Chapter 3

Small and Medium Enterprises' (SMEs') Access to Finance in Selected East Asian Economies

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CHAPTER 3

Small and Medium Enterprises' (SMEs') Access to Finance in Selected East Asian Economies

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This paper attempts to shed light on the issues of SME financing in selected East Asian economies. It will elaborate on the following questions: (i) what are the key sources of external finance for SMEs (ii) the extent to which, if any, the SME sector identified by size, country and in aggregate for a sample of countries in East Asia are systematically disadvantaged, or rationed, with respect to access to external financing, (iii) what are the key factors contributing to the extent of this rationing (stringent requirements) focusing upon firm characteristics, owner characteristics and firm performance, and (iv) identify the importance of rationing for the performance of SMEs in a sample of East Asian economies.

1. Introduction

Access to funding is the lifeblood of any enterprise, facilitating its growth, generating more output and employment (Beck et al., 2005, 2006, and 2008). There is considerable evidence to support the contention that SMEs face a number of obstacles in accessing finance, mainly related to their limited resources and perceived risk by lenders. The focus of this paper is limited to formal sources of finance (e.g. commercial banks and other financial institutions), and it is clear that, in this context, market failure exists. SMEs' access to finance and the cost of this finance does not compare favorably with that of large enterprises. From the literature, market failure in lending to SMEs can be ascribed to a number of reasons, primarily relating to their relatively small size, lack of resources, and opaqueness (Petersen and Rajan, 1994; Berger and Udell, 1998; Hyytinen and Pajarinen, 2008).

In the seminal contribution by Stiglitz and Weiss (1981), they show that due to the problems of dealing with uncertainties such as agency problems, asymmetric information, adverse credit selection and monitoring problem, lending institutions find it difficult to distinguish between good and bad risk which can result in adverse selection and moral hazard problems. In this context, lending institutions such as banks find it less risky and less costly to lend to large enterprises, and, therefore, rational to apply credit rationing to SMEs which are subject to greater opaqueness and risk. SMEs face higher transaction (compliance) costs in obtaining loans.

In many emerging-market or transition economies SMEs face even more severe challenges as the private sector is still in an embryonic form, many SMEs remain in the informal sector and operate in an environment of underdeveloped financial

markets. Domestic financial markets may have a limited range of financial products and services that are ill-suited to the needs of SMEs, which stems from a variety of reasons, such as regulatory rigidities, an incomplete legal framework or a lack of interest in lending to such enterprises.

Access to finance is critical to the performance of SMEs in a number of areas. From the literature, it appears that such access rather than the actual cost of the finance is the biggest problem for SMEs. Without adequate access to formal sources of finance, SME performance and development will be severely hindered from a number of perspectives (e.g. growth, employment, profitability, exports, efficiency, productivity and returns on assets), as informal sources are very limited and very costly. In turn, inhibited or poor performance by SMEs in these areas will further exacerbate access to and cost of funds in the future.

This paper attempts to shed light on the issues of SME financing in selected East Asian economies. It will elaborate on the following questions: (i) what are the key sources of external finance for SMEs (ii) the extent to which, if any, the SME sector identified by size, country and in aggregate for a sample of countries in East Asia are systematically disadvantaged, or rationed, with respect to access to external financing, (iii) what are the key factors contributing to the extent of this rationing (stringent requirements) focusing upon firm characteristics, owner characteristics and firm performance, and (iv) identify the importance of rationing for the performance of SMEs in a sample of East Asian economies.

We find that a significant number of SMEs still rely on internal resources for both start-up and business expansion. However, external finance becomes very important for domestically owned, small-sized, lower-profit generating, business-inspirational

SMEs with insufficient funds in less developed economies. Moreover, size of SME and stage of country development, reflecting financial market conditions, also affect the diversity of choices of financial institution and financial products that SMEs can access.

Our analysis reveals potential credit rationing or risk premiums exercised by financial institutions on SMEs. The key findings from our analysis suggests that size and stage of country development (financial market development) do affect the conditions of external finance offered to SMEs, i.e., larger-sized SMEs in more developed economies tend to get larger *amounts of loans, with longer terms,* and *lower interest rates.* We also find that an owner's net worth, collateral, business plan, financial statement, and cash flow are critical in determining the conditions of loans extended by financial institutions to SMEs. Financial institutions put higher risk premiums on opaque SMEs by offering them less favorable financial conditions relative to less well established and transparent SMEs.

Financial access has a significant impact on the innovation capability and export market participation by SMEs. The study suggests that larger SMEs having access to larger loans, of longer term duration and with a lower interest rate, are conducive to their innovation capability and participation in foreign markets. External finance with favorable conditions provides SMEs with sufficient time and resources to enhance their innovation capability and to enter foreign markets.

The rest of this paper is structured as follows. Section 2 discusses pertinent literature to provide a framework for our analysis and to establish some testable hypotheses. Section 3 presents the methodology for the empirical exercise, including a brief description of the survey from which the data for this study was drawn. Section 4

presents the results of the empirical exercises. Section 5 presents the key policy recommendations from these findings and Section 6 concludes the chapter.

2. SMEs Access to Finance in the Literature

Before discussing key issues relating to SME access to finance, it is important to understand how firms choose their sources of finance. There are two main theories in the literature: the tradeoff theory (Myers, 1977, 1984) and pecking order hypothesis (Watson and Wilson, 2002; Frank and Goyal, 2003; Cassar and Holmes, 2003). According to the tradeoff theory firms reach an optimal capital structure by balancing the benefits of debt (tax and reduction of free cash flow problems) with the costs of debt (bankruptcy and agency costs between stockholders and bondholders). The pecking order hypothesis asserts that due to the presence of information asymmetries between the firm and potential financiers, the relative costs of finance will vary between the financing choices inasmuch as firms prefer internal sources of finance (retained earnings, savings of existing owners) to external ones (bank loans, leasing, equity) as the costs of external finance are likely to be greater for them. Therefore, profitable firms with retained profits can use these for firm financing before accessing outside sources.

