hand, so little is known about the functioning of the informal credit market that any attempt to model it formally is susceptible to the charge of errors of both commission and omission. On the other hand, even the formal (mainly bank) credit market in the Indian economy is subject to so many quantitative restrictions that there appears to be a general skepticism about the extent to which conventional "market-clearing" models can capture the essence of its functioning. Perhaps, it is because of these, reasons that none of the authors mentioned in Section has substantiated his views on the link between the formal and the informal credit markets through formal models and systematic empirical evidence. It is against this backdrop that we specify what might be called a "minimal" model of the Indian credit market. Further embellishments of this skeletal model are possible and we shall mention some of these in the concluding section.

Conceptually, the credit market in the Indian economy can be meaningfully divided into two: formal and informal. The chief lenders or suppliers of credit in the formal credit market are the commercial banks (including the state co-operative banks); those in the informal market are the indigenous bankers and the moneylenders. The principal demanders (users) of commercial bank credit are enterprises and individuals in the organised sector of the economy.[3] We hypothesise that private sector demand for commercial bank credit is a positive function of income orginating in the organised sector of the economy and is negatively related to the interest rate differential between the formal and informal credit markets. The latter clause simply assumes that, when the differential widens (narrows), the demand for bank credit falls (increases). A simple, linear specification is:

$$KO^d = a_0 + a_1 (RO - RI) + a_2 YO \quad (1)$$

(−) (+)

where,

KO^d = private demand for commercial bank credit,

RO = rate of interest for commercial bank loans,

RI = rate of interest in the informal credit market,

YO = income originating in the organised sector of the economy,

and a_0, a_1 and a_2 are coefficients, with hypothesised signs indicated below them.

On the supply side, we postulate that the commercial. banks determine the amount of credit to be supplied (KOs) once the Reserve Bank of India (RBI) fixes the lending rate (s) of the commercial banks and such other policy variables as the supply of high powered money and the statutory reserve ratios. Such a "credit rationed" view of commercial banking is, in our view, appropriate to the Indian context, In Hicksian terms it is a "fix-price market". In other words:

$$KO^s = \overline{KO} \quad \ldots\ldots (2)$$

Given the supply of commercial bank credit at RBI determined interest rate(s), we can write an equation for excess demand for commercial bank credit (EKO^d) as follows:

$$EKO^d = KO^d - \overline{KO} \quad \ldots\ldots (3)$$

For the informal credit market, we believe that a "flex price model"' is more appropriate — ;hat is, the interest rate is not determined exogenously, but by demand and supply conditions in the market The demand for credit is composed of two components: (i) the "spillover" demand from the commercial bank credit market defined in (3) above, and (ii) the demand from the unorganised sector of the economy. We postulate the latter to be positively related to income orginating in the unorganised sector of the economy, and negatively related to the interest rate in the informal credit market. Writing KI^d for demand for informal market credit and YU for value added in the unorganised sector, we specify the following linear relationship :

$$KI^d = KOE^d + b_0 + b_1 RI + b_2 YU \quad (4)$$

(±) (−) (+)

where b_0, b_1 and $b_{(f}$ arc constants with the hypothesised signs indicated below each,

The supply of credit in the informal credit market (KI*) is hypothesised to be an increasing function of the interest rate in the informal credit market and the income originating in the unorganised sector of the economy.[1] Thus we have:

$$KI^s = d_0 + d_1 RI + d_2 YU \quad \ldots\ldots (5)$$

(±) (+) (+)

where d_0, d_1 and d_2 are coefficients with the expected signs as shown. Finally we have the equilibrium condition in the informal credit market:

$$KI^d = KI^s. \quad \ldots\ldots (6)$$

For given values of the two income variables, YO and YU, the interest rate in the formal credit market, RO, and the volume of commercial bank credit, KO, equations (1) and (3) through (6) can be solved for the five unknowns: KO^d, EKO^d, KI^d, KI^s and RI.

Before proceeding with the analysis, it is worth noting a few variants of our model which are relevant to the views suggesting the impotence of restrictive monetary-credit policy. The following three versions deserve special mention:

(i) version 1, where the supply of informal market credit is infinitely elastic at a certain rate of interest;

(ii) version 2, where the supply of credit in the informal credit market is a positive function of the interest rate, but the function shifts erratically because of variations in the availability of 'black liquidity', and

(iii) version 3, where the formal and informal credit markets are totally dichotomised or segmented.

