

BUSINESS FINANCIAL BEHAVIOUR AND
THE CREDIT SYSTEM IN GUYANA

by
Compton Bourne

Introduction

Plans for the economic development of the Caribbean usually involve, implicitly or explicitly, some presumption about the behaviour of business firms. Thus, for instance, transformation of the productive structure implies the relative and sometimes absolute decline of some firms and some industries, and the corresponding growth of others. In addition, the relative standings of firms in various industries determines the structure of product and factor markets with not insignificant implications for relative factor shares, income distribution, monetary stability, and more generally, economic development. From this perspective, therefore, the micro-analysis of business behaviour constitutes an important, even if not so far, integral element in the 'development' effort.

Yet with the exception of the multinational corporation studies of Girvan and Beckford's study of plantations, little analytical effort has been devoted to the description and explanation of business operations in the Caribbean. The deficiency is even more acute with respect to the financial aspects of business activity. The neglect is particularly surprising in view of the strongly-rooted policy orientation of 'academic' economic thinking.

The explanation of this phenomenon we believe is not a failure to recognise the importance of either business behaviour in general or business financial behaviour in particular. The

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explanation is more to be found in the perhaps transitory preoccupation with institutional sources of authority, e.g. the bureaucracy, and the more obvious centres of economic and political power such as the banks and plantations - a preoccupation perhaps characteristic of ex-colonial peoples. As a result, in the general area of financial analysis, the literature abounds with discussions of commercial banking and monetary policy - sources of credit supply and 'controllers' of supply - with very little direct treatment of the demanders and recipients of loanable funds. Yet monetary policy though actually conducted through financial institutions is essentially directed at businesses and households, the primary units of economic behaviour. To fully understand the operation of monetary policy, therefore, it is necessary to understand not only the vehicles for its transmission but also the response of the primary units to the policy-induced changes in financial institutions portfolios. At another level of analysis, proper appreciation of the scope for and relevance of financial policy requires some knowledge of the extent to which demanders of loanable funds are reliant on credit for the realization of their expenditure plans.

However, when attention is focussed on the business sector, the paucity of theoretical propositions and empirical generalizations is revealed in a particularly stark form. What passes for theorizing is often nothing more than simple transplants of Euro-American ideas, more especially those stemming from the 1950s studies of business investment determination in the U.K. and the U.S.A. This state of theoretical deficiency is not surprising for the development of

relevant, i.e. empirically valid theories, is part of the continuous movement between hypotheses and data.

And in our situation the data is just not available or easily accessible. No doubt, the scant availability of a solid body of data on variables such as profits, savings, income, and so on in most Caribbean countries has been a major retarding force. Much responsibility for the compilation and presentation of adequate statistics series consequently devolves upon the statistical agencies of government and the monetary authorities. However, until they accept and discharge that responsibility, the research worker has no option but to compile his own data series. It is this latter presumption that explains the form of this study.

The project we report here (in part) is a cross-section analysis of business firms in selected Caribbean countries. It is intended as a step towards providing basic descriptive material on the non-financial business sector, as well as a preliminary approach to the formulation and testing of central hypotheses about business financing practices and patterns.

In what follows we describe firstly, the nature of our sample approach and the salient financial characteristics of the set of firms investigated. In succeeding sections we discuss and attempt to establish in a statistically rigorous manner the determinants of the demand for loanable funds, and the supply of credit by the main sources. Finally, we sketch some implications of our

results for the conduct of financial policy.

Because of severe computational difficulties encountered at a critical stage, we have had to confine this presentation to data pertaining to the year 1969. However, we propose to incorporate results for other years into a fuller report to be presented in the not too distant future.

Sample Methodology and Characteristics

The primary aim of this section is to present information on the financial practices of our sample units with the objective of isolating the financial magnitudes that dominate the behaviour of the firms. It is also convenient to describe here the basic method of the sample as well as several indicators of the range of our coverage.

i) Sample Selection and Coverage

The basic sample frame consisted of those 240 firms engaged in business other than the provision of financial services and listed as members of either the Georgetown Chamber of Commerce or the Guyana Manufacturers Association in 1971. The use of this frame was the preferred alternative to the construction of a more detailed list from the official register of companies, bearing in mind the lack of timeliness and accuracy in the official register. In our opinion, the sample frame chosen cover the bulk of the established business sector and excludes absolutely only the corner-shop grocery and the 'fly-by-night' concern. After a close scrutiny of the basic frame, we decided to delete some firms if (a) they had not been established before 1969; (b) they were government corporations; and (c) their operations appeared to be on too small a scale to warrant study at this level. The number deleted turned out to be quite sizeable but left intact those firms responsible for a large proportion of manufacturing, distribution, construction, hotelling and other business activities.

Altogether, questionnaires were despatched to one hundred and nineteen business units. Since two of these represented a total

of 16 firms, the total number of firms sampled was one hundred and thirty-two - a number well over one-half of the basic population. The response rate was roughly 50%, with a noticeably higher degree of non-response from smaller firms and those within the distribution sector. Some respondents submitted only partial information; and for some, the data was insufficiently detailed and accurate for statistical analysis. Furthermore, the predominance of one group of companies in the economy tends to distort any general conclusions and therefore led us to exclude that group from some analyses. In most cases, therefore, the results reported in what follows are based on data pertaining to roughly 44 firms.

Of these, twenty-four have their main sources of revenue in manufacturing, fourteen in wholesaling and retailing, and six in other lines such as hotelling and construction. It is important to note however, that many firms engage in both manufacturing and distribution activities. Within the manufacturing category, product types include various food products, sugar, rum, molasses, non-alcoholic beverages, textiles and textile goods, furniture and fixtures, printing, chemical products, metal products, and lumber. There is thus a fairly broad coverage of industrial activity despite the small size of the sample.

In terms of other indices, notably total assets and ages of the firms, the sample appears to be not atypical of the population. This study chose to use total assets as the indicator of the sizes of firms, though we are cognisant of the claims of other competing indicators such as employment, sales revenue and net worth. The

choice in any case can be justified by the significant and positive correlation revealed in our preliminary investigations of the relationship between various indicators of size.

Tables 1(a) and 1(b) describes the distribution of firms for the economy as a whole, as well as for the manufacturing and distribution sectors. It is immediately apparent that the sample is weighted towards firms in the lower size categories, though the wide spread of the sample - \$14.00 thousand to \$11,401.00 thousand - should also be noted. One additional feature worthy of comment is the concentration of total assets among relatively few firms. The largest quartile firms account for not less than 80% total assets. This is so for both the Manufacturing and Distribution sector, as well as for the sample as a whole. Though the evidence is not by itself indicative of monopoly power as the latter is usually defined, i.e. in terms of market share of production and/or sales, it does indicate that a few large firms predominate in the economy, and is strongly suggestive of their ability to determine in large measure the structure of product and factor markets.

Most (34 out of 44) of the firms in the sample were established in the post World War II period (Table 2). Furthermore, a considerable number of them have been in existence for less than ten years. On the other hand, roughly one-fourth of the sample were established more than 30 years ago. Table 2 provides the exact distribution of firms over various age categories; it also provides an estimate of the mean age of the sample.