The issue of access to external finance by firms can also be traced back to the theory of imperfect information in capital markets. According to Stiglitz and Weiss (1981), seen from the lender's perspective (or supply side), banks have difficulty in differentiating between good (high quality) and bad (low quality) loan applicants

where there is asymmetric information. As a result, banks are likely to adopt more stringent lending policies favoring those who are able to provide more collateral assets or have a better established credit record. In other words, banks have to adopt credit rationing measures to minimize problems from adverse selection and moral hazard. The potential for credit rationing is thought to be greater for small firms as they are subject to greater opaqueness.

On the demand side, as argued by Petersen and Rajan (1994), the amount of information that banks could acquire is usually much less in the case of small firms, because they have little information about these firms' managerial capabilities and investment opportunities. The extent of credit rationing to small firms may also occur simply because they are not usually well-collaterised. Gertler and Gilchrist (1994) argue that firm size is a major determinant of access to external finance. A more recent paper by de la Torre *et al.* (2010) also attributes hindrances of SME access to finance to ''opaqueness", meaning that it is difficult to ascertain if firms have the capacity to pay, i.e., have viable projects and/or the willingness to pay (due to moral hazard). This opaqueness particularly undermines lending from institutions that engage in more impersonal or arms-length financing that requires hard, objective, and transparent information.

There are a number of notable empirical findings on the issue of SME finance. Our review is by no means exhaustive. Watson and Wilson (2002), using UK data, find that the pattern of coefficients was found to be consistent with the pecking order model predictions that retained earnings are the most preferred source of finance, then debt and finally the issue of new shares to outsiders. Cassar and Holmes (2003), using a large Australian nationwide panel survey, suggest that asset structure, profitability

and growth are important determinants of capital structure and financing. Their results generally support static trade-off and pecking order arguments. However, Frank and Goyal (2003), using publicly traded American firms for 1971 to 1998, suggest that their results are contrary to the pecking order theory, in that net equity issues track the financing deficit more closely than do net debt issues.

Vos *et al.* (2007), using UK and US data, assert that financial performance indicators (growth, return on assets, profit margin) are not determinants of SME financing activities, indicating a positive account of small business financing. They claim that SME financial behavior demonstrates substantial financial contentment or 'happiness', as they are non-growth orientated. However, they show that growth-interested SMEs are more active in the use of and access to external sources of funds.

Beck *et al.* (2008) find that small firms and firms in countries with poor institutions use less external finance, especially bank finance, less leasing or trade finance compared with larger firms. They also find that larger firms more easily expand their external financing when they are financially constrained than do small firms, and find suggestive evidence supporting the pecking order hypothesis across countries.

Nofsinger and Wang (2011) study the determinants of external financing in initial firm start-ups in 27 countries. They suggest that information asymmetry and moral hazard problems complicate access to start-up capital. They find that entrepreneurial experience is helpful in obtaining financing from institutional investors, and that the legal environment is important for access to external financing. High amounts and diversity in sources of external financing are associated with high levels of property rights, contract enforcement, and corruption protection.

As far as East Asian countries are concerned, Le and Nguyen (2009) emphasize the role of networking on bank finance for SMEs in Vietnam. Firth *et al*. (2009) use firm's profitability, political connections via state minority ownership as a criterion in granting loans and in determining loan size in China. They find that in the absence of credit bureaus and exchange of loan information across the banking sector, banks rely on corporate governance as a signal of borrowers' quality in a lending environment with severe asymmetric information. Good corporate governance can serve as organization collateral to facilitate access to bank loans.

From our brief literature cited above, a number of testable hypotheses will be highlighted in this stage of the study. These include:

Hypothesis 1*:*

SMEs' access to external finance by sources and types are related to: (i) firm attributes: size, firm age, sector of operation, country's stage of development, business life cycle, ownership type; (ii) owner attributes: managerial experience, net worth, running more than one business; and (ii) firm's past performance record: profitability, and sales growth.

The dependent variable is a binary variable and identifies: (i) whether or not a firm applied for any type of external finance (bank loans, leasing, equity, grant, or trade credits from suppliers); (ii) whether or not they had access to more than two financial institutions; and (iii) whether or not they had access to at least two types of external finance in the past 12 months.

From the literature, we expect the relationship between dependent and independent variables can be summarized in Table 1 as follows:

Table 1. Dependent variable: SMEs' Access to External finance/ Multiple Sources/ Multiple Types

Independent Variables	Expected sign
1. Business-life cycle	+/-
2. Foreign ownership	+/-
3. Owner's managerial experience	+/-
4. Owner's net worth	+/-
5. Owner's multiple businesses	+/-
6. Sales growth $_{t-1}$	+/-
7. Profit margin $_{t-1}$	-
8. Expansion plan	+
9. Sufficient internal fund	-
Control Variable	
10. Age	+/-
11. Size	+/-
12. Dummy countries	+/-
13. Dummy sectors	+/-

Hypothesis 2:

Conditions of the loan size, term of the loan, and interest rate offered to SMEs are related to: (i) firm attributes: size, firm age, firm innovation, sector of operation, country's stage of development, business life cycle, ownership type; (ii) owner attributes: managerial experience, net worth, running more than one business; (iii) firm's past performance record: profitability, sales growth; and (iv) meeting lender's requirements: collateral, business plan, financial statement, and cash flow.

Table 2. Dependent Variable: Loan size, Term of Loan, and Interest Rate Offered to SMEs

Independent variables	Expected Sign		
	Loan size	**Term of Loan**	**Interest rate**
1. Business-life cycle	+/-	+/-	+/-
2. Foreign ownership	+/-	+/-	+/-
3. Owner's managerial experience	+	+	-
4. Owner's net worth	+	+	-
5. Owner's multiple businesses	+	+	-
6. Sales growth t-1	+	+	-
7. Profit margin t-1	+	+	-
8. *Collateral*	+	+	-
9. *Business plan*	+	+	-
10. *Financial statement*	+	+	-
11. *Cash flow*	+	+	-
Control Variable			
12. Age	+/-	+/-	+/-
13. Size	+	+	-
14. Dummy countries	+/-	+/-	+/-
15. Dummy sectors	+/-	+/-	+/-

Hypothesis 3: SME performance: SMEs' innovation capability and exports are related to: (i) firm attributes: size, firm age, sector of operation, stage of country's development; (ii) access to finance.

