

Bruch, Mathias

Working Paper — Digitized Version

Financial Sources of small-scale manufacturers: A micro-analysis for Malaysia

Kiel Working Paper, No. 157

Provided in Cooperation with:

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Bruch, Mathias (1982) : Financial Sources of small-scale manufacturers: A micro-analysis for Malaysia, Kiel Working Paper, No. 157, Kiel Institute of World Economics (IfW), Kiel

This Version is available at:

<https://hdl.handle.net/10419/52668>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Kieler Arbeitspapiere Kiel Working Papers

Working Paper No. 157

Financial Sources of Small-Scale
Manufacturers:

A Micro-Analysis for Malaysia

by
Mathias Bruch

Institut für Weltwirtschaft an der Universität Kiel

Financial Sources of Small-Scale Manufacturers: A Micro-
Analysis for Malaysia*

Increasing concern about insufficient earnings opportunities for a large share of the labor force in many developing countries and about the long-run viability of industrial growth has made the development of small-scale manufacturing establishments (SSEs) a much debated issue in the recent past. Imperfections in capital markets have been identified as important factors impeding the establishment of new SSEs as well as the expansion and modernization of existing ones¹. While the impact of interest rate regulation and quantitative interventions in credit markets on the access of SSEs to formal credit has found due attention in the literature², problems of bridging the gap between formal financial institutions and the informal and unsophisticated nature of many, if not most SSEs have been relatively neglected³. In this paper an attempt is made to shed more light on the latter aspect of credit markets in developing countries.

In a situation where barriers for SSEs to gain access to formal credit are high, entrepreneurs are largely confined to own funds and informal sources of credit, such as family members, friends, moneylenders, and suppliers of materials. In financing SSE activities, it has been argued, informal

credit markets have some distinct advantages over formal markets, such as a higher degree of flexibility and lower transaction costs due to a more intimate knowledge of local conditions⁴. On the other hand, it should be noted that informal credit markets are subject to some marked disadvantages, both from the point of view of the individual entrepreneur as well as concerning social efficiency. Informal loans are usually confined to small amounts and to short repayment periods. The efficient allocation of funds tends to be impeded by the local nature of informal credit markets; and their capacity for mobilizing savings, refinancing, and term transformation is rather limited in general. Informal sources are likely to be adequate for financing traditional activities, where investment in fixed assets can be made in small steps and gestation periods are short. Access to institutional credit can, however, be regarded as essential for financing the establishment of nontraditional enterprises and for the modernization and expansion of already existing ones. Such access cannot only be impeded by credit policies, but also by several other factors to be discussed in this paper. Despite the (potential) contribution of non-traditional SSEs, in particular, to the generation of productive jobs and to a balanced industrial structure, little is known about the relative importance of different sources of finance in SSEs, and about the determinants of lending decisions in financial institutions and borrowing decisions in SSEs. A better understanding of such decisions on the micro-level may not only provide more insight into the

conditions of SSE development, but may also prove to be helpful in the design of policy measures to facilitate efficient financial development.

The empirical analysis is based on the situation in Malaysia in 1973, which for two reasons is of particular interest for the subject matter of this paper. First, policy interventions in credit markets were fairly moderate and did not discriminate against SSEs directly, since there was not regulated maximum interest rate in lending operations⁵. In many countries such a regulation has effectively confined access to formal credit to fairly large borrowers. And, secondly, financial assistance to SSEs was still in its infancy⁶. Thus, financial sources of SSEs can be analyzed for a situation where direct policy influences are insignificant.

The remainder of this paper is structured as follows: The relative importance of different financial sources of SSEs for investment and working capital purposes is examined in Section 1. Section 2 focuses on the theoretical discussion of transaction costs and other factors influencing financial sources of SSEs. In Section 3 discriminant analysis is applied to identify factors which account for institutional lending to take place. Concluding remarks are contained in Section 4.

1. Financial Sources and Plant Size

The following analysis of financial sources can take advantage of the results of a microsurvey covering 399 West-Malaysian manufacturing establishments⁷. This survey was conducted in 1974 and refers to 1973. The sample has been designed to study characteristics of the small-scale manufacturing sector in West-Malaysia and includes industries which actually as well as potentially are important for the development of SSEs⁸. Respondents were asked how they financed fixed assets purchased during the three years preceding interviews as well as how they financed working capital during the year of reference.