Finally, two remarks can be made about ownership structure. Firstly, the private limited liability form of ownership or company

TABLE 1(a). Size Distribution of Firms, 1969

Total Assets of Class (thousand \$)	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Others</u>	<u>Economy- wide</u>
(Lower limit of 14.00) < \$100	5	1	0	6
101 - 500	9	7	3	19
501 - 1000	2	2	1	5
1001 - 2000	5	0	1	6
2001 - 4000	1	2	1	4
4001 - 6000	1	2	0	3
> 6,000 (Upper limit of 11,401)	1	0	0	1
Σ	24	14	6	44

TABLE 1(b). Selected Size Characteristics of Firms, 1969

	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy- wide</u>
Mean Total Assets (\$000)	1149.92	1285.22	1078.15
Proportion of Total Assets accounted for by the bottom Quartile Firms	1.38%	2.90%	2.03%
Proportion of Total Assets accounted for by the top Quartile Firms	86.18%	82.02%	80.95%

TABLE 2. Frequency Distribution of Firms by Ages in 1969

Year of Establishment	Age Category	<u>Frequencies</u>
1965 - 1969	1 - 5 yrs.	5
1960 - 1964	6 -10 "	12
1950 - 1959	11 -20 "	7
1940 - 1949	21 -30 "	10
1920 - 1939	31 -50 "	7
1898 - 1919	51 -65 "	<u>3</u>
		<u>44</u>

Mean Age = 21 years

organisation is the most prevalent one. Thirty of the forty-four firms were of this type, with the remainder distributed as follows: Public Limited Liability (7), Partnership (3), and Sole Proprietors (4). Secondly, our sample contains a fair proportion of foreign-owned firms - seven ⁷ out of forty-four.

ii) Financial Patterns

The quantitative depiction of patterns of business financing inevitably encounters problems of concepts and measurement.

Firstly, there is the problem of deciding whether to use the net flow i.e. period changes, or the gross flow i.e. period levels concept of finance. The net flow concept in some cases oversimplifies the financing process in that it does not incorporate inter-period changes which may be quite significant. For instance, comparison of end of period balance sheets may conceal substantial deficit financing by a business if at the end of the accounting period the firm had paid off its debts. Furthermore, the 'stock' observed at a point in time may be the crystallization of a continuous reduction and augmenting of financial balances at very discrete time intervals. Thus, it can be argued that it is the gross flows of funds that are important to a firm's operation during a year. Consequently, the corresponding impression one gets on the financial practices of the firm may be considerably altered.

On the other hand, the gross flow method runs the risk of overstating the strength of a firm's financial position.

By and large, however, we sidestepped this problem by requesting information on sources and quantities of finance utilized during a given year. This method yields generally unambiguous results, except for the tax provisions item. As far as the latter is concerned the difficulty encountered is one of deciding whether business treat funds set aside for future payment of taxes as a usable sources of funds - temporary or not - or whether they do not.

groups internal finance accounted for not more than 44% of total financial capacity in 1969. For the manufacturing sector, it also appears that larger business finance a larger proportion of their activities internally. The converse holds for the distribution sector. No significant variation with size is evident for the sample as a whole.

Attention naturally turns to the various components of internal and external finance. Tables 4(a) to 8(b) contain frequency distributions and selected distribution statistics (the mean ratios, and quartile means) for the sample, and its major industry components.

In general, it is to be noted that

- 1) Retained Profits is the foremost sources of internal finance, with an economy mean of 35%, and a median of roughly similar magnitude.
- 2) Depreciation Reserves follow very closely in order of importance - its economy mean being 35%, but with a considerably lower median value.

TABLE 3. Internal Financing as a % of Total Financing

	Manufacturing	Distribution	<u>Economy</u>
Average % Ratio	44.18	30.74	33.92
Average % Ratio of lowest Quartile firms	31.23	42.99	27.07
Average % Ratio of top Quartile firms	50.79	21.47	29.31

TABLE 4(a). Frequency Distribution by Retained Profits/
Internal Finance Ratios, 1969

% Ratio of Retained Profits to Internal Finance	Frequencies		
	Manufac- turing	Distri- bution	Economy
00.00 - 00.99	4	6	11
1.00 - 20.00	5	3	9
21.00 - 40.00	2	0	4
41.00 - 50.00	4	0	5
61.00 - 80.00	4	3	7
81.00 -100.00	4	2	7
	<u>23</u>	<u>14</u>	<u>43</u>

TABLE 4(b). Selected Distribution Statistics of RP/IF

	Manufac- turing	Distri- bution	Economy
Mean RP/IF	40.38	30.39	35.14
Mean RP/IF of bottom Quartile firms	42.78	36.28	39.69
Mean RP/IF of top Quartile firms	23.28	42.43	29.49

TABLE 5(a). Frequency Distribution by Financial Reserves/
Internal Finance Ratios, 1969

% Ratio of Financial Reserves to Internal Finance	Frequencies		
	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
00.00 - 00.99	14	7	24
1.00 - 20.00	0	1	1
21.00 - 40.00	2	0	2
41.00 - 60.00	4	1	7
61.00 - 80.00	0	0	1
81.00 -100.00	3	5	8
	<u>23</u>	<u>14</u>	<u>43</u>

TABLE 5(b). Selected Distribution Statistics of FR/IF

	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
Mean FR/IF	23.21	36.49	31.75
Mean FR/IF of bottom Quartile firms	8.41	23.56	10.66
Mean FR/IF of top Quartile firms	36.32	33.20	39.84

TABLE 6(a). Frequency Distribution by Depreciation Reserves/Internal Finance Ratios, 1969

% Ratios of Depreciation Reserve to Internal Finance	Frequencies		
	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
00.00 - 00.99	1	3	5
1.00 - 20.00	9	5	16
21.00 - 40.00	6	2	9
41.00 - 60.00	2	1	3
61.00 - 80.00	1	0	1
81.00 -100.00	4	3	9
	<hr/> 23 <hr/>	<hr/> 14 <hr/>	<hr/> 43 <hr/>

TABLE 6(b). Selected Distribution Statistics of DEP/IF

	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
Mean DEP/IF	36.39	33.12	35.88
Mean DEP/IF of bottom Quartile firms	53.11	40.16	31.09
Mean DEP/IF of top Quartile firms	40.40	24.27	30.64

TABLE 7(a). Frequency Distribution by Bank Credit/
External Finance Ratios, 1969

% Ratio of Bank Credit to External Finance	Frequencies		
	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
00.00 - 00.99	1	1	3
1.00 - 20.00	0	2	3
21.00 - 40.00	4	2	3
41.00 - 60.00	1	5	6
61.00 - 80.00	8	0	3
81.00 - 100.00	9	4	15
	<hr/>	<hr/>	<hr/>
	23	14	43
	<hr/>	<hr/>	<hr/>

TABLE 7(b). Selected Distribution Statistics BC/EF

	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
Mean BC/EF	71.45	52.78	54.37
Mean BC/EF of bottom Quartile firms	81.17	51.00	71.93
Mean BC/EF of top Quartile firms	86.43	62.56	54.00

TABLE 8(a). Frequency Distribution by Trade Credit Received/External Finance Ratios, 1969

% Ratio of Trade Credit to External Finance	Frequencies		
	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
00.00 - 00.99	14	3	18
1.00 - 20.00	4	5	12
21.00 - 40.00	4	1	6
41.00 - 60.00	2	3	5
61.00 - 80.00	0	1	1
81.00 -100.00	0	1	2
	<hr/>	<hr/>	<hr/>
	24	14	44
	<hr/>	<hr/>	<hr/>

TABLE 8(b). Selected Distribution Statistics TC/EF

	<u>Manufac- turing</u>	<u>Distri- bution</u>	<u>Economy</u>
Mean TC/EF	13.59	24.51	21.47
Mean TC/EF of bottom Quartile firms	6.19	14.78	12.45
Mean TC/EF of top Quartile firms	7.10	12.01	8.05

- 3) Few firms claim to have utilized their financial reserves in the year 1969; but those which did so were concentrated in the more than 40% categories.
- 4) Bank credit is the major form of external financing. The economy mean is 54%, with the manufacturing sector having a mean of 71%. It is to be noted too that very few firms reported the use of term loans, and that consequently overdrafts are the predominant form of bank financing.
- 5) Trade credit, though being of considerable importance for some firms was not utilized by nearly one-half of the sample.