Table 3. Dependent Variable: SMEs' Innovation Capability and Export

Independent variables	Expected Sign	
	Innovation	**Export**
1. Loan size	+	+
2. Term of loan	+	+
3. Interest rate	-	-
Control Variable		
4. Age	+/-	+/-
5. Size	+	+
6. Dummy countries	+/-	+/-
7. Dummy sectors	+/-	+/-

3. Methodology and Data

The research methodology adopted a structured questionnaire survey of SMEs conducted in eight East Asian countries (Cambodia, China, Indonesia, Laos, Malaysia, the Philippines, Thailand and Vietnam). It is anticipated that a total of 150 useable samples will be obtained from each country. The questionnaire aimed at collecting information on SME characteristics, sources and usage of finance. Information on the following characteristics of SMEs is collected: basic characteristics (i.e., size, age), ownership, cost and input structure, performance (i.e., participation in production networks, sales, sales growth, profit rate, etc.), sources of finance and usage, capability to innovate, and managerial background.

Table 4. Sample Distribution

	1 to 5	6 to 49	50 to 99	100 to 200	Total	% of Total
Garment	62	193	53	32	340	32.2 %
Parts, Components and Automotives	22	55	13	11	101	9.6%
Electrical, Electronic, Parts and Machinery	23	87	33	35	178	16.9%
Others	146	215	37	38	436	41.3%
Total	253	550	136	116	1055	
	24.0 %	52.1%	12.9%	11.0%		100.0%

Firm size is defined in terms of employment and large firms are defined as those with more than 200 employees. In other words the sample contains observations of firms with a maximum of 200 employees. There are 1055 surveyed firms that fall within this definition. Tables 4 and 5 summarize the key characteristics of the surveyed SMEs. SMEs between 6 and 49 employees accounted for 52% of the total, followed by 24%, 13%, and 11% for the employment groups of 1 to 5, 50 to 99, and

100 to 200, respectively. Distributed by industry, 32% are from garments, more than 9% from parts, components and automotives, 17% from electrical, electronic, parts, and machinery, and 41% are in other industries. The average age of the SMEs was more than 10 years. Most of them are domestically owned and sold their products domestically.

Table 5. Characteristics of the Surveyed SMEs

Characteristics	Garment			Parts, Components, and Automotives			Electrical, Electronic, parts and machinery			Others		
	N	Mean	S.D	N	Mean	S.D	N	Mean	S.D	N	Mean	S.D
Age (year)	336	15.2	10.5	100	16.9	10.5	170	15.2	10.6	418	13.2	8.9
Ownership (%)												
Domestic	328	97.38	13.54	85	96.64	15.61	154	95.27	18.95	406	98.54	9.80
Foreign	22	63.36	36.28	20	94.30	13.72	33	91.75	18.17	34	80.25	31.11
Sales (% growth)												
2008	187	12.11	68.52	46	26.23	46.59	112	15.84	31.12	396	8.85	22.76
2009	302	11.70	80.60	97	4.96	38.26	163	18.63	97.47	423	13.59	49.70
Profit (%)												
2008	302	8.70	70.01	96	13.16	21.86	160	11.81	71.75	418	18.10	14.16
2009	309	9.43	53.20	97	14.61	18.77	164	-8.65	315.61	413	19.08	13.90
Cost Structure 2009 (%)												
Labour	303	28.88	21.50	96	26.06	15.60	154	22.73	14.57	404	17.06	11.87
Raw Materials	299	50.88	22.14	88	56.56	21.34	151	56.75	21.01	393	55.19	18.75
Utilities	297	8.92	8.77	84	8.41	10.68	133	6.52	7.33	385	14.58	12.06
Interest	271	3.16	6.33	80	3.42	6.30	116	2.53	5.39	366	2.63	5.13
Other costs	285	3.87	7.40	86	6.47	9.92	142	7.36	10.54	375	5.61	8.71
Employees (persons)	340	35.98	41.61	101	36.27	43.45	178	51.72	51.00	434	28.40	41.56
Tertiary (%)	266	7.82	13.36	89	9.53	16.47	121	24.42	26.35	285	11.07	22.14
Vocational (%)	258	12.66	21.06	91	26.29	33.25	126	25.96	28.39	280	14.20	25.96
High school or less (%)	331	82.24	26.25	96	61.04	37.53	161	54.69	39.99	413	80.74	31.64
Sale Destination (%)												
Domestic	331	87.61	27.44	98	93.77	20.62	169	90.30	23.49	426	95.15	17.73
Export	80	57.45	33.79	14	57.92	37.30	42	45.81	37.15	51	38.82	34.71

Source: ERIA – SMEs Survey.

Some adjustments have been made to prepare the data for this study. In most cases this involved adjustments in order to make the data consistent and comparable across the surveyed countries. Adjustments were made for some obvious errors in the data entry process. This is typical for a firm-level survey, where there is always incomplete or missing information. This study, however, did not attempt to replace the missing information with a predicted value.

3.1. Statistical Method

The dependent variables for each hypothesis are examined by way of statistical regression. The statistical model in its general form is given as follows:

$$Y_i = \gamma_0 + \Gamma' X_i + \varepsilon_i \quad \text{.....} \quad (1)$$

where (1) is the equation for dependent variables, *i* represents firm *i* and X_i is a set of explanatory variables that captures firm characteristics and concerned variables proposed in the hypotheses. Industry and country-group dummy variables are included for differences across industries and countries. The industry dummy variables identify whether firms are in the following sectors: garments, auto parts and components, electronics, including electronics parts and components, or other sectors. Meanwhile, country-group dummy variables identify whether a firm operates within the group of developed ASEAN countries (i.e., Thailand, Malaysia, Indonesia, the Philippines, and China) or the group of new ASEAN member countries (i.e., Cambodia, Lao PDR, and Vietnam).

