A NOTE ON CREDIT DEMAND

by

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Abstract

This note is a small part of a much broader study on the determinants of the demand for commercial bank deposits and the credit by the private sector in Barbados. The aim of the study is to specify a model which links the supply of loanable funds to the demand of the ultimate users via an interest rate or range of rates that incorporates the corporate decision behaviour of the commercial banking sector. This is a brief look at some of the literature.

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A SURVEY OF THE LITERATURE

The general trend in economic literature has been to concentrate on finding the demand for money. Since 1938, when A.J. Brown published his first work on demand for money studies, there has been a proliferation of literature on the topic. Yet, despite emphasis on credit control during the 1970's (UK) and the increasing reliance on credit control as a form of monetary policy in the past decade, comparatively little work has been done on credit demand. The common view has been that the demand for credit is merely a mirror image of the demand for money. However, recent theoretical arguments (Bunner, 1971 and Laidler 1991) refute this view, recognising the restrictiveness of the assumptions that underlie this theory. The credit view put forward by Hawtrey (1928), Freidman (1983), saw bank credit as far more important than money in driving economic activity, and is gaining prominence in the literature. In the Caribbean as well , most of the literature looked predominantly at the demand for money, although there were a few studies which analysed various aspects the loans market namely Bourne (1984) Worrell (1983) and Ramkissoon (1988). Most of the studies in the region as well as in the developed nations concluded that the loan market was demand determined.

The first work on the demand for credit was published in the 1930's by Tinbergen. Since then major works coming to light included Melitz and Perdue (1973), Anderson (1964), Goldfield (1966) and Jaffee (1971). According to Melitz (1975) the literature on the demand for credit can be grouped in three categories neo- Keynesian neo-Fisherine and the Portfolio approach. The neo Keyesian approach was used mainly by Anderson (1976), Goldfeld (1966) and Jaffee (1971) and looked mainly at the balance sheet of the firm in specifying the demand for business loans. In these studies the assets side of the balance sheet of firms was assumed to be financed by both long-term liabilities and short-term commercial bank loans. Short term loans were also assumed to bridge the gap between the desired and the actual finance of the firm, caused by slow adjustment to equilibrium. These studies all seemed to show that the demand for commercial bank credit is dependant on the assets of the firm. The most important determinants were inventory stock real, capital stock and liquid assets. Also the cost of financing, both long term and short term financing appeared to be of crucial importance. This approach was limited in the context of the bigger study on the demand for monetary liabilities and credit as it. concentrated on only business loans but the implications of the importance of the lending rate (ie. the cost of financing) could not be ignored.

The Fisherine model, used by Melitz and Pardue (1973) regarded the household as the main decision making unit. It approached the specification of the aggregate demand for commercial bank loans from a micro economic perspective, looking at the credit behaviour of the individual before proceeding to an aggregated demand. This approach used a process of utility maximisation to derive the functional form of the demand for credit equation. Like the Keynesian model this approach only explain the behaviour of one of the users of credit adequately, in this case the household, and does not offer much in terms of explaining the behaviour of firms.

The third approach, the portfolio approach, formed the frame work of studies by Parkin et al (1970), Hester and Pierce (1975), and Wood (1975) and unlike the previous approaches considered the banking firm rather than the private sector to be the main decision making unit. Like the Fisherine approach, this model used a utility maximisation function, constrained by the balance sheet of the banking firm in this instant, to drive commercial bank asset supply function. The major flaw in this argument is that it assumed that banks exist in a perfectly competitive market. Also it ignored the fact that the asset choice behaviour of the banks depended on their interaction with the private sector.

This note was not intended to be an exhaustive examination of the available literature but was meant to highlight the contribution of a few authors to the relatively limited body of knowledge on the topic and to provide a base for the specification of a demand for credit function for a much bigger work.

In the Caribbean there have been a few studies done on credit demand. Of these the study on the Supply and Demand for Business Loans in Trinidad and Tobago by Ramkissoon (1988) is particularly interesting. Like the neo Keynesians, Ramkissoon also viewed the firm as the main decision making unit, however, he goes beyond looking at the bare balance sheet of the firm and analyses external factors that influences the firms' decision making process. Also unlike many of the previous studies in the area, Worrell(1993), Bourne (1979)and (1984) Clinton and Masson (1975), Ramkissoon does not attempt to determine whether the loan market is demand or supply determined but specified both a loan demand and a loan supply schedule and estimated the equations.