The "b" sections of the tables also suggest -

- a) an inverse relationship between the size of firms and the share of retained profits in internal financing;
- b) a direct relationship between total assets and the share of financial reserves in internal financing;
- c) an inverse relationship between total assets and depreciation reserves as a proportion of internal financing;
- d) an inverse relationship between size and the share of bank credit in external financing for the sample as a whole, but a positive relationship for the two main sub-samples:

- e) a negative relationship between size and the share of trade credit in external financing for the whole sample and the Distribution group, and a positive relationship for the manufacturing sector.

Since the size of the firm seems to be an important explanatory factor for various financial variables, we intend to pursue its role more vigorously in later sections of this study.

Finally, another subsidiary issue which we reserve for later discussion is the influence of corporate structure and type of ownership on financial patterns. Here we confine ourselves to noting the patterns detailed in Table 9. There it can be seen that firstly, there is a considerable difference between the dependence on average of foreign-owned firms and locally-owned firms on external sources of finance. Specifically, the mean dependence of locally-owned firms is greater. Since the difference in dependence may in fact be due to the greater weighting of public limited liability forms of ownership among foreign firms, we computed mean ratios for four main types of corporate structure. By and large, the degree of internal financing varied directly with the increasing sophistication of the corporate structure.

As further attempt was made to see whether there were significant differences in the weights of particular forms of finance between firms of different ownership and corporate structure. The following prominent features were discerned:

TABLE 9. Financial Patterns by Corporate Structure and Ownership

	Overall Sample Mean	Foreign- owned Mean	Local- owned Mean	Public Limited Liabil- ity Mean	Private Limited Liabil- ity Mean	Sole Pro- prietor Mean
(IF/TF)%	33.92	43.17	31.08	46.03	30.53	19.46
(RP/IF)%	35.14	10.21	41.38	24.66	32.42	68.36
(DR/IF)%	35.88	40.60	37.55	32.19	36.76	31.64
(FR/IF)%	31.75	50.50	23.74	43.15	30.81	00.00
(BC/EF)%	54.37	20.98	63.35	74.31	51.63	80.17
(TC/EF)%	21.47	35.27	15.41	16.19	23.00	9.21

- i) Retained profits were more important for locally-owned firms than for foreign-owned firms. Retentions were similarly more important for 'sole proprietors' and to a lesser degree private limited liability companies.
- ii) Depreciation reserves had a greater weighting for foreign-owned firms.
- iii) Foreign-owned firms, and those of the public limited liability type provided a greater proportion of their financing needs out of their financial reserves.
- iv) The utilization of bank credit as a proportion of total external finance was considerably greater for locally-owned firms than for foreign firms. No distinctive patterns were evident with respect to corporate structure.
- v) Foreign-owned firms utilised trade credit to a greater degree than locally-owned firms. No distinctive patterns were evident with respect to corporate structure.

The Demand for Credit

Granted the importance of finance to the productive activities of firms, one can postulate some kind of demand function for finance. Evidently the major explanatory variable would be the planned investment and stock expenditures. As projected levels of expenditures rise, so would the demand for finance. To satisfy this demand, firms can have recourse to either or both of two categories: own financial resources, and external funds. It can be demonstrated quite easily that the decisions as to the form of financing are interdependent.

Anderson [1964] and Duesenberry [1958] provide clear and essentially correct statements of the nature of financial decision-making. The treatment here uses their analytical framework.

Given a decision about non-financial expenditures i.e. stock and fixed capital expenditures, a firm may choose to increase its debts, or run down its existing stock of liquid assets, or increase the level of retained profits and depreciation reserves. Thus, the financial constraint may be formalized in gross flow terms by :

$$\text{EXP} = \text{D} - \text{L} + \text{IF} \quad (4)$$

where EXP is expenditures, D is debt, L is liquidity, and IF(=RP+DR) is internal finance. Apart from the obvious algebraic relationship, a firm has to take into account the relative costs of pursuing one financial policy as opposed to another, and these costs would affect its preferred debt accumulation, liquidity reduction, and "retentions" positions.

Debt accumulation theoretically involves two kinds of costs. Firstly, there are the interest charges on the loan, or the shareholder commitments to be met if finance is raised by equities. Secondly, there are some imputed costs. In the case of loan finance, one can impute costs to reflect the possibility that demand fluctuations, in a situation of fixed interest charges, may reduce the profitability of the firm and its dividend payouts with certain attendant risks associated with shareholders' dissatisfaction. Another imputed cost arises if the firm becomes a 'necessitous' borrower thereby resulting in the imposition by the lender of restrictions on the firm's decision-making. In the case of equity capital, additional flotations dilute the control of existing major shareholders.

On the other hand, the benefits of debt accumulation can be approximated by some combination of the expected profitability of the new expenditures and the costs of alternative financial strategies. Evidently, desired debt levels will vary directly with the level of planned expenditures and the costs of alternative financing methods, and vary inversely (on the assumption of perfectly competitive product markets) with the direct costs of debt accumulation.

The relationship between debt accumulation and imputed debt costs is also expected to be inverse. Altogether then, the desired debt function can be written generally as:

$$D^* = D^* (\text{EXP}, i_D, i_{\text{imputed}}, i_{\text{alt}}) \quad (5)$$

where i_D = direct interest costs

i_{imputed} = imputed costs

i_{alt} = costs of alternative financial instruments.

If we assume depreciation reserves to be rigidly linked to capital stock, retentions becomes the policy variable in internal financing. Retained profits carry imputed costs of shareholder dissatisfaction and takeover risks in the case of limited liability companies. Some investigators (notably Lintner [1956]) have elevated these costs to a position of high prominence by making the dividend-payout ratio the primary financial target, in which case retained profits become residually determined. In addition, there are the normal opportunity costs as measured by the rate of return on alternative financial assets. The benefits to retentions are those associated with the expected profitability of the project, together with the advantages to be derived from greater liquidity debt minimisation e.g. greater safety, lower interest payments, less dilution of control. Like in the case of desired debt, the preferred retention relationship can be written in general functional form:

$$RP^* = RP^* (EXP, i_{opp}, i_{imputed}, i_{alt}) \quad (6)$$

where i_{opp} = opportunity costs, measured by, say, the rate of interest on government securities or commercial bank time deposits.