3.2. Measurement and Summary of Variables

Besides the industry and country-group dummy variables described above, the following variables are employed to account for the hypothesized firm characteristics. The set of dependent and independent variable are defined and measured as follows:

3.2.1. Financial Variables

For SMEs need for external finance, three dummy variables are created. First, a dummy variable is created and takes a value of unity if a firm applied for any type of external finance (bank loans, leasing, equity, grant, or trade credits from suppliers) in the past 12 months, or 0 otherwise. The second dummy variable takes a value of unity for a firm accessing more than two financial institutions in the past 12 months, or takes 0 otherwise. The third dummy variable takes a value of unity for a firm accessing at least two types of external finance in the past 12 months, or 0 otherwise

Three variables are identified to capture the conditions of finance extended to SMEs. One is the amount of the loan and another is its length; both are given in natural logarithm form. Lastly, the loan's interest rate is measured by the interest rate on the loan that the SMEs in the sample were able to obtain. These variables tend to be firm-specific since they reflect the risk premium value assessed by the banks or other lending institutions that advanced loans to the SMEs.

Four dummy variables are created to capture the conditions required by lenders for the finance to be advanced which are: collateral, business plan, financial statement, and cash flow. The value of each of these variables is equal to unity if each of the requirements is met, or zero otherwise.

3.2.2. Firm Characteristics

For the characteristics of SMEs, firm size is proxied by the number of employees. Other common alternatives, such as output or profits, are not used as they tend to be more sensitive to changes in the business cycle or macroeconomic variables. The head-count measure is chosen because data on the number of hours worked, which is the ideal measure of employment, is not available. Meanwhile, the age of the firm is proxied by the number of years that its plant has been in commercial production.

Two other dummy variables are created to capture the firm's business life-cycle (start-up, fast growth, slow growth, maturity, and decline) and type of ownership (domestic or foreign owned). The first dummy variable is created to identify whether a firm is a start-up and grows at a rate much faster than the economy, taking the value of unity, or zero otherwise. Foreign ownership is defined by the percentage share of foreign ownership, with a share over 51%. It takes a value of unity if it is foreign owned, or zero otherwise.

Three variables are defined owner attributes: managerial experience, net worth, and running more than one business. The owner's managerial experience is the number of years the majority owner has accumulated in owning or managing a business. The owner's net worth is the estimated total private and business assets of the majority owner. These two variables are converted into natural logarithms. The last dummy variable takes the value of unity if the owner is running other businesses, or zero otherwise.

3.2.3. Firm Performance Variables

In order to assess the relationship between SMEs' access to finance and their performance, two main performance variables are considered against the financial variable, i.e., loan size, term of the loan, and interest rate. The first variable is SMEs' innovation capability and the second is the exporting activity of the surveyed SMEs. The first dummy variable takes a value of unity if a firm is reported to have done business, process, and product innovation at the same time, or 0 otherwise. The second dummy variable takes the value of unity if a firm reports having its products exported to foreign markets, or 0 otherwise.

All variable definitions and summary statistics are given in Table 6.

Table 6. Variable Definition and Summary Statistics

Variable	Definition	N	Mean	S.D
Applied for external finance	Dummy variable takes value 1 for a firm applied for any type of external finance (bank loans, leasing, equity, grant, or trade credits from suppliers) in the past 12 months, or 0 otherwise	1055	0.5441	0.4983
Access to more than 2 financial institutions	Dummy variable takes value 1 for a firm access to more than two financial institutions in the past 12 months, or 0 otherwise	419	0.1551	0.3625
Access to at least 2 types of external finance	Dummy variable takes value 1 for a firm access to at least two types of external finance in the past 12 months , or 0 otherwise	507	0.4300	0.4956
Loan size	Logarithm of firm's amount of loans offered	358	10.1106	2.4389
Term of loan	Logarithm of firm's average number of years of loans offered	376	1.8155	1.2696
Interest rate	Logarithm of firm's average interest rate paid	440	2.3860	0.7293
Innovation capability	Dummy variable takes value 1 for a firm having, business, process, product innovation capability, or 0 otherwise	1055	0.2152	0.4111
Export	Dummy variable takes value 1 for a firm participation in export market, or 0 otherwise	1055	0.1773	0.3821
Business-life cycle	Dummy variable takes value 1 for a firm in the start-up and fast growth stage, or 0 otherwise	1055	0.2408	0.4277
Foreign ownership	Dummy variable takes value 1 for a firm with the share of foreign ownership more than 51%, or 0 otherwise	1055	0.0815	0.2738
Owner’s managerial experience	Logarithm of firm's owner years of managerial experience	834	2.4036	0.8277
Owner’s net worth	Logarithm of firm's owner net worth of private and business asset	838	11.6518	1.6811
Owner’s multiple businesses	Dummy variable takes value 1 for a firm's owner running other businesses, or 0 otherwise	1005	0.3592	1.3476
Sale growth $_{t-1}$	Logarithm of firm's sale growth in Year t-1	596	2.3662	0.9793
Profit margin $_{t-1}$	Logarithm of firm's profit margin in Year t-1	899	2.4899	1.1333
Expansion plan	Dummy variable takes value 1 for a firm 's plan to expand the business in the next 2 years, or 0 otherwise	917	0.6150	0.4868
Sufficient internal fund	Dummy variable takes value 1 for a firm's reported to have sufficient fund to finance its expansion plan, or 0 otherwise	972	0.4064	0.4914
Collateral	Dummy variable takes value 1 if a firm 's required to provide collateral as a condition for financial approval, or 0 otherwise	553	0.6184	0.4862
Financial statement	Dummy variable takes value 1 if a firm 's required to provide financial statement as a condition for financial approval, or 0 otherwise	569	0.5272	0.4997
Business plan	Dummy variable takes value 1 if a firm 's required to submit business plan as a condition for financial approval, or 0 otherwise	568	0.4120	0.4926
Cash flow	Dummy variable takes value 1 if a firm 's required to provide cash flow as a condition for financial approval, or 0 otherwise	570	0.2912	0.4547
Age	Logarithm of firm's number of year since its year of establishment	1026	2.4308	0.7352
Size	Logarithm of firm's number of employment	1055	2.8112	1.3093
Dummy country	Dummy variable takes value 1 for Cambodia, Lao, Vietnam, or 0 otherwise	1055	0.4483	0.4976
Dummy sector	Dummy variable takes value 1 for garment sector, or 0 otherwise	1055	0.3223	0.4676
	Dummy variable takes value 1 for auto parts and components, or 0 otherwise	1055	0.0957	0.2944
	Dummy variable takes value 1 for electronics, and electronics parts and component, or 0 otherwise	1055	0.1687	0.3747
	Dummy variable takes value 1 for other sectors, or 0 otherwise	1055	0.4114	0.4923

4. Empirical Results and Discussion

4.1. SMEs' Access to External Finance by Sources and Types

Before analyzing hypothesis 1 on the need of SMEs for external finance, we check the response from SMEs with regards to their sources of funds for start-up and operations and the main purpose of the requested finance. Results from Tables 7a, 7b, and 7c confirm that firms use first internal finance (loans from friends or relatives and personal savings) as the main source of finance for starting a new firm and operations. However, external finance from financial institutions becomes more important than internal finance in the form of retained earnings, for their business operations. The main purposes of the requested external finance are for working capital, buying machinery, equipment, and to grow the business. These results seem to support the pecking order hypothesis that firms prefer internal sources of finance to external sources as long as these remain available and are cheaper.