In formulating his supply equation, Ramkissoon recognised the work of Bourne (1977.1984) and Clinton and Masson (1975) on the dominance of commercial banks in the financial system and extent to which the loan rate is manipulated by them. While not making a judgement on the exogenity or endogenity of the loan rate the author assume that there is some degree of simultaneity in the determination of the loan rate of interest and the supply function and consequently the estimation of the supply function required the use of simultaneous equation technique. The loan rate was viewed as endogenously determined to the banking system as a whole and perceived to be sticky downwards with it s present position being highly dependant on the rate in the previous period.

Ramkissoon specified his supply function as follows: -

$$BL^s = f(RL, WRTS, AVD, BL^s_{-1}) \quad (+, -, +, +)$$

where

BL^s	the supply of business loans
RL	the weighted average loan rate
WRTS	the weighted average rate on treasury bills and other special deposits
AVD	average bank deposits

In determining the demand for business loans the only viable alternative funding for business was retained earnings which were measured by the operating surplus. Also previous work by Laffont and Garcia (1977) seemed to indicate that an index of domestic production was a better measure of economic activity than GDP. However, upon examination this variable proved to be rather unreliable and GDP was used. The functional equation for the demand side of the loan market was as follows: -

$$BL^d = f(RL\ OS\ GDP)$$

(- - +)

BL^d business loan demand

OS operating surplus

GDP gross domestic product at current prices

The study was essentially an equilibrium one, however some attempt was made to examine the disequilibria alternative using simple directional method.

The results for the equilibria model, using 3SLS (Three least squares technique) showed RL to be statistically insignificant. The real rate of interest was also tried and this also proved to be insignificant. This result concurs with that of Rock and Worrell (1983) but goes against that of some of the earlier writers in the more developed countries. Both OS and GDP provided favourable results, with GDP being shown to have the greatest influence on the demand for loans. On the supply side RL also proved insignificant but results appear to indicate that the supply of loans and the loan rate may be determined simultaneously. WRST was significant only with 3SLS, AVD gave better results when lagged by one period and BL^s_{-1} proved very significant indicating rapid adjustment between the actual loans in previous quarter and the desired balances in the present quarter. The results using the disequilibria techniques however were significantly worst than that of the equilibria model.

Whilst this work excluded the input of householders and so did no provide a base for the formulation of a total demand for credit it does provide a brief insight to the question of whether supply or demand drives the loan market.

Melitz and Perdue (1973) utilised the Fisherine approach in their work deriving the equation for the demand for money from the general theory. Using I. Fishers model of individual credit behaviour the authors attempted to move systematically into an aggregate demand for commercial banks loans. However, this approach viewed the household as the basic decision making unit, therefore the authors had to modify the Fisherine model to incorporate behaviour of the firm. This was done by changing the utility framework in to one of production behaviour and corporate management. Another interesting point was the use of permanent and transitory income as the scale constraints for demand for commercial bank loans. Also they framed the demand equation in real terms whilst the supply equation was in nominal terms. The demand for credit is specified as follows: -

$C_d/P_e = f(Y_{pb}/P_e, Y_{tb}/P_e, r- p_e, t)$

$\quad + \quad - \quad - \quad \pm$

where

Cd	dollar value of credit demand
P_e	expected price level
Y_p	current dollar permanent income
Y_t	current dollar transitory income
p_e	expected rate of inflation
r	nominal interest rate
t	portmanteau term
b	borrowers

Thus where the desired ratio of commercial bank loans to total credit was dependant on the relative cost of funds and other factors, called Q and assuming a simple linear demand equation, then the demand for commercial bank loans was given as: -

$$L_d/P_e = \alpha_0 + \alpha_1 Y_{pb}/P_e - \alpha_2 Y_{tb}/P_e - \alpha_3(r- p_e) \pm \alpha_4 T \pm \alpha_5 Q$$

The determinants of the supply of commercial bank loans was postulated to be: -

$L_s = g(S, r_c, r_b, CD)$

$\quad + + - \quad +$

L_s	current dollar value of loans supplied by the commercial banks
S	scale constraint
r_c	interest rate on commercial bank loans
r_b	opportunity cost of lending for commercial banks
CD	cost per dollar of bank deposits