Finally, the costs of liquidity reduction derive from the reasons for holding liquid assets (cash, government securities, bank deposits). Basically, a firm wishes to expedite its normal short period transactions such as paying for factor services, intermediate inputs, etc. So short-term financial assets are also a means of employing temporarily idle funds. Running down liquidity involves a cost in the form of a greater risk of being unable to meet current commitments, as well as the sacrifice of interest earnings on financial

investments. Thus, desired liquidity can be formalised:

$$LA^* = LA^* (EXP, i_{LA}, i_{alt}) \quad (7)$$

Algebraically, we can translate the desired levels of any financial instrument in terms of others. We do so for the variable of direct interest to this study:

$$D^* = D^* (EXP, i_D, i_{imputed}, i_{alt}, LA^*, IF^*) \quad (8)$$

By the use of a stock adjustment model which asserts that firms adjust with some delay to any divergence between desired and actual levels of an asset/liability, we can express the demand for debt at any point of time as a function of a set of interest rates and lagged stocks of the various financial instruments. Thus,

$$D = D(EXP, i_D, i_{imputed}, i_{alt}, D_{-1}, LA_{-1}, IF_{-1}) \quad (9)$$

with $\partial D / \partial D_{-1} < 0$.

So far the discussion has been theoretical. We now wish to apply this framework to the Guyana situation. In the earlier description of patterns of financing, it was noted that the major forms of external finance are bank overdrafts and trade credit. Our task therefore is to explain the demand for those two liabilities. We deal first with bank credit.

Bank overdrafts are a form of short-term debt. Its short-term nature leads to certain ambiguities about the direction of its relationship with existing internal financial capacity and liquidity. While the latter set of variables may remove the need for bank finance and therefore suggests an inverse relationship, they also for another reason suggest a direct relationship. As Anderson [1964, p. 41] argues, firms with outstanding short-term bank credit will be concerned with their ability to repay. "Ability to repay"

varies directly with the stock of liquid assets and internal financial capacity. Furthermore, bank credit may be visualized as freeing the firm's own resources for medium and longer term use. Consequently, the more liquid assets and internal financial resources a firm has the more willing it may be to incur short-term debt.

The cross-section nature of this study does not permit quantitative analysis of the role of interest rate effects since these will in general exhibit little, if any, variation across firms. Nonetheless, we can make a few remarks about the likely significance of interest rates. Generally, they are not expected to be important for several reasons. Firstly, product markets appear to be generally characterised by oligopoly and monopoly features, and by fairly bouyant and price inelastic demand conditions which jointly make for price flexibility in the upward direction. In this situation, firms respond more to demand conditions than to small increases in costs resulting from higher interest charges. Secondly, corporate holding of government and corporate securities does not appear to be sufficiently widespread for many firms to be affected by the opportunity costs of financial asset reduction. And thirdly, the precautionary motive for liquid asset accumulation may well outweigh the interest-income motive if commercial bank time deposits are not widely held.

The estimating equation incorporates transactions variables, beginning of period levels of liquid assets, internal finance, and short-term debt. Both stock expenditures (from now on represented by EXP) and turnover (SR) were tried as proxies for "transactions".

Liabilities under one year and trade debt were tried as the short-term debt variable. In addition, an attempt was made to see whether ratio indicators of solvency, and growth rates of profits and sales (over three years) had any significant impact on the demand for bank overdrafts. Separate regressions were run for the whole sample and its two main components, namely, Manufacturing, and Distribution. Some of the preliminary results are reported in Tables 9 to 11.

For the whole sample "Economy", stock expenditures did not fare as well as turnover; its coefficient of determination, R^2 , was 0.0409, and its slope coefficient was not significant at the 25% significance level. It is evident however, that the level of business activity is an important explanation of the demand for bank overdrafts. Nonetheless, financial factors endogenous to the firms appear to be more important. The level of liquid assets and the level of internal finance together explain about 21% of the variation in the demand for short-term bank credit; while the debt variables together explain about 36%. It is important to note however, that outstanding short-term debt and outstanding trade debt are highly correlated, and as a result one variable may be simply reflecting the influence of the other. Indeed, the R^2 for the two taken jointly scarcely exceeds the R^2 in either of the single variable regressions. Furthermore, only short-term debt has the right sign. Note too that the "ability to repay" element appears to be the dominant one in the influence of internal finance and liquidity on the demand for overdrafts. Finally, none of the growth and ratio solvency variables turned out to be of importance to the explanation of the demand for bank credit.

TABLE 9: Demand for Bank Overdrafts - "Economy"

EQ.	Constant	Variables					R ²	D.F.
		IF-1	LA-1	SR	STD-1	TD-1		
(1)	96.029	2.8699 (2.9174) [1]					.1912	36
(2)	129.232		.7031 (2.2642) [5]				.1246	36
(3)	94.061			.0966 (3.4966) [0.2]			.2535	36
(4)	92.695				.5501 (3.7354) [0.1]		.2793	36
(5)	165.952					.9760 (4.5125) [0.1]	.3612	36
(6)	18.469	1.8308 (1.6505) [25]	-0.0181 (0.490) [N.S]	0.0754 (2.2735) [5]			.3165	34
(7)	6.028	1.5711 (1.3888) [25]	0.1064 (.2775) [25]	0.0079 (.1131) [25]	0.3860 (1.0931) [25]		.3403	33
(8)	61.8285	.9271 (1.1204) [N.S]	1.0011 (3.1204) [1]	.1942 (3.1965) [1]	-2.3042 (4.2100) [0.1]	2.9331 (5.5599) [0.1]	.6644	32

() contains "t" statistics, [] denotes level of significance, with N.S. being "Not Significant".

TABLE 10: Demand for Bank Overdrafts - Manufacturing

EQ.	Constant	Variables					R ²	D.F.
		IF-1	LA-1	SR	STD-1	TD-1		
(1)	127.76	3.1139 (2.044) [10]					.1804	19
(2)	-6.61		2.6594 (3.3708) [1]				.3742	19
(3)	17.31			0.2056 (4.3137) [0.1]			.4979	19
(4)	143.18				0.6642 (2.9720) [1]		.3173	19
(5)	194.20					0.9653 (3.2520) [1]	.3575	19
(6)	-126.95	-0.7439 (.5464) [N.S.]	1.4125 (1.7278) [15]	0.3551 (2.1839) [5]	-0.7423 (1.2307) [25]		.6553	16
(7)	-129.21	-0.3643 (.2488) [N.S.]	1.8399 (2.1274) [10]	0.1406 (.8836) [N.S.]		0.1273 (.1609) [N.S.]	.6232	16
(8)	17.22	0.0220 (.0574) [N.S.]	1.7191 (2.4362) [5]	0.3002 (2.1446) [5]	-2.9035 (3.0191) [1]	3.2056 (2.6580) [2]	.7657	15

TABLE 11: Demand for Bank Overdrafts - Distribution

EQ.	Constant	Variables					R ²	D.F.
		IF-1	LA-1	SR	STD-1	TD-1		
(1)	121.25	1.6617 (2.8732) [2]					.4522	10
(2)	90.60		0.3128 (3.4597) [1]				.5448	10
(3)	150.63			0.0226 (1.8216) [10]			.2491	10
(4)	124.83				0.2138 (2.2556) [5]		.3372	10
(5)	168.91					0.8802 (1.3448) [25]	.1531	10
		CR-1	AGP	ASR				
(6)	186.46	0.0357 (1.2226) [25]					.1300	10
(7)	172.90		4.3205 (1.7466) [15]				.2337	10
(8)	105.50			25.0593 (1.8848) [10]			.2621	10

Since the role of several variables might differ according to the type of industry or activity in which a firm is engaged, we examine Manufacturing & Distribution separately. The results indicate firstly, that for both groups stock expenditures feature more importantly than in the sample as a whole. The regression equations are as follows:

$$BOC_{\text{Manuf.}}^D = 215.765 + 0.5016 \text{ EXP} \\ (7.2779) \quad R^2 = 8547$$

$$\text{and } BOC_{\text{Distribution}}^D = 316.337 + 17.2395 \text{ EXP} \\ (3.0699) \quad R^2 = 5409.$$

This particular result perhaps indicates that the remaining sample units distorted the overall picture. More importantly, the relative standings of the two transactions variables are reversed. Financial factors maintain their importance in the two sectors, though again there is evidence of a strong correlation between the two debt variables, and though again the perverse sign on the coefficient of outstanding trade persists in both sectors.