Answers are sought to the following questions:

- (i) How does the relative importance of own funds and credit vary with plant size ?
- (ii) What are the most important sources of credit for SSEs as opposed to larger establishments ?
- (iii) When the formal share in total credit is found to increase with plant size, does this result from variations in the relative number of establishments having received formal credit or from variations in the relative amount of formal credit in establishments which have received such credit ?

The answer to the third question is essential for the subsequent Sections. Aspects of credit rationing and small-scale specific demand factors become relevant when it is found that there are relatively few SSEs among the recipients of formal credit.

(a) Fixed Assets

Confining the analysis to 171 establishments with purchases of fixed assets during 1971-1973, it is shown in Table 1 that the share of own funds is about two thirds in all size groups; the remaining gap is financed by loans and to a minor extent by equity participation. A closer look reveals, however, that this is the case on an average only, as just about half of the 171 establishments have received any loans. A disaggregation of credit by source clearly reflects financing conditions being different between establishments of different size. While relatives and friends account for about 30-40 percent of total credit in establishments with less than 20 persons engaged, these sources are virtually irrelevant in establishments with 50 or more workers. For the latter the most important source of external finance are commercial banks (line 12 in Table 1). "Other" sources, which have been grouped among "formal" financial institutions, are somewhat heterogeneous and consist of formal institutions such as finance companies as well as of informal sources such as moneylenders. A more appropriate

Table 1 : Financing of Fixed Capital Investment by Source and Plant Size

		Plant size (no. of persons engaged)						Total
		1 - 4	5 - 9	10 - 19	20 - 49	50 - 99	100 +	
<u>No. of establishments</u>	(1)	60	85	106	81	37	30	399
<u>No. of establishments with fixed capital investment during 1971-1973</u>	(2)	11	28	44	42	24	22	171
<u>Sources of funds (percent)</u>								
Own	(3)	48.6	67.3	60.7	65.9	67.9	61.9	63.4
Credit	(4)	42.4	32.7	38.6	29.3	26.5	32.9	33.2
Others	(5)	9.0	-	0.7	4.8	5.6	5.2	3.4
		<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
<u>Establishments with credit financing:</u>								
Number	(6)	8	14	20	19	12	13	86
Share in (2) (percent)	(7)	72.7	50.0	45.5	45.2	50.0	59.1	50.3
<u>Sources of credit (percent)</u>								
"Informal"	(8)	40.1	29.1	33.4	11.6	-	4.0	19.8
Family	(9)	(20.2)	(13.6)	(12.9)	(-)	(-)	(1.0)	(7.2)
Friends	(10)	(19.9)	(15.5)	(20.5)	(11.6)	(-)	(3.0)	(12.6)
"Formal"	(11)	59.9	70.9	66.6	88.4	100.0	96.0	80.2
Banks	(12)	(39.9)	(25.5)	(48.4)	(41.8)	(61.2)	(69.5)	(46.8)
Others	(13)	(20.0)	(45.4)	(18.2)	(46.6)	(38.8)	(30.5)	(33.4)
		<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
<u>Establishments with bank credit:</u>								
Number	(14)	2	3	10	7	8	9	39
Share in (2) (percent)	(15)	18.2	10.7	22.7	16.7	33.3	40.9	22.8
Share in (6) (percent)	(16)	25.0	21.4	50.0	36.8	66.7	69.2	45.3
Share of bank credit in total credit (percent)	(17)	100.0	92.7	81.7	100.0	81.8	83.8	87.0
Share of bank credit in total investment funds (percent)	(18)	98.0	45.0	78.0	71.2	97.5	66.3	66.7
<u>Establishments with "formal" credit:</u>								
Number	(19)	3	8	12	15	11	11	60
Share in (2) (percent)	(20)	27.3	28.6	27.3	35.7	45.8	50.0	35.1
Share in (6) (percent)	(21)	37.5	57.1	60.0	78.9	91.7	84.6	69.8
Share of "formal" credit in total credit (percent)	(22)	100.0	96.7	91.0	100.0	100.0	95.8	97.5
Share of "formal" credit in total investment funds (percent)	(23)	88.5	74.5	82.7	73.1	66.7	70.9	74.4