In linear form this was:-

$$L_s = \beta_0 + \beta_1 S + \beta_2 r_c - \beta_3 r_b + \beta_4 CD$$

Metilz and Perdue encountered some problems in the estimation of the equations. These included the formulation of a measure of for Y_{pb}, Y_{tb}, T and Q. It was recognised that there were varying degrees of tastes and desire for credit especially between firms and individuals and they believed that an index of business activity would prove useful. To this end they followed the work of Goldfeld ( ), Hendershott ( ) and Budzeika ( ) and used inventories and fixed investment partly as indices of T and Q. They also used seasonal dummy variables as indices of tastes for credit. To find a measure for Y_{pb}, Y_{tb}, they used Freidman's technique of deriving permanent income and adjusted this measure to compensate for the previous inclusion of fixed investment (FI) and inventories (V). Therefore $Y_{tb} = (Yt/y)(FI + V)$ was used as a proxy for Y_{tb} and Y_{pb}/P_e as a proxy for Y_{pb}/P_e

In the supply function the scale constraint (S) was defined as total commercial bank assets less legal reserves and loans, and the opportunity cost (r_b) of lending was measured by data series of commercial banks lending rates.

One very interesting result coming out of the study was the apparent validation of the role of interest rate as a determinant of the supply of credit. With the exception of the interest rate, all the variables in the model performed well. The interest rate elasticity of demand was low but this may be due to the statistical variation in the modelling of the cost of credit.

M.M. Fase (1993) study on <u>The Demand for Commercial Bank Loans and the Lending Rate</u> focused on short term lending to the private sector in the Netherlands. He assumed that the market for credit was demand sided and that the lending interest rate was used to equilibrate the demand for credit to the banks desires portfolio balance and proposed a demand equation: -

$$CL/P = \alpha\, SA^{\gamma_0} \exp(\gamma_1 r^*_B + \gamma_2 r_L)$$

(+ on γ_1, - on γ_2, + on γ_0)

where

CL/P is the equilibrium real stock of out standing debt of the private sector to the commercial banks

SA the volume of sales,

P the price level

r_L the yield on long term government bonds

r^*_B the lending rate (unobservable)

In order to complete his model Fase also proposed a specification for the loan rate. He assumed that the aggregate loan rate charged by commercial banks was actually a range and not a specific point. He also assumed that it was related to the discount rate and the yield on alternative earning assets and reflected the money market conditions in the Netherlands, the openness of the money market and the control of the Nederlandsche Bank. He gave the functional from of the determination of the loans' rate as: -

$$r^*_B = f[\, D/BT,\ r_D,\ r_E,\ r_k - r_D,\ (r_B - r_D)_{-1}]$$

D/BT is the proportion of short term deposits of the domestic sector in the banking system total liabilities

r_D the discount rate

$r_k - r_D$ the flexible surcharge applied when the Nederlandsche Bank's discount rate is lower than that of the money market.

r_E the net yield on three month Euro-guilders

The volume of sales and the income of the household was estimated by the gross value added and the price level by the price deflator of sales by enterprises.

The most striking result in this study was that the that the loan rate was significant in determining the demand for credit and thus the discount rate of the Bank which was itself a major determinant of the loan rate was also an important in the determination of credit demand. Whilst this result was interesting from a theoretical point of view, its application to our types of economies is limited and depended on the extent to which the discount windows of our Central Banks were utilised (Worrell, 1983).

Worrell (1983) proposed a model of the demand for credit and the determinants of the loan interest rate in his study on Monetary Mechanisms in the Open Economies: A Model for the Caribbean. This model gave the determinants of credit as the level of economic activity, measured by GDP, and the cost of credit (r_l), where r_l was dependant on the discount rate, the commercial banks deposit rate and a foreign lending rate. The results like many of the previous studies concurred that the demand for credit depends on the level of economic activity and interest rate had little or no influence on the demand for credit. It was found that in Barbados the loan interest rate was influenced by Central Bank's accommodation and the loan rate in the previous period.

CONCLUSION

The papers provided valuable insight into the possible formulations of the demand for credit function. Whilst the issue of the influence of interest rate appeared somewhat undecided, the majority of literature based in the Caribbean agreed that it had little influence on the demand for credit. The level of economic activity played a major part in driving the demand for credit. This can be adequately measured using GDP. What may be necessary is to follow Melitz and Perdue and formulate the equation in real terms. There is also a need to examine the literature on incorporating an inflation variable in the function.

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