In the manufacturing sector regressions, growth and solvency variables were found to be insignificant. For the Distribution sector, this was not the case. Both the average growth rate of profits and the average growth rate of sales were important explanatory factors in their own right.

Finally, we would like to direct attention to the multiple regression equations where it can be observed that the internal finance becomes in most cases statistically insignificant, but where the explanatory power (judged by the size of the coefficient of determination) is high. A full equation for the Distribution sector is for convenience

listed below:

$$\begin{aligned} \text{BOC}^D \text{ Distrib.} &= -56.22 & -0.0728 & \text{LA-1} & -0.1130 & \text{SR} \\ & & (0.7746) & & (4.4375) & \\ & + 1.1515 & \text{STD-1} & +0.0661 & \text{TD} & +3.0639 & \text{AGP} \\ & & (4.4486) & & (3.8087) & -1 & (3.4793) \\ & + 10.2432 & \text{ASR} & & & & \\ & & (2.0957) & & & & \end{aligned}$$

$$R^2 = .9595$$

From the above equation, it can be seen that for the Distribution sector, that (i) the liquidity motive is dominant; (ii) turnover seems to be inversely related to the demand for bank funds; (iii) both debt variables are significant but with signs opposite to those expected; and (iv) that both growth variables are statistically significant.

The next debt instrument to be analysed statistically is trade credit. The behaviour of trade debt (TD) in the present period was examined with respect to the same explanatory variables as in the case of commercial bank overdrafts. Bank credit, however, was introduced as an additional explanatory factor to see whether trade credit was perceived as an alternative to bank credit. Some preliminary regression results are contained in Tables 12 to 14. For the economy, turnover turned out to be the most relevant and important transactions variable, explaining approximately 46% of the movements in trade credit taken. Of the financial variables, the beginning of period stock of liquid assets was important; as were the supply of bank overdrafts and lagged trade debt (TD₋₁). Certainly this is so on conventional tests of statistical significance and explanatory power. It is noteworthy, however, that bank credit

does not appear to provide an alternative to trade debt - both variables move in the same direction - and that the previous level of trade debt exerts a powerful push influence on the demand for trade credit. The latter findings suggest that trade credit is regarded as a normal feature of business financing and would take place partly because of institutional practice and independently of the supply of bank finance. This conclusion is reinforced by the observation - based on the survey results - that trade credit involves no interest charges to the recipients whereas bank credit does. Growth variables and solvency ratios, as well as the internal finance variable exerted no significant influence.

The findings for the manufacturing sector are somewhat at variance with those for the "economy" as a whole. Stock expenditures are an insignificant influence on the demand for trade credit, when taken jointly with other variables, though it does appear to be significant in the simple regression. So too, is the case for the turnover variable, though in the regression of trade debt on EXP, SR, and BOC, turnover was highly significant. We find the instability and perversity of the signs of these coefficients puzzling, and we shall be endeavouring to find out to what extent they result from problems of a purely econometric character, such as multicollinearity or problems of data, or what extent they reflect the facts of economic behaviour. What is clear, nonetheless, from the use of R^2 as an indicator of explanatory power, is that our specification of the arguments of the demand for trade credit function is essentially correct.

TABLE 12. Demand for Trade Credit - Economy

EQ.	Constant	Variables					R ²	D.F.
		EXP	SR	BOC	LA-1	TD-1		
(1)	91.01	0.0174 (1.9050) [20]					.1313	24
(2)	60.49		0.0231 (4.5090) [0.1]				.4586	24
(3)	84.29			0.1164 (2.8774) [1]			.2563	24
(4)	76.71				0.1106 (3.1640) [1]		.2943	24
(5)	21.23					0.7262 (8.6492) [0.1]	.7571	24
(6)	-2.79	.0099 (1.6767) [25]	0.0015 (.1732) [N.S.]	0.0601 (3.9986) [0.1]	-0.0666 (1.9412) [10]	0.8288 (8.6232) [0.1]	.9248	20
(7)	48.16	-0.0150 (1.3646) [25]	0.0397 (2.7096) [2]	0.0957 (3.1254) [1]	-0.0901 (1.2427) [25]		.6453	21
(8)	5.21		0.0133 (3.0191) [1]	0.0660 (4.3364) [0.1]	-0.1043 (3.8625) [0.1]	0.7502 (8.5774) [0.1]	.91426	21

TABLE 13. Demand for Trade Credit - Manufacturing

EQ.	Constant	Variables					R ²	D.F.
		EXP	SR	30C	LA-1	TD-1		
(1)	52.92	0.1937 (2.4826) [3]					.4064	9
(2)	62.36		0.0241 (3.7356) [1]				.6079	9
(3)	87.73			0.1135 (2.8441) [2]			.4733	9
(4)	75.15				0.1146 (3.3327) [1]		.5523	9
(5)	25.40					0.5998 (4.60) [0.2]	.7015	9
(6)	33.68	-0.0469 (1.6176) [25]	0.0225 (19.8703) [0.1]	0.1255 (8.0032) [0.1]			.9908	7
(7)	32.06	-0.0072 (.1855) [N.S.]	-0.0027 (.1551) [N.S.]	0.1141 (6.8290) [0.1]	0.1249 (1.4239) [25]		.9931	6
(8)	32.04	-0.0075 (.1450) [N.S.]	-0.0027 (.1411) [N.S.]	0.1141 (5.7586) [0.1]	0.1245 (1.2247) [N.S.]	0.0015 (.0100) [N.S.]	.9931	5

TABLE 14. Demand for Trade Credit - Distribution

EQ.	Variables						R ²	D.F.
	Constant	EXP	SR	TD-1	CR	ASR		
(1)	86.60	0.0155 (1.3731) [25]					.19075	8
(2)	84.21		0.0197 (1.7458) [15]				.2758	8
(3)	6.30			1.0547 (11.0808) [0.1]			.9388	8
(4)	210.08				-0.3738 (1.0515) [N.S.]		.1214	8
(5)	167.68					-9.2547 (1.014)	.1140	8
(6)	-5.71	-0.0050 (.5352) [N.S.]	0.0138 (1.3664) [20]	0.9642 (13.2163) [0.1]	0.0219 (.2005) [N.S.]		.9867	5
(7)	27.00	-0.0095 (1.526) [25]	0.0223 (3.122) [5]	0.8264	-0.0359 [0.1]	-4.1902 (2.855) [3]	.9956	4
(8)	-2.05	-0.0057 (.7115) [N.S.]	0.0145 (1.6863) [25]	0.9571 (16.3873) [0.1]			.9866	6
(9)	-6.18		0.0086 (4.7397) [1]	0.9720 (18.4880) [0.1]			.9854	7
(10)	10.77		0.0085 (4.4333) [1]	0.9825 (16.2332) [0.1]	0.0254 (.4507) [N.S.]		.9859	6

For the Distribution sector, the multiple regressions involving EXP, SR, TD_{-1} , and ASR produced very high R^2 s. The turnover variable carried the right sign in all cases, but the coefficient of EXP was, contrary to expectations, negative. The level of trade debt in the previous period exerted the largest single influence on the demand for trade credit.