Source: Sample survey (see text).

classification (which is impeded by the data) would most likely bring out the positive relation between plant size and the share of formal finance even more clearly. The question now arises, whether the share in total credit or in total investment funds banks or "formal" institutions are prepared to finance in individual establishments (lines (17), (18), (22), and (23) in Table 1) is increasing with plant size. The answer is that such a relationship cannot be found in Table 1. On the other hand, it is clearly revealed that, in contrast to larger establishments, relatively less SSEs either have access to loans from banks and "formal" institutions or are seeking such access (lines (15), (16), (20), and (21) in Table 1). Hence, for the individual SSE formal credit is not so much a matter of "how much", but rather a matter of "whether at all".

(b) Working Capital

In most cases own funds are not sufficient to finance working capital. Suppliers' credit is the most important source of external working capital in establishments with less than 100 employed persons (Table 2). In larger establishments over 50 percent come from commercial banks, mostly in the form of overdrafts. This convenient and highly flexible facility is rarely available to small establishments. Accordingly, the share of relatives and friends as sources of external working capital is clearly decreasing with plant size, while the share coming from commercial banks is increasing

Table 2 : External Financing of Working Capital by Source and Plant Size

	Plant size (no. of persons engaged)						Total
	1 - 4	5 - 9	10 - 19	20 - 49	50 - 99	100 +	
<u>No. of establishments with external sources of working capital</u> (1)	31	60	78	60	31	23	283
Share in total no. of establishments (percent) (2)	51.7	70.6	73.6	74.1	83.8	76.7	70.9
<u>Sources of external finance (percent)</u>							
Family and friends (3)	27.6	20.3	17.6	8.7	2.3	4.1	14.6
Suppliers (4)	49.0	58.7	61.7	53.8	51.8	34.2	54.7
Banks (5)	8.4	7.3	14.2	24.8	25.4	50.3	18.5
Others (6)	15.0	13.7	6.5	12.7	20.5	11.4	12.2
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
<u>Establishments with bank credit</u>							
Number (7)	6	9	25	28	13	18	99
Share in (1) (percent) (8)	19.4	15.0	32.1	46.7	41.9	78.3	35.0
Share of bank credit in total externally financed working capital (9)	43.3	48.9	44.4	53.0	60.6	64.1	52.9
<u>Establishments with "formal" credit</u>							
Number (10)	12	18	33	35	21	20	139
Share in (1) (percent) (11)	38.7	30.0	42.3	58.3	67.7	87.0	49.1
Share of credit from banks and other sources in total externally financed working capital (percent) (12)	60.4	70.0	49.0	64.3	67.7	70.8	62.5

Source: Same as Table 1.

rationing according to plant size as well as for reluctance of SSEs to borrow from formal institutions will now be discussed. Often demand for formal credit by SSEs is taken for granted and the discussion is confined to the lending decision of financial institutions (or banks in short). In this paper also factors influencing the borrowing decision of SSEs are taken into account. Subsequently, credit supply is dealt with first, followed by considerations relevant for credit demand.

(a) Credit Rationing

Credit markets differ from commodity markets in various ways. First, transactions in credit markets involve a relationship over a period of time between a lender and a borrower. Hence, uncertainty resulting from imperfect foresight is an essential element of credit markets. Secondly, information is imperfect and asymmetric. Banks find it difficult to identify "good borrowers" who are both willing and likely to be able to repay the loan. I.e., the conditions of transactions are not equally known to both sides of the market. And thirdly, the terms of lending may affect the nature of transactions by sorting borrowers (selection effect) and by influencing their actions (incentive effect)¹⁰. The implications of such conditions for the functioning of credit markets have recently become the focus of an extensive literature which is helpful for explaining, first, how credit rationing can occur even under competitive conditions and, secondly, why smaller estab-

lishments may be more subject to such rationing than larger establishments.

For a given cost of funds banks' expected rate of return in lending operations is an increasing function of the interest rate and a decreasing function of the default risk. Theories of credit rationing in equilibrium are based on the argument that the probability of repayment itself is a decreasing function of the interest rate. Hence, there may be an optimal interest rate for the banks beyond which additional loans are not made available even when there is excess demand. The underlying mechanisms have recently been discussed by Stiglitz and Weiss and are briefly presented below¹¹.

