An Analysis of Malaysian SMEs' Access to Public Financial Assistance

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Abstract The purpose of this paper is to identify the types of firms for which government financial support for SMEs is provided in Malaysia. The financial data of privately held and publicly traded companies are used and a probit model is estimated with qualitative variables as explained variables. The estimation results of the probit model reveal that the more Bumiputras are included as the ethnic composition of the board of directors. The more support they have received, the more fixed assets a company has, and the more support it receives. Firms with poor corporate performance tend to be more likely to receive financial assistance. Since the length of operation and ROE are not statistically significant, length of operation and ROE do not seem to have a significant effect on government financial support. The study finds that government financial support through development finance institutions is related to the ethnic composition of the board members. And the more difficult it is for SMEs to borrow from banks on a commercial basis, the more government financial support they receive.

Keywords SMEs, Return on Assets, Return on Equity, Loans, Financial Assistance

1. Introduction

The Malaysian government has been committed to the development of SMEs since the 1950s. The development of SMEs in Malaysia has been incorporated into the national development framework as stated in the Five-Year National Development Plan (Malaysia Plan). Particularly since 2000, Malaysia has been putting more emphasis on SME development.

In 2004, the National SME Development Council (NSDC) was established as the overarching body to discuss SME development policies. Under the NSDC, SME development programmes focused on three areas: (1) capacity building, (2) infrastructure development, and (3) financing. To make these programmes more agile, the NSDC decided to establish the SME Corporation in 2007. This corporation began operations in 2009, incorporating the functions of the Small and Medium Industries Development Corporation and the NSDC.

In 2012, SME Corp. Malaysia launched its SME Master Plan. It consolidates and streamlines past support measures for SME development, and in addition to this, new perspectives have been introduced.

Against this background, this paper aims to identify the types of firms for which government financial support for SMEs is provided. In the analysis of this paper, the

financial data of privately held (Sendirian Berhad) and publicly traded (Berhad) companies is used and a probit model is estimated with qualitative variables as explained variables.

It is important to note in advance the limitations of this paper. This paper is only a partial picture of the government's financial support for small and medium-sized enterprises (SMEs) which does not provide a full picture. The reasons for this are twofold. The first relates to the data used in this paper. The data from the financial statements of small and medium-sized enterprises (SMEs) is used for the analysis, so it is not possible to obtain information that is not contained therein. The financial statements of SMEs in Malaysia are prepared following the national accounting standards and therefore minimum information is disclosed, but the status of further detailed disclosure varies from company to company. In addition, there are some missing data. Secondly, there are cases in Malaysia where government financial support for SMEs is provided by financial institutions other than development finance institutions. In their financial statements, few SMEs can distinguish between government soft loans provided by commercial banks and Islamic banks and loans on a commercial basis. Hence, the focus of this paper is on development finance institutions and business relationships with government agencies that are identifiable as government financial assistance. The paper attempts to get as close as possible to the reality of the situation, despite the use of incomplete data such as the above.

The paper is organised as follows: Section 2 summarises the government's financial support for SMEs, section 3 summarises previous studies, section 4 estimates the probit model, and section 5 summarises the paper and concludes with future issues.

2. Government Financial Support for SMEs

Self-financing and borrowing from friends and family are the most important means of financing for SMEs. As for financial institutions, most of the firms use commercial banks and Islamic banks, and the number of firms using loans from development finance institutions is not so large.

On the other hand, the government's financial support for SMEs has been relatively good. Government financial support for SMEs is mainly provided through development finance institutions, although in some cases, other institutions are also involved. There were 187 programmes as of March 2021, offered through development finance institutions (107), as well as government agencies (61), central banks (8), ministries (8), and state agencies (3). In addition to development finance institutions, some programmes are offered through commercial banks and Islamic banks.

Support has been provided in the form of loans, credit guarantees, gifts, and venture capital. The most common method of support was loans, with 125 cases. Loans are offered to SMEs according to their stage of development. Of these, 16 support the start of operations, 93 support growth, and 78 support business expansion. Loans are mostly used for working capital and the purchase of production equipment and fixed assets.

A distinctive feature of this support is that several projects have specified ethnicity as an eligibility criterion for support. Specifically, 37 projects (20% of the total) have Bumiputras as owners or directors of the companies, and 3 projects (1.6%) have Indians as owners or directors.

3. Preliminary Studies

Analyses of the attributes of firms receiving government financial assistance are generally conducted in the preparatory stages of policy evaluation. Based on the results of this analysis, firms that have received government financial assistance are classified into an intervention group and firms that have not received assistance but show similar attributes to the intervention group into a control group. Then the effects of the policy are measured.