In all three cases, the effectiveness of monetary-credit policy gets considerably reduced.

Consider the situation where the supply of informal market credit is perfectly elastic with respect to the rate of interest — that is, at a certain rate, RI, there is an unlimited supply of funds (black or white) in the informal credit market. In such a case, the supply function reduces to:

$$RI' = RI \quad \ldots\ldots (5a)$$

There are two corollaries of this extreme case. First, changes in conditions in the formal credit market, whether as a result of monetary policy or otherwise, have no influence on the rate of interest in the informal credit market. Secondly, any excess demand in the commercial bank credit market can be met fully from the informal credit market without altering the cost of funds in the latter. Therefore restrictive monetary policy is *severely weakened.* Its only impact is to reduce the volume of credit supplied by commercial banks at the RBI-deterrained interest rate, RO. Since borrowers can satisfy all\their residual

loan demands from the informal market at the. rate of RI, the effect of contractionary- policy is limited' to curbing those expenditures for which borrowers are not prepared to pay the interest-rate differential of moving from the formal to the informal credit market. It is only in the polar case, where the RBI-determined interest rate RO in the commercial bank market is equal to RI, that restrictive monetary policy becomes *wholly* ineffective. Since, normally, factors such as risk premia would ensure a level of RI which is higher than the RBI-determined RO, the situation of *completely* ineffective restrictive monetary policy is highly improbable.

Within the framework of our simple model, we can envisage a second scenario within which the effectiveness of restrictive monetary policy might be greatly reduced. Suppose the supply function for credit in the informal market takes the form :

$$KI = d_0 + d_1 RI + d_2 YU + B \quad \ldots\ldots\ldots (5b)$$

where B is a shift parameter, which allows for the possibility of *shifts* in the original supply function (5), brought about by changes in the volume of black funds (that is, changes not already captured in the basic specification) made available to the informal credit market Substitution of equation (5b) for (5) may greatly reduce the effectiveness of monetary policy. Since B affects the position of the credit supply function in the informal market, the effect of a restrictive credit policy on the cost of funds in the informal credit market would depend on the value of B Other things remaining the same, if B is stable over time, monetary policy will have predictable effects on the cost of funds in the informal credit market. However, if B varies errratically over time, the effect of monetary-credit policy on the cost of funds in the informal market would also be unpredictable. In other words, erratic changes in B may destabilise monetary policy, in the sense that it may make credit conditions in the informal market easier (tighter) when monetary authorities intend to follow restrictive (liberal) credit policy.

Two theoretically possible extreme cases of equation (5b) are worth mentioning. *The* first occurs when the black money induced shifts in the Supply function are such as to lead to an unchanged rate of interest in the informal credit market, even in the face of restrictive monetary policy. Analytically, such a case reduces to the one discussed earlier, where the infinitely elastic supply of informal sector funds leads to a rate of interest, RI, which is invariant to changes in the market for commercial bank credit. The second extreme case involves shifts in B which exactly offset changes in the supply of commercial bank credit. This is the most literal interpretation of the view that variations in the supply of black liquidity nullify the effects of official monetary-credit policy.

A third alternative, where the effectiveness of monetary policy is severely weakened, is the one where the two markets are segmented from each other. Basically, such a situation can be modelled by substituting for the two demand functions, (1) and (4), respectively the following forms:

$$KO^d = a_0 + a_1 RO + a_2 YO \quad (\pm \; - \; +)$$

$$\ldots\ldots (1a)$$

$$KI^d = b_0 + b_1 RI + b_2 YU \quad (\pm \; - \; +)$$

$$\ldots\ldots (4a)$$

Equations (1a), (2), (3), (4a), (5) and (6) thus give an alternative version of our basic model. The principal distinguishing characteristic of this verson is that nothing that happens in the commercial bank credit market affects the informal credit market and *vice versa.* This is because, the excess demand in the commercial bank credit cannot, by hypothesis, spill over to the informal credit market. Consequently, the cost of funds in the informal credit market is invariant to the monetary-credit policy of the RBL This can be easily seen by solving for RI from this alternative version of the model;

$$RI = \left(\frac{b_0 - d_0}{d_1 - b_1}\right) + \left(\frac{b_2 - d_2}{d_1 - b_1}\right) YU \quad \ldots\ldots (7)$$

In this version of the model, the effect of monetary policy is limited to the commercial bank credit market Only expenditures financed by commercial bank credit get affected; expenditures financed by the informal credit market remain invariant to official monetary policy.