The Supply of Credit

Our interest in the determinants of the supply of credit to businesses arises naturally out of the premise that the provision of loanable funds forms important element in the strategy for economic expansion and development. Our primary purpose here is to define what characteristics of firms influence the supply of bank credit to them, as well as their supply of credit to each other. We deal firstly with the supply of bank credit.

It is a standard part of our economic doctrines, that in the Caribbean situations of oligopolistic, surplus liquidity commercial banking industries, the primary constraints on the supply of bank loans to various applicants are the standards of credit-worthiness by which the banks operate. The general literature defines three broad categories of decision variables which influence the allocation of funds. These are (i) ultimate safety variables; (ii) liquidity variables; and (iii) "capacity to repay" variables. The first category emphasizes collateral - the ultimate ability of the bank to recover its investment if the borrower defaults. The second emphasizes the speed with which the bank can transform a loan into some equivalent - value stock of currency. The third category emphasizes the capacity of the borrower

to repay out of the income stream generated by the loan.

While the set of categorical explanatory variables is fairly narrow and well-defined, the empirical counterparts are numerous. For instance, theory leaves unanswered the question of which of several empirical asset-measures represent the best counterpart to the theoretical "safety" variable. The feasible set includes total assets, fixed assets, and net worth. Likewise liquidity may be empirically represented by total financial assets, "quick assets" i.e. financial assets plus stocks in trade, net quick assets, and so on. Again, repayment capacity might be indicated by the growth rate of gross, net, or retained profits, by the growth rate of sales, the growth rate of total assets or some other indicator of growth. Evidently, when theory does not provide clear guidance, empiricism must be relied upon to define those observed variables which best represent conceptual variables.

For this study, we experimented with various combinations of liquidity, safety, and capacity to repay variables in the regression analysis of bank overdraft ceilings in 1969. The initial experiments revealed considerable collinearity between some contenders. Also, in cases where collinearity was notably high, each variable did about equally well as the other in terms of the coefficient of determination. One variable could therefore be eliminated without any serious loss of explanatory power. The basis for elimination was the size of the "t" statistic, higher "t" statistics being preferred to lower ones. A second consideration was the need to conserve degrees of freedom.

On these bases, the variables finally used were:

- A. Bank Overdraft Ceiling (BOC^s) 1969 - The supply variable.
- B. Average Total Assets (ATA), 1966-68; and Net Worth (NW) - the "safety" or collateral variables.
- C. Average Quick Assets (AQA); Quick Assets Ratio (QAR); Current Ratio (CR) - all representing the liquidity variable.
- D. Average Gross Profits (AGP); Average Growth Rate of Gross Profits (AGP); Average Growth Rate of Sales (ASR) and Average Growth Rate of Total Assets (ATA) - all representing "capacity to repay".

Variables rejected included the gross profit ratios, lagged values of total assets, lagged quick assets, and lagged gross profits.

The use of previous years' data in explanation of current period bank loan supply was premised on the argument that banks take into account the financial performance of the firm over some defined set of years, sufficiently recent to allow for current experience, but also sufficiently dated to allow for some broader perspective.

The functional form used is one by which the supply of bank overdrafts is linear in the levels of the three categorical variables. Judging from the statistical significance of the estimated coefficients (to be discussed shortly) this form of the relationship works well. Tables 15 to 16 present some statistical results.

For the sample as a unit, safety and liquidity variables as represented by ATA and AQA were the major explanatory factors. Singly they explain 66% and 42% respectively of changes in the supply of overdrafts to individual firms; jointly, they explain about 76%. Net worth was of no significance, (R^2 less than 10%), as was the Current Ratio variable. Quick Assets Ratio, the other liquidity variable,

also was of negligible significance. No repayment capacity variable was of marked importance, though Average Gross Profits, when taken alone, was found to explain approximately 18% of the variations in loan supply. Growth rates of total assets, sales, and profits all yielded coefficients of determination smaller than 0.1 and slope coefficients which were significant at the 25% level only.

The same general results were obtained for the manufacturing sector. Commercial banks' lending by overdrafts appear to be primarily influenced by the firm's ability to satisfy collateral and liquidity requirements, and little influenced by the indicators of ability to repay. As before, average total assets and average liquid assets were the best empirical counterparts to "safety" and liquidity respectively. An additional feature of the statistical results, both for the sample as a whole, and the manufacturing sector, worth commenting on is the inverse relationship between liquidity and the supply of bank loans. Received theory suggests a direct relationship i.e. that banks are willing to lend larger sums to more liquid than to less liquid firms. What the findings indicate is that banks somehow view greater liquidity as a disqualification for loans. A possible explanation is the higher product market risks implied by a high level of stock accumulation.

The results for the Distribution sector are fundamentally different in the latter respect and in others. Firstly, they indicate that banks do attribute considerable importance to liquidity, though to a lesser degree. However, in the case of the Distribution sector quick assets act as a qualification for loans. Secondly, safety variables perform considerably less well as explanatory factors.

TABLE 15. Supply of Bank Overdrafts - "Economy"

EQ.	Constant	Variables					R ²	D.F.
		ATA	AQA	AGP	QAR	ASR		
(1)	-59.05	0.3182 (3.3911) [0.1]					.6617	36
(2)	44.97		-0.4014 (5.1610) [0.1]				.4252	36
(3)	-80.97	0.6334 (5.9358) [0.1]	-0.5218 (2.2398) [5]				.7589	35
(4)	136.77			0.8589 (2.8516) [1 /			.1843	36
(5)	257.50				0.6414 [N.s.]		.0005	36
(6)	386.07					-4.3552 (1.1819)	.0264	36
(7)	-269.06	0.7238 (5.8019) [0.1]	-0.7168 (2.6409) [2]	0.0958 (0.2396) [N.s.]	3.9456 (1.3554) [25]		.7698	33

TABLE 16. Supply of Bank Overdrafts - Manufacturing

EQ.	Constant	Variables					R ²	D.F.
		ATA	AQA	AGP	QAR	ASR		
(1)	-126.98	0.8491 (13.6025) [0.1]	-0.7956 (8.0111) [0.1]				.9535	18
(2)	-213.65	0.37308 (12.6078) [0.1]	-0.84108 (7.3691) [0.1]		2.0458 (0.8313) [N.S.]		.9554	17
(3)	-116.70	0.8230 (9.6535) [0.1]	-0.7126 (3.4555) [1]	-0.1489 (0.4623) [N.S.]			.9541	17
(4)	556.73					-6.0969 (1.1256) [N.S.]	.0625	19
(5)	-202.74	0.3477 (9.2645) [0.1]	-0.7607 (3.5073) [1]	-0.1432 (0.4400) [N.S.]	2.0217 (0.8016) [N.S.]		.9559	16

TABLE 17. Supply of Bank Overdrafts - Distribution

EQ.	Constant	Variables					R ²	D.F.
		ATA	AQA	AGP	QAR	ASR		
(1)	133.246	0.0721 (1.5420) [25]					.2123	10
(2)	83.86		0.1655 (2.9511) [2]				.4655	10
(3)	73.48			0.8571 (3.8201) [1]			.5933	10
(4)	-205.08				7.0062 (2.9864) [2]		.4714	10
(5)	105.50					25.0593 (1.8848) [10]	.2621	10
(6)	79.53	-0.3776 (5.7010) [0.1]	0.7049 (5.7064) [0.1]	0.1346 (0.7012) [N.S.]	-0.1576 (0.1275) [N.S.]		.9517	7
(7)	71.33	-0.3724 (7.6573) [0.1]	0.6957 (7.4005) [0.1]	0.1341 (0.7460) [N.S.]			.9516	7

Average total assets, the best candidate, explains no more than 20% (as opposed to 66% for the "Economy") of the variation in bank overdrafts. Furthermore, the direction of its influence is negative thereby implying that, contrary to the case of manufacturing, banks regard the accumulation of total assets as a disqualification, perhaps on the grounds that larger firms should be more capable of financing themselves. Thirdly, the capacity to repay variable, whether measured by the growth rates of sales or of gross profits, exhibited greater explanatory power.