In the analysis of company attributes, the probit model is mainly used. The probit model is used when it is not possible to obtain the numerical values of the data to be analyzed, but it is known whether the subject of the analysis belongs to a certain category or not. A dummy variable (1 for belonging to the category and 0 for not belonging to the category) is used as the explained variable, and variables that are thought to influence it are used as explanatory variables in the analysis.

In the context of this paper, a probit model is estimated with a dummy variable of 1 for firms that receive government policy support and 0 for firms that do not, as the explained variable, and variables that are thought to influence it as the explanatory variables. The analysis of firm attributes using such methods has been adopted by a large part of the policy evaluation literature, including Chudnovsky, López, Rossi, and Ubfál [4] (2006), Aerts and Czarnitzki [1] (2004), Roper and Hewitt [13] (2001), and Jarmin [7] (1998).

Jarmin [7] (1998) is a study that analyses the effects of policies for the US manufacturing industry between 1987 and 1992. In this, a probit model is used. The explanatory variables used are industry, state, firm size, location (urban and rural), and factory ownership. On the other hand, Roper and Hewitt-Dundas [13] (2001) analyzed a probit model including the number of employees, export sales, years in operation, industry dummies, and characteristics of owner-managers (dummy variables) to identify the attributes of firms that received government subsidies. Aerts and Czarnitzki [1] (2004) also analysed the characteristics of firms that received subsidy support

for R&D in Belgium between 1998 and 2000. They analysed the characteristics of subsidised firms using as explanatory variables the number of employees, patents, export intensity, cash flow per employee, the ratio of debt to total assets, and firm ownership (government or foreign). Chudnovsky, López, Rossi, and Ubfal [4] (2006) studied the impact of government financial support on firm innovation and performance in Argentina between 1998 and 2001, using a probit model to identify characteristics such as sales, number of employees, and industry of firms receiving support programs.

As already mentioned, since the analysis of the probit model is often used to classify intervention and control groups in policy evaluation, the results are not always clearly stated in the papers. A probit model with a dummy variable is analyzed as the explained variable, where 1 is the number of firms that received a loan from a policy-based financial institution during their start-up period and 0 is the number of firms that did not, reveals two points. First, a high proportion of loans from policymakers were provided for start-ups with few assets and no business experience. Second, they found that the competitive nature of lending between government and private financial institutions did not occur among start-up firms. In addition, Mole, Hart, Roper, and Saal [12] (2008) analyzed a probit model to identify the characteristics of firms that participated in government support programs for the United Kingdom from 2003 to 2005. They found that the younger the limited liability company, the more support it received.

4. Research Methodology

In this section, following the previous studies, the probit model is used to identify the attributes of firms that received government financial assistance. As described in Section 3, the probit model uses a binary choice model in which a dummy variable, which is set to 1 if the subject of analysis belongs to a certain category and 0 if it does not, is used as the explained variable, and variables that are thought to influence it are used as explanatory variables.

The explained variable (y) in the binary choice model is a dummy variable that takes the value 0 or 1. The conditional probability that y is 1 given the explanatory variable X_k can be expressed as:

$$P(y = 1|x) = P(y = 1|x_1, x_2, \dots, x_k) \quad (1)$$

When the variable Z is expressed as a linear function of the variable determining the probability, equation 1 can be expressed as follows:

$$Z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (2)$$

Since the probit model is cumulative standard normal distribution such that $F(Z)$ is S-correlated, the probability of variable Z can also be expressed as equation 3:

$$P_i = F(Z_i) \quad (3)$$

The parameters of the model are estimated by the

maximum likelihood method and the marginal effect of $x_i(\partial P/\partial x_i)$ can be calculated by equation 4:

$$\frac{\partial P}{\partial x_i} = \frac{dP}{dZ} \cdot \frac{\partial Z}{\partial x_i} f(Z) \beta_i \quad (4)$$

Note that $F(Z)$ is the cumulative standard normal distribution, and its derivative $f(Z)$ follows the standard normal distribution. $f(Z)$ can be expressed by equation 5:

$$f(Z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}Z^2} \quad (5)$$

It should be noted that in the estimation results from the probit model, the sign of the coefficient of the explanatory variable indicates the direction (positive or negative) of the effect and not the extent of the effect. Therefore, to know the extent of the effect, the calculation of the marginal effect is needed. First, Z is calculated as the mean value of the explanatory variables, then $f(Z)$ is calculated from equation 5, and then $f(Z)\beta_i$ can be calculated.