When loan applicants are observationally identical, there is only one such optimal interest rate. The default risk is influenced by the interest rate via the selection effect and the incentive effect. First, assume that applicants have only one project each and that all projects have the same mean return, but differ in riskiness¹². As is the case with all fixed payment debts, the default risk is shared between borrower and lender but not eventual gains in excess of principal and interest¹³. Therefore, only individuals with high-risk projects apply for loans when the interest rate is relatively high. Such an adverse selection effect may outweigh the direct effect of increasing interest rates on the expected return on the loan portfolio to a bank. An analogous

argument applies when each applicant has a choice of projects. In this case the attractiveness of riskier projects to the borrower rises with increasing interest rates. Hence, the bank has to take into account the adverse incentive effect of increasing interest rates on the choice of projects by borrowers. Increasing collateral requirements do not necessarily offset the adverse effect of increasing interest rates on the risk structure of banks' loan portfolio. Concerning collateral, an adverse selection effect may result from wealthier individuals being less risk adverse than less wealthy ones and an adverse incentive effect from smaller loans being used to finance a given project, thus making projects more likely to fail because of insufficient initial funding.

In the real world, terms of lending are not the only screening devices which are available to banks. When loan applicants are observationally distinguishable, credit may be rationed according to characteristics of potential borrowers. Transaction costs are a useful concept for demonstrating this. Transaction costs consist of administrative costs and the default risk and are equal to the mark-up on costs of funds needed by banks to break even in lending operations. There may be a trade-off between the two components of transaction costs as screening of loan applications serves the purpose of filtering out exceedingly risky projects. Transaction costs can differ between groups of borrowers for one or more of the following reasons:

First, for a given level of "screening technology" it may be more difficult and costly to identify project risks among one group of borrowers than among another. Secondly, there may be differences in the average riskiness of projects between groups of borrowers. And thirdly, one type of borrower may be less easy to supervise with respect to projects actually undertaken than another. Focusing on small-scale (S) versus large-scale (L) borrowers, it has been argued that when banks have little experience with lending to SSEs transaction costs are exceedingly high¹⁴. Since in equilibrium the banks' expected rates of return on all loan contracts must be equal, interest rates for S loans would have to exceed interest rates for L loans by a large percentage which is equal to the difference in transaction costs. In such a situation the default risk is, however, likely to outweigh the direct effect of high interest rates on the banks' rate of return. Therefore, loans to S applicants may not be disbursed at all. Better screening techniques, as they are likely to be developed under competitive conditions, may, however, help some S applicants to obtain formal credit and reduce the importance of establishment size as a screening device.

Before the nature of such screening devices can be examined empirically in the next section, more light has to be shed upon the question why transaction costs are strongly decreasing with the size of establishments when there is a lack of familiarity of banks with SSEs as well

as of SSEs with banks. In such a situation it is especially difficult and costly to identify the riskiness of projects among SSEs when documentation is deficient. Ho, for example, reports that less than one third of establishments with 20-49 workers in Korea practice double-entry bookkeeping and less than one half have any recognisable form of bookkeeping at all¹⁵. A similar situation has also been found to persist in the Philippines¹⁶. Loan applications by large-scale establishments, on the other hand, are often evaluated on the basis of audited statements. Often banks are also reluctant to lend to SSEs, since they have little knowledge of the conditions under which such projects succeed. Objective differences in the average riskiness of projects between S and L borrowers may result from a number of factors.

First, management and entrepreneurship may be of a lower quality in SSEs compared to larger establishments. This factor is revealed as the most important determinant of economic performance in a number of micro studies. In a study of the wood and furniture industries in Ghana, Page attempted to identify variables which might explain why costs of some firms are significantly higher than of others. He concludes that "variations in managerial effort and ability are significant factors in explaining a firm's position relative to the industry production frontier"¹⁷. A recent study on SSEs in Colombia by Cortes and Ishaq supports this conclusion and provides more detail with respect to the type of entrepre-

preneur who is successful. Cortes and Ishaq found that "previous experience of the entrepreneur is an important determinant of the firm's performance"¹⁸. Another, though scarcely used approach is the analysis of the causes leading to a firm's failure. Failure rates are particularly high for newly established small businesses. Itao found for the Philippines that "the primary cause of failure among small firms can be collectively attributed to management weaknesses. More specifically, these include lack of accounting records and non-hiring of a certified public accountant/bookkeeper"¹⁹. External factors which may account for a higher average default risk being connected with loans to SSEs are their discrimination by the protective system and by investment promotion measures²⁰. In many countries such policies are effectively excluding SSEs from profitable investment opportunities. And finally, deficiencies in the legal system may restrain action to be taken against delinquent small-scale borrowers.