The contrast between the latter finding and that for the manufacturing sector perhaps can be explained in the following manner. In the manufacturing sector, production is normally single-product, while in the Distribution sector a firm handles a larger number of products. If marketing risks are reduced by diversification, the firm engaged in wholesaling and retailing operates under a lower level of risk than does the manufacturing firm. In addition, in economies where the pattern of consumption is biased towards imports, either as a result of the income elasticities of demand in the face of domestic supply rigidities or as a result of taste preferences, marketing proves to be more difficult for the domestic manufacturer trying to break into the local market than for the local distributor already entrenched and strongly assisted by habits and customs. Cognisant of the different levels of marketing risks, a bank may pay little attention to profit and growth measures in its evaluation of a manufacturing firm. On the other hand, the weakness of a firm in the Distribution sector would be quickly reflected in the failure of its profits and sales to grow rapidly. Growth or capacity to repay

variables could in these situations serve as useful supplements to the safety and liquidity indicators of credit-worthiness.

Having discussed the supply of bank overdrafts, we now turn to the supply of trade credit. Most studies dealing with the supply of trade credit focus on the possible frustrating effects the provision of trade credit can have on restrictive monetary policy. Only two studies (viz. Tamari [1970] and Nadiri [1969]) to our knowledge have attempted to isolate the factors explaining the demand for and the supply of trade credit. Nadiri contains by far the more rigorous treatment, though Tamari's work does provide some useful insights and supporting statistical material. We will utilize Nadiri's basic model as the frame for our analysis. The essence of the model is as follows:

"Like advertising, trade credit affects the position and elasticity of the demand schedule of the firm. It is a way of expanding the market; it is also a selling cost arising in the context of the firm's joint pricing policy.....Like advertising expenditure, trade credit is a capital investment that, by establishing permanent relations between lender and borrower, gives returns over time". [Nadiri, p. 409]. As a result, optimal trade credit policy may be analysed in a profit-maximisation model in which the price, quality, volume, and selling costs are variables to be determined.

Let

$$q = f(p, TC) \quad (10)$$

be the product demand function, where

q = quantity; p = price; TC = trade credit given.

A cost function consisting of production and selling costs can also be defined:

$$C = C(q) + D \quad (11)$$

where $C(q)$ = production costs;

and D = selling expenses, represented by the sum of new trade credit (ΔTC) and an allowance for bad debt (δTC).

The firm then seeks to maximise net profits by achieving an optimal price (p^*) and the optimal level of trade credit (TC^*). The solution process is two stage. First maximise with respect to p :

$$\phi(p, TC) = \int_0^{\infty} e^{-rt} [p f(p, TC) - C(q) - D] dt \quad (12)$$

subject to the constraint

$$D = \Delta TC + \delta TC \quad (13)$$

Having obtained the optimal price, we then maximise

$$\phi_1(TC) = \int_0^{\infty} e^{-rt} [p^* f(TC) - (r + \delta) TC] dt \quad (14)$$

for the optimal value of trade credit.

The solution for (14) is

$$\frac{TC^*}{pq} = \frac{V}{N(r + \delta)} \quad (15)$$

where V and N are the elasticities of demand with respect to trade credit and price; and r is a discount rate which represents the interest income on alternative use of funds tied up in trade credit. Equation (15) can be rewritten generally as:

$$TC^* = TC^*(pq, \mu) \quad (16)$$

where $\mu = r + \delta$

The basic functional form of the supply of trade credit can be developed to allow for subsidiary hypotheses. Firstly, one can introduce a term or set of terms representing the hypothesis that trade credit extended varies directly with the financial and liquidity position of firms. Secondly, some growth rate variable can be included to represent the hypothesis that more rapidly growing firms are relatively greater providers of trade credit. Thirdly, we can test for the role of age either as an indicator of the need to compete via trade credit or as an indicator of habits designed to maintain customer goodwill. Fourthly, we introduce the ratio of Bank Credit to Sales to test the hypothesis that firms use trade credit as a means of passing on credit from the established financial institution, or conversely that trade credit supplied is inversely related to business borrowing from financial institutions. Thus, finally, the trade credit supply function be written generally as:

$$TC = TC(SR, IF, LA, G, Age, BOC/SR, TC-1) \quad (17)$$

where $SR = pq$

and $G =$ any one of growth rate variables.

The opportunity cost variable does not feature because of the cross-section nature of the study. The results of applying this model to the sample are presented in Tables 18, 19, and 20.

Regressions on "economy-wide" data indicate that the major determinant of supply is turnover. The lagged supply of trade credit also exerts a powerful influence thus revealing some degree of institutional rigidity in supply conditions perhaps stemming from customers expectations of a continuance of business credit. The stock of liquid

TABLE 18. Supply of Trade Credit - "Economy"

EQ.	Constant	Variables					R ²	D.F.	
		BOC/SR	SR	IF	LA	Age			
(1)	265.23	-2.6123 (1.0295) [N.S.]						.0321	32
(2)	23.57		0.0809 (16.3889) [0.1]					.3935	32
(3)	139.88			1.0733 (1.8421) [10]				.0959	32
(4)	72.43				0.4331 (8.5810) [0.1]			.6971	32
(5)	29.69					8.9921 (2.1379) [5]		.1250	32
(6)	-22.46						1.3820 (11.7461) [0.1]	.8117	32
(7)	25.45		0.0275 (2.1181) [5]		0.1555 (3.1844) [1]	-2.4985 (2.0154) [10]	0.7252 (4.7305) [0.1]	.9456	29

TABLE 19. Supply of Trade Credit - Manufacturing

EQ.	Constant	Variables					TC ₋₁	R ²	D.F.
		BOC/SR	SR	IF	LA	Age			
(1)	225.90	-2.1846 (0.7543) [N.S.]						.0291	19
(2)	8.18		0.0845 (20.7788) [0.1]					.9578	19
(3)	93.99			1.1019 (1.6821) [25]				.1296	19
(4)	45.64				0.4249 (19.1368) [0.1]			.9507	19
(5)	84.10					0.5662 (.7525) [N.S.]		.0289	19
(6)	-58.40						1.6872 (7.1711) [0.1]	.7302	19
(7)	11.42		0.03781 (1.8044) [10]	0.1875 (1.1498) [N.S.]	0.2233 (2.4367) [5]		0.0458 (0.2278) [N.S.]	.9700	16

TABLE 20. Supply of Trade Credit - Distribution

EQ.	Constant	Variables					TC ₋₁	R ²	D.F.
		BOC/SR	SR	IF	LA	Age			
(1)	402.15	-4.2334 (0.6199) [N.S.]						.0458	8
(2)	68.82		0.0743 (5.5114) [0.1]					.7915	8
(3)	262.67			1.0008 (0.6430) [N.S.]				.0498	8
(4)	146.23				0.4455 (1.8691) [10]			.3040	8
(5)	15.90					11.8410 (1.7685) [25]		.2811	8
(6)	4.40						1.2129 (21.5814) [0.1]	.9831	8
(7)	45.74		0.0005 (.0430) [N.S.]		0.1201 (1.8164) [N.S.]	-3.5526 (1.4975) [25]	1.2177 (8.1151) [0.1]	.9906	5

assets also explain much of the variations in trade credit supplied; but internal finance was not important. Age was found to be of relatively positive and small though important influence. None of the solvency and growth rate indicators turned out to be important - all yielding R^2 not greater than 3%. Furthermore, the ratio of bank overdrafts to turnover was of negligible significance thereby contradicting the "passing on" hypothesis about trade credit.