Table 7.a. Source of Finance for Business Start-up

	N	Mean	S.D
Loans from friends or relatives of business owner(s)	1055	0.564	0.496
Retained earnings	1055	0.528	0.499
Commercial or personal loans and lines of credit from financial institution including credit cards.	1055	0.362	0.481
Trade credit owing to suppliers	1055	0.331	0.471
Leasing	1055	0.183	0.387
Loans from individuals unrelated to the firm or its owner ("angels")	1055	0.171	0.376
Personal savings of business owner(s)	1055	0.156	0.363
Government funding, grants	1055	0.111	0.314
Micro-credit	1054	0.102	0.302
Other sources of financing	1055	0.047	0.213

Table 7.b. Source of Finance for Business Operations

	N	Mean	S.D
Personal savings of business owner(s)	1034	0.721	0.449
Loans from individuals unrelated to the firm or its owner ("angels")	1034	0.646	0.478
Government funding, grants	1032	0.499	0.500
Commercial or personal loans and lines of credit from financial institution including credit cards.	1030	0.331	0.471
Retained earnings	1033	0.329	0.470
Trade credit owing to suppliers	1029	0.232	0.422
Loans from employees	1028	0.190	0.392
Leasing	1027	0.155	0.362
Micro-credit	1055	0.116	0.320
Other sources of financing	973	0.055	0.229

Table 7.c. Purpose of Requested Finance

	N	Mean	S.D
Working capital/ operating capital, such as inventory or paying suppliers	598	0.540	0.499
Other Machinery and equipment	595	0.262	0.440
To grow the business	599	0.230	0.421
Vehicles/ rolling stock	597	0.136	0.343
Land and buildings	596	0.104	0.306
Debt consolidations	595	0.074	0.262
Research and development	595	0.066	0.248
Other	568	0.039	0.193
Computer hardware and software	599	0.033	0.180
Intangibles? (such as training, customer list, goodwill)	595	0.017	0.129
Purchase a business	595	0.008	0.091

Source: ERIA – SMEs Survey, 2011.

To have a clearer picture of SMEs' choices of external finance, we test hypothesis 1 by running the following regression:

$$F_i = \gamma_0 + \Gamma' X_i + \varepsilon_i \text{ .....} \qquad (2)$$

The dependent variable F_i is a binary variable and identifies: (i) whether or not a firm applied for any type of external finance (bank loans, leasing, equity, grant, or trade credits from suppliers); (ii) whether or not it had access to more than two financial institutions; and (iii) whether or not it had access to at least two types of external finance, in the past 12 months.

Equation (2) is estimated within the framework of binary choice models (i.e., a probit model), instead of a linear probability model (LPM). This is mainly because the predicted probability derived from an LPM may lie outside the 0-1 region, which is clearly not reasonable in practice. Despite this, a binary response model has a number of shortcomings. One important shortcoming is that the potential for bias arising from neglected heterogeneity (i.e. omitted variables) is larger in a binary choice model than in a linear model. Nevertheless, Wooldridge (2002) points out that estimating a binary response model by a binary choice model still gives reliable estimates, particularly if the estimation purpose is to obtain the direction of the effect of the explanatory variables.

Before we proceed with the maximum likelihood regression, we check the correlation matrix of the dependent and independent variables, as shown in Table 8.

Table 8. Correlation Matrix of Dependents and Independent Variable

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Applied for external finance	1													
2	Access to more than 2 financial institutions	1	1												
3	Access to at least 2 types of external finance	1	0.1565***	1											
4	Business-life cycle	-0.0098	-0.0005	0.1922***	1										
5	Foreign ownership	-0.0472	-0.0355	0.022	0.0996***	1									
6	Owner's managerial experience	0.0649	0.1375	0.0184	-0.2168***	-0.0051	1								
7	Owner's net-worth	0.0244	0.1097	0.1873***	0.1184***	0.2445***	0.1565***	1							
8	Owner's multiple businesses	-0.0369	-0.0169	0.1177***	0.0161	0.0417	0.0958***	0.1718***	1						
9	Sale growth $_{t-1}$	0.0353	0.0064	0.1611***	0.1528***	0.1776***	-0.1208	0.076	-0.0406	1					
10	Profit margin $_{t-1}$	-0.1413***	0.0161	-0.0578	0.0336	-0.0551	0.022	-0.2495***	-0.0387	-0.1048	1				
11	Expansion plan	0.1509***	0.032	0.0573	0.0898***	-0.0005	-0.0871	0.0606	-0.0076	0.1363***	-0.0114	1			
12	Sufficient internal fund	-0.1881***	0.1479***	0.1366***	-0.0299	0.0198	0.0525	0.1097***	0.0217	-0.0024	0.0282	0.1396***	1		
13	Age	0.0616	0.1027	-0.0618	-0.2369***	-0.1724***	0.6032***	0.0064	0.0496	-0.2384***	0.1105***	-0.0618	0.0962***	1	
14	Size	0.0990***	0.1862***	0.1754***	0.1210***	0.2880***	0.0353	0.4976***	0.1510***	0.2087***	-0.4372***	0.0802	0.0334	-0.047	1

Since we found no serious multi-collinearity between the independent variables, we include all of them in our regression models. The regression results for each of the SMEs' access to external finance variables are presented in Table 9.