(b) The Borrowing Decision in SSEs

When respondents were asked why purchases of fixed assets were not financed by institutional sources, the reasons generally provided were: lack of collateral, informal loans are faster and more convenient, and interest rates charged by relatives and friends are lower²¹. These answers suggest that besides credit rationing the essence of borrowing decisions in SSEs lies in transaction costs

incurred by the borrower as well as in the type of project to be financed. For many SSEs applying for formal credit is not a matter of mere routine, but an innovative act. Proper documentation can take considerable time and effort when an entrepreneur is not familiar with such procedures. Hence, many SSEs prefer informal loans to finance small purchases of fixed assets and normal requirements of working capital. The volume of finance needed is important for the borrowing decision for two reasons. First, at "reasonable" interest rates informal sources are normally only able to provide small amounts at short maturities. And secondly, transaction costs incurred by the borrower tend to be more or less fixed, thus implying a certain minimum volume of formal credit. Relatively large amounts of finance are required for the establishment of nontraditional SSEs as well as for upgrading existing ones. Supposed the result obtained in Section 1 does not reflect credit rationing, effective demand for formal credit by SSEs may be restrained by internal reasons, such as a lack of innovative entrepreneurs as well as by external reasons implicit in economic policies and the institutional environment²².

3. Determinants of Financial Sources: Discriminant Analysis

On the basis of available data an empirical test of factors which may have had an influence on financial sources of the sampled establishments must remain of a tentative

nature. First, there is no information on interest rates, on available collateral, and about the type of project which has been financed. And secondly, external factors such as effects of industrialization policies and the institutional environment are beyond the reach of a country study based on a single period of reference. Furthermore, some factors, such as characteristics of the entrepreneur may be relevant on both sides of the market.

Discriminant analysis has been applied to find that linear combination of variables which allows best to statistically distinguish between establishments with formal credit and those without. Discriminating variables measure characteristics on which the two groups are expected to differ. Making use of a stepwise procedure those variables with the highest discriminating power can be selected. The objective of discriminant analysis is to linearly combine discriminating variables in such a way that the two groups are as statistically distinct as possible²³. The relative discriminatory power of a discriminating variable can be derived from the standardized discriminant function coefficient²⁴. The discriminant procedure has been applied to three alternative classifications of establishments. First, establishments with bank credit are distinguished from establishments without such credit. In the second alternative a difference is made between establishments with "formal" credit and those without. And thirdly, establishments with bank credit are

compared with establishments without "formal" credit, i.e., establishments with credit from "other" sources but without bank credit are neglected.

Besides plant size the following characteristics are included as discriminating variables:

- Establishment
 - age (since foundation)
 - legal status (individual ownership, partnership = 1, otherwise = 0)
 - location (rural = 1, urban = 0)
 - capital-labor ratio²⁵.

- Entrepreneur
 - previous experience in related activity (yes = 1, no = 0)
 - professional qualification (technical, commercial = 1, otherwise = 0)
 - formal education (secondary and more = 1, otherwise = 0)
 - race (Malay = 1, otherwise = 0)
 - other business interests (yes = 1, no = 0)
 - knowledge of available assistance to SSEs (yes = 1, no = 0).

Arguments supporting the choice of these variables have already been discussed above or are subsequently presented in conjunction with the discriminant analysis results for financial sources of working capital and investment finance.