As against the three special versions outlined above, our basic model — that is, equations (1) through (6) — represents a more eclectic view of the effectiveness of restrictive monetary-credit policies. Put briefly, any restrictive credit policy in this model will lead to an increase in the excess demand in the bank credit market, which, in turn, will spill over to the informal credit market and raise the cost of funds there. Hence, a restrictive credit policy reduces expenditures financed by the informal credit market, through a higher cost of funds. More formally, substituting equations (1), (2), and (3), in (4) and (4) and (5), in (6), we have:

$$[a_0 + a_1 (RO - RI) + a_2 YO - KO] + [b_0 + b_1 RI + b_2 YU] = d_0 + d_1 RI + d_2 YU, \quad \ldots\ldots (8)$$

which can be rearranged to yield:

$$RI = \left(\frac{a_0 + b_0 + d_0}{g}\right) + \left(\frac{a_1}{g}\right) RO + \left(\frac{a_2}{g}\right) YO + \left(\frac{b_2 - d_2}{g}\right) YU - \left(\frac{1}{g}\right) KO. \quad \ldots\ldots (9)$$

where, $g = (d_1 + a_1 - b_1)$.

In terms of equation (9), restrictive monetary-credit policy (that is, a reduction in KO) will have the effect of raising the cost of funds in the informal credit market if the coefficient of KO_t that is, $-1/g$ is negative in magnitude. For $-1/g$ to be negative, g has to be positive. Since we hypothesise that $d_1 > 0$ and b_1 a, < O. for g to be positive ($d_1 - b_1$) h3s to be greater than the absolute value of a_1. Hence, given the hypothesised signs of d_1 b_1 and a_1, it is difficult to specify the sign of g and hence that of $-(1/g)$ *a priori.*[5] In other words, it may not be possible to treat the sign of g and hence the direction of the effect of a given variation in commercial bank credit on the interest rare in the informal market, as a maintained hypothesis. However, the sign, (as well as the magnitude) of g can be set as an empirically testable hypothesis. This requires the estimation of equation (9). Accordingly, we now turn to a discussion of the estimate of equation (9).

III

Empirical Results

We estimated equation (9) using annual time-series data for the Indian economy, for the period from 1951-52 to 1976-77, by the Ordinary Least Squares method. However, before we discuss the estimated equation, it may be useful to explain, briefly, the data base for the exercise.

The **RBI** used to publish data (discontinued since 1976-77) on the bazar bill rate for three of the major business centres in India — Bombay, Madras and Calcutta. This is the rate at which the Shroffs discount commercial bills presented to them by traders. An average of these rates in the three centres is given in Gupta (1979) for the period from 1950-51 to 1976-77. It is this series that we have used in our empirical exercise to represent the rate of interest *in* the informal credit market, RL Gupta (1979) also presents a series on the weighted average advance rate of commercial banks, constructed on the basis of the interest range-wise advances of commercial banks published by the RBI in the *Statistical Tables Relating to Banks in India.* This series represents RO in our estimated equation. The series on KO is the sum of credit to the private sector by the commercial banks (scheduled and non-scheduled) and the state co-operative banks. These figures are the averages of the stock of credit outstanding as of the last Friday of each month in a financial year. There has been a major revision [See RBI (1977)] in the data on the commercial bank credit since 1970-71, which has led to a noticeable upward shift in this series since then. To take account of this shift in our regressions, we have used a shift dummy, D70 (which takes values of zero until 1969-70 and unity thereafter) as an additiona! independent variable.[6] The *National Accounts Statistics* (various issues). published by the Central Statistical Organisation (CSO), gives data on the net value added by the organised and *the* unorganised sectors of the economy for the sixties and the seventies. However, such a disagregation of national income is not available for the fifties. Following approximately the same procedure as the one employed by the CSO, we constructed the series on net value added, by the organised and the unorganised sectors, for the period from 1951-52 to 1959-60, from the underlying national accounts data on output by sector of origin. These series represent YO and YU, respectively, in our estimated equation.