Table 9. Dependent Variable: SMEs' external finance/Multiple Sources/Multiple Types

Independent Variable	Dependent variable		
	Applied for external finance	Access to more than 2 financial institutions	Access to at least 2 types of external finance
Business-life cycle	0.0613 (0.219)	-1.115 (0.763)	0.811** (0.336)
Foreign ownership	-1.492*** (0.497)	0 0	0.139 (0.803)
Owner's managerial experience	0.204 (0.125)	0.276 (0.402)	-0.274 (0.233)
Owner's net worth	0.0628 (0.0666)	-0.243 (0.171)	0.0408 (0.0930)
Owner's multiple businesses	0.0695 (0.0915)	0.0126 (0.132)	0.193** (0.0909)
Sale growth $_{t-1}$	0.0202 (0.0945)	-0.0398 (0.353)	0.126 (0.138)
Profit margin $_{t-1}$	-0.148* (0.0855)	-0.258 (0.205)	-0.131 (0.117)
Expansion plan	0.399** (0.173)	0.500 (0.620)	-0.168 (0.293)
Sufficient internal fund	-0.498*** (0.179)	0.317 (0.428)	-0.0504 (0.314)
Age	-0.0890 (0.172)	1.580*** (0.413)	0.420 (0.292)
Size	-0.0273 (0.0932)	0.250 (0.290)	0.285** (0.145)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or 0otherwise)	0.159 (0.218)	-1.997*** (0.507)	-1.064*** (0.330)
(Dummy var. for garment sector) i	-0.0813 (0.206)	1.534** (0.631)	0.142 (0.352)
(Dummy var. for auto parts and components) i	0.742* (0.412)	0.346 (0.705)	0.355 (0.515)
(Dummy var. for electronics, and electronics parts and component)i	0.453 (0.301)	1.613** (0.732)	-0.193 (0.505)
Constant	-0.576 (0.882)	-3.746 (2.318)	-1.587 (1.407)
Observations	274	117	146

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 9 reports the results of a maximum likelihood estimation of Equation (2) for the subset of the sample that consists of all firms/SMEs with a maximum size of 200 employees. The table reports the final specifications that give the best results, while the other specifications that were estimated during the experimental stage are not reported here. The Wald test of overall significance in all specifications passes at the 1 % level. The table reports robust standard errors for the heteroscedastic variance.

4.1.1. SMEs' Need for External Finance

First, with regards to the general need for external finance, we found that though not statistically insignificant, younger and smaller SMEs at the start-up and fast-growth stage, with experienced, wealthier owners running multiple businesses, and operating in less developing economies, are inclined to need, or use, more external finance.

However, we found 4 main variables with statistically significant estimated coefficients at the 1, 5 or 10 % level of significance. The highly significant and large coefficients with negative signs imply that foreign-owned SMEs are financially viable and are not actively seeking external finance. Moreover, SMEs which report higher profit margins in previous years and have sufficient internal funds are highly inclined not to seek external funding. This result is very consistent with the pecking order hypothesis. Finally, SMEs with business expansion plans actively seek external finance.

4.1.2. SMEs' Access to Financial Institutions

For those SMEs that received external funding, we attempt to identify their distinctive characteristics with regards to their access to more than 2 financial

institutions. We find that, at a lower level of statistical significance, SMEs that are able to access more than 2 financial institutions are those at a mature stage in their business life-cycle, all are domestically owned (the foreign ownership variable is dropped from the model), are more experienced but have less affluent owners, have lower growth and profit margins but have expansion plans and adequate internal funds (to service the debt), and tend to be larger. However, at the 1 % significance level, only older SMEs and those in more developed economies are statistically significantly able to access more than 2 financial institutions.

4.1.3. SMEs' Access by Type of External Finance

Finally, with regards to types of external finance (bank loans, leasing, equity, grant, or trade credits from suppliers), we found that, at the 1 or 5 % significance levels, larger SMEs at the start-up and fast-growth stage, with owners running multiple businesses and operating in more developed economies are highly likely to be able to access more than 2 types of external finance.

In summary, although the results suggest that a significant number of SMEs still rely on internal resources both for start-up and business expansion, external finance is very important for SMEs which are domestically-owned, smaller=sized, lower profit making, with business aspirations but lacking sufficient funds, in less developed economies. Moreover, the size of SMEs and stage of country development, reflecting financial market conditions, also affects SMEs' access to finance in terms of choices of financial institutions and financial products.

4.2. Conditions of Finance Offered to SMEs

This section extends the previous analysis by gauging firm characteristics that allow SMEs to receive favorable conditions in terms of loan size, term of loan, and interest rate. Moreover, we are interested in whether stringent requirements imposed on SMEs would result in different financial conditions being offered to SMEs. Those requirements are: collateral, business plan, financial statement, and cash flow. Thus, the following general form of a statistical model is estimated for hypothesis 2:

$$LTR_i = \gamma_0 + \Gamma' X_i + \gamma_1 F_i + \varepsilon_i \quad \text{.....} \qquad (3)$$

where LTR_i is loan size, term of loan, and interest rate, respectively, offered to SMEs. i represents firm i as in the previous section, X_i is a set of explanatory variables that captures firm characteristic determinants, and F_i is a set of explanatory variables that captures firm requirements (collateral, business plan, financial statement, and cash flow) imposed by financial institutions. Estimations also include dummy variables for industries and country groups. Estimations are conducted only on the sample of SMEs that successfully applied for external finance.

By checking the correlation matrix there appears to be multi-collinearity amongst our main independent variables, especially amongst owner's net worth, collateral, business plan, financial statement, and cash flow. Therefore, we introduce these variables one by one into the base model.