(a) Fixed Assets

The value of canonical correlation shows to what extent the discriminant function is able to distinguish between the groups of establishments. The value of canonical correlation squared is the proportion of variance in the discriminant function explained by the grouping procedure. Although this proportion is relatively moderate (Table 3), group centroids are significantly different at the 1 percent level for the first and the third alternative. The results presented in Table 3 reveal that plant size remains important as a determinant of formal credit even after other characteristics have been taken into account. Almost equally relevant is age; older establishments have already proved their viability and may for that reason be regarded by banks as less risky borrowers. The results show, however, that the characteristics of entrepreneurs are more decisive for formal lending than establishment characteristics. Hence, small size as such is not sufficient to exclude SSEs from access to formal credit under competitive conditions. The reflections in Section 2 suggested that entrepreneurial qualities are both relevant as screening devices by banks and for the degree of innovation in the choice of projects and financial sources. Inasmuch as an entrepreneur has accumulated experience in a related activity or has undergone training in technical or commercial fields, he is more likely to be regarded as a low risk borrower by banks than otherwise. On the other hand, such an entrepreneur has less problems in

Table 3 : Financing Purchases of Fixed Assets - Discriminant Analysis Results

	Group 0: no bank credit Group 1: with bank credit	Group 0: no "formal" credit Group 1: with "formal" credit	Group 0: no "formal" credit Group 1: with bank credit
<u>Group centroids</u>			
Group 0 (no. of observations)	- 0.271 (132)	- 0.246 (111)	- 0.382 (111)
Group 1 (no. of observations)	0.593 (39)	0.377 (60)	0.532 (39)
	<u>Standardized discriminant function coefficients^b</u>		
<u>Independant variables^a</u>			
Establishment size	0.301 (11.5)	0.333 (22.3)	0.272 (11.1)
Age of establishment	0.292 (11.2)	n.i. (-)	0.193 (7.9)
Previous experience of entrepreneur in related activity	0.614 (23.5)	n.i. (-)	0.545 (22.2)
Professional qualification of entrepreneur (technical, commerce)	0.531 (20.3)	n.i. (-)	0.494 (20.1)
Other business interests of entrepreneur	0.430 (16.5)	0.579 (38.7)	0.514 (20.9)
Knowledge of available assistance	0.443 (17.0)	0.584 (39.0)	0.436 (17.8)
	<u>(100.0)</u>	<u>(100.0)</u>	<u>(100.0)</u>
<u>Statistics</u>			
Canonical correlation ^c	0.365 (0.133)	0.289 (0.089)	0.399 (0.159)
F value for difference between group centroids	6.865 ^d	5.721 ^e	6.988 ^d
^a n.i.= not included into discriminant function by stepwise procedure; other variables not included are legal status, location, formal education and race of the entrepreneur. - ^b Relative contribution (in percent) in parentheses. - ^c Canonical correlation squared in parentheses. - ^d Significantly different at the 1 percent level. - ^e Significantly different at the 5 percent level.			

Source: Same as Table 1.

drafting a viable project and has to put forth less effort to file a loan application with a formal financial institution. Similarly, when an entrepreneur has other business interests as well, this makes him an "established businessman" in bankers' eyes. Relatively high discriminatory power was also found for the binary variable "knowledge of available assistance" which can be regarded as a proxy for entrepreneurs' general awareness of the institutional environment. Variables such as legal status and location of the establishment as well as formal education and race of the entrepreneur failed to meet the inclusion criterion of the stepwise procedure. A possible explanation for formal education is the relatively high share of Chinese entrepreneurs in the sample and their traditional preference for vocational training in family enterprises.

(b) Working Capital

The results of a separate discriminant analysis of the financing of working capital are presented in Table 4. Essentially similar conclusions can be drawn as with respect to the financing of fixed assets. The size and age of establishments, other business interests of entrepreneurs and their knowledge of assistance measures have been identified as variables with discriminating power. The respective coefficients have the expected sign and can be interpreted as above. Additional variables with discriminating power have not been selected by the stepwise procedure in the case of