The following is the estimated version of equation (9) for the period from 1931-52 to 1976-77;;

$$\begin{aligned} RI = {} & 10.27 + 3.7219D70 \\ & \quad (3.80)^{***} \\ & - 0.62245RO - 0.00247\,KO \\ & \quad (2.14)^{**} \quad (5.60)^{***} \\ & \quad [-0.3233] \quad [-0.6214] \\ & + 0.00261YO - 0.00001YU \\ & \quad (5.00)^{***} \quad (0.08) \\ & \quad [1.2092] \quad [-0.0121] \end{aligned}$$

$$R^2 = 0.9638; \quad DW = 1.78$$

The overall statistical quality of the estimated equation is reasonably good, judged from such test-statistics as the R^2, the Durbin-Watson statistic, the signs and the t-values of the coefficients.

What is more important is that the coefficient of KO in the above equation not only bears a negative sign but also is satistically significant at the one per cent level even on a two tailed t-test- This result is of crucial importance for the main issue raised in the present paper — the link between the formal and the informal credit markets and the effectiveness of official monetary-credit policy. The statistically significant negative coefficient of KO suggests that this link is not as weak as it is sometimes asserted to be by many authors. More specifically, it implies that a restrictive credit policy *does* lead to an increase in the interest rate in the informal market, or, in other words, the impact of restrictive credit policy is transmitted to the informal credit market in the form of a higher cost of funds. Considering the absence of any empirical evidence on this issue in the Indian context, this certainly is an important empirical finding with potentially important; implications for policy.

Since our series for YO and YU for the period 1951-52 to 1959-60, are synthetic constructs based on underlying estimates by the CSO of value added by sector of origin, we decided to test the sensitivity of our estimated equation by re-estimating it on a truncated sample period, 1960-61 to 1976-77, for which the series on YO and YU are obtained directly from published National Accounts data, and involve no reconstruction on our part. Our estimate of equation (9) for the truncated sample period is as follows;

$$\begin{aligned} RI = {} & 10.35 + 3.5202D70 \\ & \quad (2.81)^{***} \\ & - 0.54931RO - 0.00230KO \\ & \quad (1.53)^{*} \quad (3.54)^{***} \\ & \quad [-0.2978] \quad [-0.7215] \\ & + 0.00243YO - 0.000001YU \\ & \quad (3.41)^{***} \quad (0.01) \\ & \quad [1.3375] \quad [-0.0014] \end{aligned}$$

$$= 0.9305 \qquad DW = 2.03$$

Except for minor differences, the equation for the truncated sample period is remarkably similar to the one for the full period. In particular, the coefficient values of the two equations ore reasonably close.to each other, suggesting that the underlying relationships postulated in our basic model have remained fairly stable over the entire sample period.

Armed with these empirical results, we are now better placed to assess the validity of the alternative versions suggesting the impotence of restrictive monetary policy.

In the first such version, it may be recalled, the supply of informal market credit is believed to be perfectly elastic, leading to the conclusion that changes 'in the formal credit marker have no impact on the going rate of interest in the informal market. This conclusion is belied by our empirical results. It can be seen from the estimated version of equation (9) that an increase (decrease) in the supply of commercial bank credit, KO reduces (raises) the rate of interest in the informal credit market, RI So our results lead us to reject this first version. They also permit us to return a negative verdict on one of the extreme cases of the second version, involving shifts in the supply of informal sector credit due to variations in availability of black funds. This is the one which analytically reduces to the case of a constant RL invariant to changes in the supoly of commercial bank credit, or, for that matter, any other factor in file forma! credit market

A second extreme case of the "black liquidity version" entailed shifts in the value of 'B' in equation (5b),, which exactly offset changes in the supply of commercial bank credit. In effect, this view posits a relationship

of the form:

$$B = \alpha_0 + \alpha_1 KO$$

By substituting for B in (5b) and solving our system of equations lor Ri we get:

$$RI = \left(\frac{a_0 + b_0 + d_0 + \alpha_0}{g}\right) + \left(\frac{a_1}{g}\right) RO + \left(\frac{a_2}{g}\right) YO + \left(\frac{b_2 - d_2}{g}\right) YU - \left(\frac{1 + \alpha_1}{g}\right) KO$$

This is simply a modified from of equaiton (9), For variations in B to exactly neutralise the effect of a change in the supply of commercial bank credit, KO, on the rate of interest in the informal market, RI, the value of in the above equation must be — 1. But, in that case, the coefficient of KO in the estimated version of equation (9) should not he significantly different from zeo. Ye'. our econometric estimate of equation (9) yields a coefficient of KO. which is negative and statistically significant at the one per cent level even on a two tailed t-test. This allows us to reject the mill hypothesis that the, coefficient of KO is zero, Hence, we can reject the extreme form of the hypothesis which credits black liquidity with the power to nullify the effects of official monetary-credit policy.