Table 10. Correlation Matrix of Dependents and Independent Variable

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Loan size	1															
2 Term of loan	0.4263***	1														
3 Interest rate	-0.5499***	-0.2147***	1													
4 Business-life cycle	0.1979***	0.3282***	0.006	1												
5 Foreign ownership	0.3513***	0.1500***	-0.1850***	0.0996***	1											
6 Owner's managerial experience	-0.07	-0.1581***	-0.1578***	-0.2168***	-0.0051	1										
7 Owner's networth	0.7056***	0.3143***	-0.5508***	0.1184***	0.2445***	0.1565***	1									
8 Owner's multiple businesses	0.0837	0.1685***	0.0076	0.0161	0.0417	0.0958***	0.1718***	1								
9 Sale growth $_{t-1}$	0.2368***	0.3381***	-0.0802	0.1528***	0.1776***	-0.1208	0.076	-0.0406	1							
10 Profit margin $_{t-1}$	-0.4331***	-0.2834***	0.1896***	0.0336	-0.0551	0.022	-0.2495***	-0.0387	-0.1048	1						
11 Age	-0.2348***	-0.2156***	-0.1006	-0.2059***	-0.1519***	0.5425***	-0.0062	0.0246	-0.2233***	0.1082***	1					
12 Size	0.7259***	0.4059***	-0.5040***	0.1210***	0.2880***	0.0353	0.4976***	0.1510***	0.2087***	-0.4372***	-0.039	1				
13 Collateral	0.0219	0.0592	-0.034	-0.1266***	0.0306	0.2663***	-0.0177	0.0374	0.1161	-0.2497***	0.1194***	0.2010***	1			
14 Financial statement	0.5979***	0.3825***	-0.5127***	-0.0064	0.1199***	0.1440***	0.3072***	0.1003	0.1905***	-0.4887***	0.0642	0.6409***	0.4722***	1		
15 Business plan	0.3143***	0.3738***	-0.1861***	0.0251	0.1356***	0.1044	0.1296***	0.0801	0.2947***	-0.3399***	0.0461	0.3958***	0.4023***	0.5997***	1	
16 Cash flow	0.3119***	0.1456***	-0.2584***	0.0239	0.0831	0.1035	0.1842***	0.1193***	0.1525***	-0.2295***	0.0418	0.3548***	0.3190***	0.5148***	0.5003***	1

4.2.1. Loan Size

As for loan size, we find that among firm characteristics: foreign ownership, larger firm size, and SMEs located in more developed economies are the ones able to secure bigger loans. A statistically significant and negative sign for the profit margin in the previous year coefficient is consistent with our previous results that profitable SMEs are financially viable, therefore they would prefer not to seek external finance. If they did, it would be for a smaller loan amount.

Table 11. Dependent Variable: Loan Size

Independent variable	Dependent variable: Loan Size					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	0.211	-0.0158	0.202	0.0589	0.0967	0.182
	(0.361)	(0.324)	(0.358)	(0.346)	(0.346)	(0.346)
Foreign ownership	2.186*	2.730***	2.233*	2.054	1.910	2.056
	(1.214)	(0.693)	(1.329)	(1.282)	(1.341)	(1.289)
Owner's managerial experience	-0.104	-0.445	-0.130	-0.0892	-0.143	-0.161
	(0.357)	(0.298)	(0.348)	(0.366)	(0.357)	(0.364)
Owner's multiple businesses	-0.111	-0.0557	-0.125	-0.150*	-0.119*	-0.123
	(0.0903)	(0.0792)	(0.0885)	(0.0896)	(0.0714)	(0.0746)
Sale growth $_{t-1}$	-0.0365	-0.0235	-0.0391	-0.0289	-0.138	-0.0409
	(0.147)	(0.131)	(0.141)	(0.159)	(0.165)	(0.157)
Profit margin $_{t-1}$	-0.329*	-0.173	-0.335*	-0.265	-0.271	-0.324*
	(0.186)	(0.147)	(0.178)	(0.183)	(0.185)	(0.177)
Age	0.248	0.297	0.327	0.296	0.264	0.293
	(0.364)	(0.320)	(0.338)	(0.371)	(0.353)	(0.358)
Size	0.867***	0.512***	0.873***	0.701***	0.790***	0.825***
	(0.195)	(0.182)	(0.198)	(0.189)	(0.200)	(0.192)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or otherwise)	-1.055*	-0.952	-1.153**	-0.878	-1.150**	-1.036*
	(0.600)	(0.608)	(0.574)	(0.619)	(0.581)	(0.591)
(Dummy var. for garment sector) i	-0.830**	-0.00793	-0.841**	-0.963**	-0.866**	-0.781*
	(0.399)	(0.389)	(0.398)	(0.383)	(0.393)	(0.402)
(Dummy var. for auto parts and components) i	-1.600**	-1.377	-1.635**	-1.909**	-1.575**	-1.562**
	(0.789)	(0.911)	(0.784)	(0.800)	(0.734)	(0.772)
(Dummy var. for electronics, and electronics parts and component) i	-0.547	-0.207	-0.458	-0.498	-0.528	-0.521
	(0.368)	(0.351)	(0.364)	(0.332)	(0.341)	(0.353)
Owner's net worth		0.660***				
		(0.101)				
Collateral			0.524			
			(0.455)			
Financial statement				1.070***		
				(0.393)		
Business plan					0.746*	
					(0.382)	
Cash flow						0.556*
						(0.308)
Constant	9.256***	2.659	8.787***	8.800***	9.440***	9.187***
	(1.443)	(1.655)	(1.539)	(1.522)	(1.439)	(1.438)
Observations	144	137	144	144	144	144
R-squared	0.518	0.650	0.525	0.541	0.531	0.529

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

As far as owner's net worth, collateral, business plan, financial statement, and cash flow are concerned, the estimated coefficients are positive and very statistically significant at the 1, 5, 10% level, except for collateral. This finding suggests that financial institutions seem to feel more secure and thus offer bigger loan amounts to SMEs that: have wealthier owners, are financially established, and are financially transparent. SMEs located in developed economies are more likely to possess these characteristics as they are likely to operate in a more advanced legal, institutional and regulatory environment that requires greater disclosure and transparency.

4.2.2. Term of Loan

In terms of the length of loan we find that, at the 1, 5 and 10% significance levels, larger SMEs at the start-up and fast-growth stage, higher sales growth in the previous year with owners running multiple businesses and operating in less developing economies, are inclined to secure longer term loans.