5. Empirical Analysis

5.1. Data Characteristics and Sample Selection

In this analysis, financial data of SMEs in Malaysia since 1999 is used. The SMEs included in the analysis were randomly selected from the SME Corp.'s publicly available SME directory, which includes privately held companies (Sendirian Berhad) and publicly traded companies (Berhad). The reason for choosing the year of coverage from 1999 onwards is related to the Asian currency crisis that occurred in the neighbouring country of Thailand in 1997-1998. Outliers are likely to be observed in Malaysia because many firms were adversely affected by the Asian currency crisis. For this reason, the analysis in this paper uses panel data from 1999 onwards.

The variables used in the analysis in this paper are as follows. The dependent variable is a dummy variable with 1 for firms receiving financial assistance through development finance institutions or government agencies and 0 for firms not receiving financial assistance. The explanatory variable is the ethnic composition of the board of directors (race), which is expected to be a benchmark for financial assistance. This is a dummy variable that is set to 1 if the board includes Bumiputras and 0 if it does not. The variables are also set that are expected to affect the general lending operations of financial institutions. Specifically, they are age (years in operation), fixed assets (FA), turnover (rev), return on assets (ROA), and return on equity (ROE). The figures for the number of years in operation, fixed assets, and turnover are expressed as a percentage. In addition to these, industry dummies (dm) have been used with 1 for manufacturing and 0 for other industries. A dummy variable is also used for regional characteristics. Regions

are classified according to the Malaysian government's classification of states into five regions: North, Central, South, East, and Borneo.

As mentioned earlier, the sign of the variables is important in the probit model. The sign of each variable obtained from the estimation of the model is expected as follows. First, the longer a firm has been in operation, the more information about the firm it has accumulated, which should have a positive impact on the lending decisions of financial institutions. However, from the perspective of SME development, the government may focus on supporting younger firms with shorter operating years. Therefore, it can be assumed that the sign of the number of years in operation (age) can be positive or negative. Secondly, the sign of fixed assets, which indicates collateral holdings, is generally expected to be positive. This has to do with the fact that collateral plays an important role in borrowing from financial institutions. The more collateral there is, the better the chances of receiving support, so a positive sign is expected for this coefficient. However, the government may be tempted to support firms that do not have sufficient collateral, as they are more likely to borrow from banks on a commercial basis if they have sufficient collateral. Therefore, the sign can be positive or negative. Thirdly, sales, ROA, and ROE, which are indicators of the good or bad performance of a company, would likewise be considered to be both positive and negative. Since good performance allows companies to borrow on a commercial basis, the government might support companies whose performance is not so good that it is difficult for them to borrow from financial institutions on a commercial basis. In such a case,

the sign would be negative.

6. Results and Discussion of Results

Table 1 shows the basic statistics of the variables used in the analysis of this paper. For the data, the basic statistics were calculated after excluding outliers with the Smirnov-Grubbs test. The standard deviation shows that the difference from the mean is large for fixed assets (1.871) and sales (1.372). In particular, the kurtosis of fixed assets is 3.635, which is moderate among the variables, but the skewness is the largest at -0.582. This indicates that the variability of the data for fixed assets is relatively large. This means that there is a large difference between firms that own fixed assets and those that do not own much. It may be possible to understand this as a difference between industries.

4.3. Estimation Results

In the analysis, a probit model was estimated with a qualitative variable as the explained variable, with 1 for firms receiving government financial assistance through development finance institutions and 0 for firms not receiving such assistance. The results of the analysis are shown in Table 2. As mentioned earlier, in the estimation results of the probit model, the direction of the sign (positive or negative) is more important than the numerical value of the coefficient of the explanatory variable. It should be noted that the numerical value itself does not imply the size of the effect. With this in mind, let us check the estimation results.

Table 1. Basic statistics of the data

Variables	Government	Race	Years in operation	Fixed assets	Turnover	Return on assets	Return on equity
Average	0.121	0.471	2.328	13.431	15.164	0.023	0.113
Median	0	0	2.302	13.533	15.253	0.022	0.093
Std Dev	0.324	0.498	0.705	1.871	1.372	0.103	0.358
Skewness	2.343	0.121	0.144	-0.582	-0.287	-0.516	0.148
Kurtosis	6.492	1.014	2.501	3.635	3.613	7.541	7.19
n	1,352	1,352	1,352	1,352	1,352	1,352	1,352

Table 2. Estimation results of the probit model

Dependent Variable	Government			
	1	2	3	4
Race	1.167 ***	1.162 ***	1.127 ***	1.126 ***
Years in operation	0.008	0.011	-0.003	-0.011
Fixed assets	0.197 ***	0.201 ***	0.203 ***	0.196 ***
Turnover	-0.143 **	-0.146 **	-0.141 **	-0.137 **
Return on assets	-1.281 **	-1.127 **	-1.287 **	-1.273 **
Return on equity	-0.127	-0.127	-0.113	-0.117
Dummies		-0.023		0.052
Northern region			0.080	0.086
Southern region			-0.190	-0.200
Eastern region			0.322 *	0.330 *
Borneo region			0.257	0.262
C-statistic	-2.423 ***	-2.426 **	-2.543 ***	-2.531 ***
Log-likelihood	-402.746	-402.658	-398.858	-398.702
McFadden statistic	0.163	0.161	0.171	0.168
n	1352	1344	1352	1344