Our empirical analysis does not permit us to test for less extreme forms of the "black funds hypothesis". We may however be skeptical of the view that changes in the availability of black funds lead to large random shifts *in* the supply function for credit in the informal market. For, if this were so, it would be highly unlikely that we would have obtained statistically significant estimates of the parameters of equation (9)

The third and final version of the views suggesting impotence of restrictive moneary-credit policy hypothesis complete segmentation between the formal and the informal credit markets, We have shown, in Section If, that this version implies an equation for RI with YU as the sole explanatory variable — that is, equation (7). We estimated this equation for"the full sample period obtained the following results:

$$RI = 9.30 + 0.00032\ YU \quad (16.58)^{***}$$

$$\overline{R^2} = 0.959;\ DW = 0.475$$

While both the value of R^2 and the t-statistic for the coefficient of YU are impressively high, the the Durbin-Watson statistic displays an extremely low value. The very low value of the Durbin-Watson statistic suggests a *high* degree of first-ordcr serial correlation in the residuals, which may be attributed to the omission of important explanatory variables. Thus, on balance, and especially in comparison to the estimated version of equation (9), the above equation is of "poor" statistical quality and cannot be marshalled to support the hypothesis of wholly segmented credit marketes.

IV

Conclusions

In this paper, we have tried to tackle the issue of whether the existence of an informal credit market and "black liquidity' undermines 'he operation of official monetary and credit policy at the aggregate level. To address this issue, we formulated a simple model which characterises demand and supply in the formal and informal credit markers as well as the links between them. In a nutshell, the model is cast in terms of a fix-price 'credit rationed', commercial bank credit market, and a 'flex-price' informal erelit market — the links between the two being established by the spill-over of excess demand from the former to the latter. We then identified those parameters of the model, the empirical magnitudes of ,which are crucial for assessing the efficacy of official monetary-credit policy in altering the cost of funds in the informal market. Finally. we estimated those parameters using annual time-series data from the Vidian economy for the period from 1951-52 to 1976-77. We can sum up the major conclusions of our model specification and econometric estimation as follows.

(a) Contrary to a view held in some circles, we find that official monetary-credit policy has substantial effects on the informal credit market. More specifically our empirical results suggest that variations in the stock of commercial bank credit to the private sector have statistically significant effects, in the opposite direction on the rate of interest in the informal market. In terms of our model, the transmission mechanism of these effects runs as follows: A reduction in the stock of. commercial bank credit to the private sector leads to an increase in the excess demand in the commercial bank credit market, which then spills over to the informal credit mark; and thereby leads to an increase in the rate of interest in the latter market.

(b) Within the framework of our model, we showed that *the* view that the existence of informal credit market and "black liquidity" renders monetary-credit policy impotent requires certain *extreme* assumptions regarding, one or other of the structural relations in the credit markets. We considered three such "special cases" and implications. They are:

(i) An infinitely elastic supply of credit in the informal credit market (this may be attributed either to the underlying structure of supply in this market or to shifts in the supply function due to variations in "black liquidity" which bring about the same result);

(ii) a negative and unitary coefficient relating the supply of informal credit to the availability of commercial bank credit, brought about by offsetting shifts m the availability of black liquidity" (or otherwise)- and

(iii) complete dichotomy between the commercial batik credit market and the informal credit market represented, say, by the invariance of demand in the latter market to variations in the excess demand in the former.

It appears that none of these special cases finds empirical support in the Indian context. In contrast, the more eclectic specification of the links between the commercial bank credit market and the informal market that we propose in this paper provides a reasonably good set of working hypotheses.