For the manufacturing sector, the model works equally well and yields roughly similar results. Important differences are the slightly more important roles of internal finance ($R^2 = .13$ as opposed to .09), liquid assets ($R^2 = .95$), and the lesser roles of "habit persistence" i.e. TC_{-1} ($R^2 = .73$), and age, especially the marked insignificance of the latter. The regressions on the Distributions sector do not produce dramatically different results, but especially noteworthy features are the much stronger explanatory power of age and "habit persistence".

Altogether then, the overwhelming conclusion is that trade credit supply can indeed be conceived of as a selling expense in a manner analogous to advertising, and that goodwill once established by the provision of credit has to be maintained by the continued provision of credit. Further, that the internal liquidity of the firm exerts a major influence on its willingness to supply credit, but its access to external sources of short-term, low cost credit, notably bank overdrafts, does not.

Implications for Monetary Analysis and Policy

This paper has produced information indicative of the importance of credit to the performance of business firms in Guyana. It proceeded to formulate a few theoretical models of the demand for and supply of bank overdrafts and trade credit which were identified as the major sources of credit. The models were then applied to the data. With a few statistical reservations, the empirical analysis yields some results of considerable importance to both academic economists and policy-makers. These we state briefly.

Firstly, they indicate that in analysing the behaviour of business firms in the credit system - as borrowers and suppliers of loanable funds - one has to ascribe a primary role to financial factors inherent in the firms themselves. Secondly, real factors such as business physical transactions must be elevated as motivating forces in the explanation of the demand for and the supply of bank credit and trade credit. Neither set of factors - real or financial - by themselves constitute sufficient explanation of business participation in the credit system.

Thirdly, though trade credit is an important form of business financing it is essentially short-term, with repayment periods varying between one to three months, and cannot be regarded as an alternative to bank credit, nor as a serious means of meeting whatever deficiencies are present in the provision of institutional credit. This certainly is one implication of, on the one hand, the weak relationship between bank credit received and trade credit supplied to local firms, and on the other hand, the earlier descriptive information on the relative weight of bank credit and trade credit in total external

financing.

Fourthly, and very importantly, the results move us much closer to the point of settling once and for all some questions about the role of credit criteria in bank lending decisions and issues hinging upon these questions. Specific views have been preferred by several Caribbean economists about the relative importance of safety, liquidity, and capacity to repay variables. A not so popular view is that banks being conservative emphasize the safety and liquidity variables. This proposition is then used to explain the particular sectoral distribution of credit in terms of the extent to which some sectors satisfy those criteria better than other sectors. The explanation can be further extended to inter-sectoral distribution of loans. Dissatisfaction with the structure of credit then leads to advocacy of a change in loan criteria. On the other hand, those who judge the loan calculus to be more broadly based, reflecting safety and liquidity variables as well as ability to repay, see no pressing need for a change in loan criteria. Evidently, therefore, it is of vital importance for monetary analysis and policy to establish the empirical basis of the bank loan supply function.

Our analyses indicate that in general banks do emphasize safety and liquidity variables. It reveals nonetheless that in some instances ability to repay variables are of major importance. Further, the results highlight the dangers of aggregation; some explanatory factors are more important for Distribution than for Manufacturing firms; and some factors also operate in different directions. Those who allege conservatism as reflected by risk minimisation in oligopolistic price situations (in the banking industry) are on good ground; but

the quality of analysis is enhanced by attention to industry differences. One illustration of the latter point is the way in which the different strengths of "ability to repay" forces us to seek explanations in terms of the differing degrees of product market risks in the two sectors.

Finally, and perhaps most importantly, the results highlight the critical role of the size of firms as a determinant of credit supply. Banks lend proportionately more to big firms than to smaller ones. When this result is taken conjointly with the greater ability of larger firms to finance themselves out of their own resources (Table 3), one possible inference is that the commercial banking system operates sub-optimally from the standpoint of business expansion and the efficiency of the business sector.

In the short period, the allocative bias towards large firms results in a lower level of activity than could have been sustained by a different allocation for the simple reason that credit deprivation exerts a stronger negative impact on the expenditure decisions of financially weaker firms. A firm with sizeable internal resources or access to other external resources can by a suitable reallocation of its financial assets and liabilities maintain a projected level of expenditures. Certainly Palmer's [1967] study indicates that for many large monopolistic or foreign firms the denial of an overdraft of the order of say \$50,000 would be a minor irritation and nothing more. For a young and indigenous small manufacturing establishment on the other hand, there is often no internal resources or external source to fall back on. The provision of an overdraft of one-fifth that size could make the difference between survival and

non-existence.

The lower short-period level of activity must however be taken in a broader and more dynamic context. An emphasis on large firms is not sub-optimal if (a) larger firms are growing more rapidly than small firms, and (b) large firms are more efficient - efficiency being measured by profitability, about which we say something later. We conducted two simple statistical tests of the last set of assumptions. First, simple linear regressions of average profitability on average total assets were conducted on the three groups of data. In all cases the relationship was found to be weak, but with a tendency for profitability to decline with the size of the firm. Secondly, an analysis of variance was conducted on the average growth rates of total assets for the ten largest and the ten smallest firms. It did not support the hypothesis that there is a significant difference between the growth performances of small and large firms. Thus, altogether, the opportunity cost argument against the size allocative pattern of credit is not offset by the evidence on profitability and growth rates. In global terms, bank loans on the criterion of maximum expansion of business activity are not optimally allocated.

There are at least two important qualifications to the above analysis and inferences. First of all, it is somewhat unrealistic to treat profitability as a measure of efficiency in a situation of serious product market imperfections. Apart from the difficulty of comparing efficiency in this sense across different industries, the problem is further compounded by differences in degrees of monopolistic and administered price fixing.

Moreover from a broader welfare standpoint, high profit rates may well be regarded as an index of inefficiency. Secondly, though the global expansion of the business sector is important, it must be considered together with (and perhaps is overshadowed in importance by) the product structure of the business sector. The allocative efficiency of bank credit can only be fully judged when one takes into consideration the extent to which the pattern of credit is consistent with or in conflict with an optimal economic structure. This is a large issue in its own right and we do not attempt to handle it in any detail here. It suffices to say, however, that the structure of the economy has been deemed by both academics and policy-makers as considerably far divergent from that consistent with the needs and aspirations of the Guyanese people. The structure of bank loans now, as in 1950, can be characterised in like manner.

The sub-optimal structure of credit is the product of a virtually unregulated commercial banking industry operating on the kinds of criteria this study has demonstrated to be the case. If policy-makers really do wish to bring about structural changes in a monetary economy, they have to face up to the issue of a structurally regulated banking industry in particular and a functional financial system in general. Policy-makers, like commercial banks, will be judged by the evidence.

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