Table 4 : External Financing of Working Capital - Discriminant Analysis Results

	Group 0: no bank credit Group 1: with bank credit	Group 0: no "formal" credit Group 1: with "formal" credit	Group 0: no "formal" credit Group 1: with bank credit
<u>Group centroids</u>			
Group 0 (no. of observations)	- 0.308 (184)	- 0.450 (144)	- 0.415 (144)
Group 1 (no. of observations)	0.573 (99)	0.466 (139)	0.604 (99)
<u>Standardized discriminant function coefficients^b</u>			
<u>Independent variables^a</u>			
Establishment size	0.433 (22.1)	0.314 (12.5)	0.320 (13.3)
Capital-labor ratio	0.242 (12.3)	0.200 (7.9)	0.207 (8.6)
Age of establishment	0.164 (8.4)	0.329 (13.1)	0.213 (8.9)
Legal status (indiv. ownership or partnership)	- 0.251 (12.8)	- 0.315 (12.5)	- 0.308 (12.8)
Location (rural)	n.i. (-)	- 0.451 (17.9)	- 0.285 (11.9)
Other business interests of entrepreneur	0.470 (23.9)	0.300 (11.9)	0.364 (15.2)
Knowledge of available assist- ance	0.403 (20.5)	0.237 (9.4)	0.316 (13.2)
Formal education (secondary and more)	n.i. (-)	n.i. (-)	0.157 (6.5)
Race (Malay)	n.i. (-)	0.370 (14.7)	0.233 (9.7)
	<u>(100.0)</u>	<u>(100.0)</u>	<u>(100.0)</u>
<u>Statistics</u>			
Canonical correlation ^c	0.388 (0.151)	0.418 (0.175)	0.449 (0.202)
F value for difference between group centroids	6.979 ^d	7.234 ^d	6.551 ^d
^a n.i.= not included into discriminant function by stepwise procedure; equally not included were previous experience and professional qualification of the entrepreneur. - ^b Relative contribution (in percent) in parentheses. - ^c Canonical correlation squared in parenthesis . - ^d Significantly different at the 1 percent level.			

Source: Same as Table 1.

investment finance are legal status, location, race, and formal education. A possible explanation for legal status is that working capital requirements have to be met relatively fast and respective funds should be readily available. Individual ownerships and partnerships may have more direct access to convenient and flexible credit from relatives and friends compared to companies. The negative coefficient of the location dummy may be explained in a similar way. While problems of financing fixed assets occur only once in a while, it would not be worthwhile for rural establishments to contact urban financial institutions each time external working capital finance is required. In contrast to the results for investment finance, experience and professional qualification of the entrepreneur have not been found to be relevant for obtaining formal working capital credit. Application procedures may be less demanding on the one hand and banks may be screening less intensively because of the lower risks involved, on the other. The positive coefficient for race may simply reflect the fact that the extended family system as a source of working capital credit is much more developed in the Chinese community than among Malays. Finally, the capital-labor ratio, which has been neglected in the analysis of investment finance for obvious theoretical reasons, has been found to differ between establishments with and without formal working capital credit. Lack of collateral in labor-intensive establishments and a preference of banks for more modern and capital-intensive establishments may explain the positive sign of the respective coefficient.

4. Concluding Remarks

The results obtained in this paper suggest that an overly pessimistic view of SSEs' potential access to formal credit is not justified. In as far as a sample survey is able to show, SSEs can obtain formal credit, although the rate of participation in such transactions is increasing with the size of establishments. In this respect, discriminant analysis revealed that size as such is only of minor importance compared to other characteristics of the establishment and the entrepreneur. Concerning lending decisions of financial institutions, the relevance of establishment size is likely to decrease when screening technology is improving. A necessary precondition for this to occur is, however, that the credit market is fairly competitive, i.e. that terms of lending are sufficiently flexible to make lending to SSEs potentially profitable. In such a situation SSEs can obtain access to formal finance even when specific assistance programs are absent. Concerning borrowing decisions of SSEs, a lack of innovative entrepreneurs as well as a lack of profitable investment opportunities are restraining effective demand for formal credit. It is, therefore, unlikely that credit programs alone can be very helpful in realizing the development potential of SSEs in nontraditional activities. What is more essential for policy makers to do, is to create an economic environment where private initiative and ingenuity are adequately rewarded.