As we said earlier, our exploration *of* these issues *has* been based on a relatively simple (some might say simple-minded!) model. We conclude by outlining some of the obvious limitations of our work — limitations which may help guide the directions of future research. First, our Credit-rationed view of the commercial bank credit market may not be appropriate for all periods; in certain years *the* volume of commercial bank credit may

have been demand-determined. In principle, our model could be embellished to handle this problem, Second, our postulated supply and demand equations are linear; alternative functional forms can be tried. Third, our modelling of the infromal credit market attributes a degree of homogeneity to that market which may be questioned. Fourth, the ability of the average "bazar bill rate" to represent, adequatey the cost of funds in 'he informal credit market may be challenged; further research can be usefully directed to constructs more appropriate indices. Fifth our spcifications of supply and demand for credit in the two markets do not allow for any expectational factors which might influence the rates of interest in them. In particular, the role of inflation expectations is omitted. This emission may not be of consequence in our specification of the formal sector credit market, where it is the *differential* between two rates of interest which is believed to matter, and thus the introduction of any inflation variable would cancel out. But the lacuna may be relevant to our specification of the informal credit market. Sixth. our treatment of "black liquidity" and its consequences has been, perforce, somewhat indirect. Until more information and insight is gained on this phenomenon, it is difficult to conceive a more direct approach. Finally, while we believe we have established a presumptive case arguing for the efficacy of official monetary-credit policy in influencing expenditures, financed through both formal and informal credit channels, we have not been able to address the issue of uneven or discriminatary impact of aggregate monetary policy on different sectors, owing to their varying sources of finance.

All of these are potentially serious limitations of our study, which call further work. But, given the existing paucity of empirical studies on this set of important macro-economic issues, we are emboldened to offer the present exercise as a preliminary step towards empirical analyses of the links between the formal and the informal credit market in the Indian economy.

Notes

[For protecting us from at least one elementary error, we are indebted to Ashok Lahiri. We are also grateful for comments to Raja T Chelliab. For all remaining errors and the views expressed in this paper we alone are responsible.}

1 Some writers prefer the label "unorganised credit markers" to "informal credit markets". We display an opposite preference, mainly because because the credit market in question is highly or* ganised.

2 Our paper does not address the question of the destabilising potential of the informal credit market and black liquidity for official *selective* credit policy.

3 The organised sector of the economy is defined to include: plan tation agriculture, forestry and logging, registered manufacturing, about half of construction activity, ail of electricity, gas and water supply, railways, communication, slightly under a third of "other transport and storage", the overwhelming bulk of banking and insurance, public administration and defence, and about half of all o her services. The remainder of the economy constitutes the "unorganised sector". This classification is adopted from the *National Accounts Statistics* (1982), published by the Central Statistical Organisation (CSO).

4 In principle, the supply of funds could also be a function of the income originating in the organised sector of the economy. However, this would not affect the form of the key equaion estimated in our study or the interpretations with respect to the efficacy of monetary policy derived from it.

5 However, one may specify the sign of g *a priori* by resort to the stability condition in the informal credit market. To illustrate, consider a reduction in commercial bank credit, KO. All other things remaining the same, this leads to an increase in the excess demand in the commercial bank credit market (through equation 3), thereby leading to an increase in the demand for informal market credit (through equation 4). Given that the demand and supply functions in the informal credit market have the slopes hypothesised in equations (4) and (5), respectively, the increase in the demand for informal market credit has to lead to a higher interest RI. By implication, the derivative of KO in equation (9) hag to be negatively signed which is the same thing as a positive g.

6 It may be worth mentioning here that we included ajfope dummy, defined as equal to KO.D70 (both along with the shift dummy, D70 and without it) in our regressions to check whether the revision in the data, besides causing a shift in the time-profile of KO, has also caused a change in its slope. Statistically, both the regressions with the slope dummy turned out to be much inferior to the one without it. Perhaps, this result indicates that there has not been a change in the slope of KO consequent on the data revision.

7 In what follows, the figures in the round brackets below the coefficients are the t-values and those in the square brackets are the elasticities of RI with respect to the relevant variable computed at the sample means. **** ** and on the round brackets denote that the respective coefficient is statistically significant (on a two-tailed t-test) at the one per cent, *five* per cent and ten pet cent levels respectively. KO, YO and YU are in Rs crores at current prices, while RO and RI arc measured as percen ages per annum.

S It is passible to take account *of* such 'regime changes' in the commercial bank credit market in an econometric model by using the method of 'swiching regressions' See Maddala (1977, pp 594-396) and the related articles cited therein].

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