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2 reveals the following four attributes of firms receiving government financial support for SMEs. Firstly, the ethnic composition of the board of directors (RACE) confirmed a statistically significant positive relationship. In terms of ethnic composition, the more bumiputras are included on the board, the more supportive the company is. Secondly, the fixed asset holding ($\ln(\text{FA})$) also confirmed a statistically significant positive relationship. This suggests that the holding of collateral may be a significant factor in the support provided through development finance institutions. Thirdly, a statistically significant negative relationship between sales ($\ln(\text{rev})$) and ROA was confirmed. It may be understood that firms with less favourable corporate performance in terms of turnover and ROA tend to receive financial support. Fourthly, the results for years of operation and ROE are not statistically significant. Therefore, these variables are considered to have little influence on financial support by the government. Industry dummies were not statistically significant and therefore no differences between industries could be identified. On the other hand, the regional dummy confirms a statistically significant positive relationship only for the Eastern region (East). Given the other variables, the East receives more government financial support than the Central. The Eastern states are Kelantan, Terengganu, and Pahang, which are relatively poor states in Malaysia. On the other hand, the Central region consists of the states of Selangor, Negri Sembilan, Malacca, and the Federally Administered Territories (Kuala Lumpur, Putrajaya, and Labuan). These areas have relatively higher income levels than the rest of Malaysia. This suggests that government financial assistance may be provided to the relatively poorer states.

The above analysis suggests that government financial assistance through development finance institutions is provided for the SMEs that have collateral but are performing poorly. Such firms are likely to access government financial assistance because they have difficulty accessing commercial bank loans in the first place. In this sense, the government's financial support has played a certain role. In addition, the more Bumiputras are included in the ethnic composition of the board of directors, the more they have access to government financial support. This may be related to the background and history of policy formation for SME development. Extrapolating from the fact that 20% of the SME financial assistance programmes are for Bumiputras, as discussed in Section 2, it may be said that government support for SMEs in Malaysia is still strongly implied to be for Bumiputras. As such, Bumiputra's access is likely relatively high.

7. Conclusions

In summary, this paper presents an analysis of the

attributes of firms that received government financial assistance. The estimation results of the probit model reveal four points. First, the more Bumiputras are included as the ethnic composition of the board of directors, the more support they have received. Secondly, the more fixed assets a company has, the more support it receives. Third, firms with poor corporate performance, such as sales and ROA, tend to be more likely to receive financial assistance. Fourthly, since the length of operation and ROE are not statistically significant, length of operation and ROE do not seem to have a significant effect on government financial support. Taken together, the government's financial support through development finance institutions appears to have been provided for the small and medium-sized enterprises (SMEs) that have collateral but are performing less well. This suggests that the government is playing a role in helping those companies that have difficulty obtaining loans on a commercial basis.

There are two notable findings from our analysis. The first is that government financial support through development finance institutions is related to the ethnic composition of the board members. It was the development of Bumiputra and the raising of the income level that led to the emphasis on SME development in Malaysia. Also, at the time of the Ninth Malaysia Plan (2006-2010), "Promotion of Bumiputra SMEs" constituted a chapter. Given this, it can be understood that the focus of SME development policy is on Bumiputras. This is confirmed by the finding that companies with a Bumiputra ethnic composition on their board of directors are more likely to have access to government financial support.

The second is that the more difficult it is for SMEs to borrow from banks on a commercial basis, the more government financial support they receive. This is partly in line with the so-called child industry protection argument. If the government's financial support helps SMEs to grow well and to borrow from banks on a commercial basis, then the government's support is worthwhile. The problem, however, is that it is not always the case that the SMEs it supports will grow. If the government is unable to identify those SMEs that are certain to grow, the money spent on support will be wasted and the government will not be accountable to the public. Governments need to evaluate their policies and make them public to justify them. It is also necessary to link this to improvements in support. In addition to the government's policy evaluation, it would be desirable to have a neutral evaluation by an external researcher.

Thus, this paper has shed light on the characteristics of SMEs accessing government financial support, but as mentioned at the beginning, the analysis in this paper needs to be treated with caution. To present more realistic results, it is desirable to increase the sample size and improve the accuracy of the analysis. It would also be necessary to analyse government financial assistance

provided through commercial banks. In addition to such improvements, it is also necessary to examine whether the government financial support provided for SMEs has been effective or not. These are questions for the future.

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