Footnotes

- * The research on which this paper is based was financed by the Stiftung Volkswagenwerk. I would like to thank Dr. Chee Peng Lim (Universiti Malaya) for providing the data of the micro-survey used in this paper. Comments by Juergen B. Donges and Bernhard Fischer on an earlier draft are gratefully acknowledged.
- ¹ See, for instance, E. Staley and R. Morse, Modern Small Industry for Developing Countries (New York: McGraw Hill Book Co., 1965), p. 354; World Bank, Employment and Development of Small Enterprises: Sector Policy Paper (Washington, D.C.: World Bank, 1978), pp. 21 f.
- ² See R.I. McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution, 1973); V.V. Bhatt and A.R. Roe, Capital Market Imperfections and Economic Development, World Bank Staff Working Paper No. 338 (Washington, D.C.: World Bank, 1979).
- ³ There is, however, a vast amount of literature on financial assistance to SSEs. A more in-depth treatment of this issue can be found in the recent discussion of the effects of interest rate deregulation, such as in D. Anderson, Small Industry in Developing Countries: Some Issues, World Bank Staff Working Paper No. 518 (Washington, D.C.: World Bank, 1982).

- ⁴ See, for instance, R.W. Davenport, Financing the Small Manufacturer in Developing Countries (New York: MacGraw Hill Book Co., 1967), pp. 109 f.; V.V. Bhatt and A.R. Roe, pp. 6 ff.
- ⁵ Prior to October 1978 the Malaysian Central Bank (Bank Negara) regulated maximum interest rates for savings and term deposits and a minimum interest rate (prime rate) in lending operations. See Bank Negara Malaysia, Money and Banking in Malaysia (Kuala Lumpur: Bank Negara Malaysia, 1979).
- ⁶ See M. Bruch and U. Hiemenz, The Role of Small and Medium-Scale Manufacturing Establishments in the Industrial Development of ASEAN Countries: Perspectives and Policy Issues, Economic Staff Paper No. 14 (Manila: Asian Development Bank, forthcoming).
- ⁷ This sample survey has been conducted by Dr. Chee Peng Lim (Universiti Malaya).
- ⁸ Large-scale establishments, consequently, are underrepresented in the sample. See Chee Peng Lim, The Role of Small Industry in the Malaysian Economy (Ph.D.diss., Universiti Malaya, 1975), pp. 11 ff., for further details on the design of the sample.
- ⁹ Conditions are not competitive, for example, when lending to SSEs is made mandatory as in Malaysia after 1976, or when SSE financing schemes are cross-subsidized by government banks.

- ¹⁰ See J.E. Stiglitz and A. Weiss, "Credit Rationing in Markets with Imperfect Information", *American Economic Review* 71 (June 1981): pp. 393-410.
- ¹¹ For related analyses see the literature cited in Stiglitz and Weiss.
- ¹² This means that riskier projects have greater weight in the tails of the probability distribution of returns than less risky ones.
- ¹³ When there is zero equity or collateral, the default risk falls entirely on the lender.
- ¹⁴ See D. Anderson, Small Industry in Developing Countries: Some Issues, World Bank Staff Working Paper No. 518 (Washington, D.C.: World Bank, 1982). For an empirical estimation of transaction costs see K. Anderson Saito and D.P. Villanueva, "Transaction Costs of Credit to the Small-Scale Sector in the Philippines", *Economic Development and Cultural Change* 29 (April 1981): pp. 631-640.
- ¹⁵ See S.P.S. Ho, Small-Scale Enterprises in Korea and Taiwan, World Bank Staff Working Paper No. 384 (Washington, D.C.: World Bank, 1980), p. 83.
- ¹⁶ See D. Anderson, p. 40.

- 17 J.M. Page Jr., "Technical Efficiency and Economic Performance: Some Evidence from Ghana", Oxford Economic Papers 23 (July 1980): pp. 319-339, p. 335.
- 18 M. Cortes and A. Ishaq, Determinants of Economic Development and Technical Efficiency in Colombian Small and Medium Enterprises (Washington, D.C.: World Bank, 1981, mimeo), p. 7.
- 19 A.F. Itao, A Study of Mortality Rates and Causes of Failure of Small-Scale Industries in the Philippines (Manila: U.P. Institute for Small-Scale Industries, March 1980), p. iii.
- 20 See M. Bruch and U. Hiemenz.
- 21 See Chee Peng Lim, p. 245.
- 22 See M. Bruch und U. Hiemenz.
- 23 For a description of discriminant analysis see U.P. van de Geer, Introduction to Multivariate Analysis for the Social Sciences (San Francisco: Freeman, 1971).
- 24 Standardized discriminant function coefficients have an interpretation which is analogous to that of beta-weights in multiple regression analysis.
- 25 For obvious reasons this variable has been neglected in the analysis of investment finance.