Table 12. Dependent variable: Term of Loan

Independent variable	Dependent variable: Term of Loan					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	0.750***	0.685***	0.710***	0.573***	0.517**	0.726***
	(0.219)	(0.220)	(0.211)	(0.202)	(0.212)	(0.217)
Foreign ownership	-0.885	-2.091*	-0.750	-0.955	-1.205	-0.928
	(1.031)	(1.218)	(0.751)	(0.979)	(0.812)	(1.030)
Owner's managerial experience	0.00573	-0.0833	-0.0801	-0.00729	-0.0736	-0.00390
	(0.128)	(0.132)	(0.129)	(0.118)	(0.121)	(0.128)
Owner's multiple businesses	0.168***	0.153***	0.173***	0.132***	0.184***	0.167***
	(0.0396)	(0.0479)	(0.0376)	(0.0371)	(0.0546)	(0.0414)
Sale growth $_{t-1}$	0.230***	0.267***	0.254***	0.223**	0.0848	0.223**
	(0.0876)	(0.0925)	(0.0770)	(0.0879)	(0.0910)	(0.0887)
Profit margin $_{t-1}$	-0.178**	-0.0732	-0.210***	-0.130	-0.134*	-0.180**
	(0.0810)	(0.0868)	(0.0794)	(0.0822)	(0.0761)	(0.0822)
Age	0.00960	-0.0612	0.145	0.0525	0.0773	0.0257
	(0.131)	(0.133)	(0.146)	(0.125)	(0.127)	(0.133)
Size	0.275***	0.214**	0.240**	0.113	0.164*	0.264**
	(0.100)	(0.0989)	(0.0951)	(0.110)	(0.0938)	(0.104)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or otherwise)	0.319	0.566**	0.185	0.522**	0.221	0.313
	(0.254)	(0.283)	(0.243)	(0.253)	(0.238)	(0.256)
(Dummy var. for garment sector) i	-0.118	0.123	-0.102	-0.215	-0.145	-0.106
	(0.218)	(0.245)	(0.219)	(0.216)	(0.201)	(0.217)
(Dummy var. for auto parts and components) i	-0.108	-0.187	-0.0546	-0.353	-0.00273	-0.109
	(0.437)	(0.379)	(0.354)	(0.412)	(0.432)	(0.446)
(Dummy var. for electronics, and electronics parts and component) i	-0.0932	0.0314	-0.0346	-0.125	-0.132	-0.0808
	(0.261)	(0.268)	(0.246)	(0.239)	(0.224)	(0.266)
Owner's net worth		0.243***				
		(0.0679)				
Collateral			0.824***			
			(0.261)			
Financial statement				0.998***		
				(0.267)		
Business plan					0.946***	
					(0.232)	
Cash flow						0.176
						(0.173)
Constant	0.0699	-2.747**	-0.566	-0.259	0.368	0.0542
	(0.750)	(1.105)	(0.788)	(0.768)	(0.718)	(0.751)
Observations	140	134	139	140	140	140
R-squared	0.436	0.511	0.498	0.509	0.517	0.440

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

In contrast, foreign-owned SMEs and those making profits in the previous year tend to seek a shorter term of finance, presumably because they are better financially equipped. These results are also consistent with the pecking order hypothesis.

The coefficients for owner's net worth, collateral, business plan and financial statement are positive and very statistically significant at the 1% level, suggesting that

SMEs with wealthier owners, that are financially established and transparent, are able to secure a longer term loan.

4.2.3. Interest Rate

When examining the interest rate charged to SMEs, we find that those with foreign ownership, experienced owners, and those which report higher growth of sales in the previous year, with a low level of statistical significance, tend to receive favorable interest rates from financial institutions. Larger SMEs located in more developed economies pay lower interest rates, and this was statistically significant at the 1% level.

Table 13. Dependent Variable: Interest Rate

Independent Variable	Dependent variable: Interest Rate					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	0.0221	0.0353	-0.0293	0.0449	0.0544	0.0302
	(0.0959)	(0.0988)	(0.0866)	(0.0982)	(0.0957)	(0.0943)
Foreign ownership	-0.256	-0.185	-0.320	-0.298	-0.231	-0.280
	(0.205)	(0.261)	(0.253)	(0.264)	(0.244)	(0.283)
Owner's managerial experience	-0.0784	-0.0287	-0.0869	-0.0893	-0.0728	-0.0755
	(0.0936)	(0.103)	(0.0912)	(0.0934)	(0.0873)	(0.0892)
Owner's multiple businesses	0.0430	0.0472	0.0573	0.0533	0.0454	0.0473
	(0.0644)	(0.0609)	(0.0675)	(0.0661)	(0.0581)	(0.0607)
Sale growth $_{t-1}$	-0.0723	-0.0696	-0.0536	-0.0787*	-0.0487	-0.0707
	(0.0448)	(0.0525)	(0.0415)	(0.0446)	(0.0477)	(0.0451)
Profit margin $_{t-1}$	0.0250	0.00804	0.00614	-0.00243	-0.00241	0.0118
	(0.0499)	(0.0497)	(0.0512)	(0.0538)	(0.0533)	(0.0516)
Age	0.0542	0.0676	0.0490	0.0611	0.0588	0.0567
	(0.0990)	(0.0965)	(0.0953)	(0.0981)	(0.0929)	(0.0945)
Size	-0.115***	-0.0888*	-0.148***	-0.105**	-0.0992**	-0.119***
	(0.0392)	(0.0478)	(0.0401)	(0.0413)	(0.0410)	(0.0417)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or 0 otherwise)	0.893***	0.891***	0.837***	0.833***	0.896***	0.866***
	(0.115)	(0.150)	(0.114)	(0.127)	(0.123)	(0.122)
(Dummy var. for garment sector)i	0.134	0.0765	0.136	0.137	0.134	0.115
	(0.104)	(0.107)	(0.103)	(0.103)	(0.102)	(0.107)
(Dummy var. for auto parts and components)i	-0.166	-0.170	-0.118	-0.105	-0.179	-0.161
	(0.163)	(0.177)	(0.172)	(0.177)	(0.171)	(0.174)
(Dummy var. for electronics, and electronics parts and component)i	0.114	0.125	0.0986	0.106	0.120	0.100
	(0.110)	(0.115)	(0.110)	(0.111)	(0.110)	(0.111)
Owner's net worth		-0.0652*				
		(0.0368)				
Collateral			-0.126			
			(0.113)			
Financial statement				-0.159		
				(0.107)		
Business plan					-0.218**	
					(0.104)	
Cash flow						-0.124
						(0.0817)
Constant	2.382***	2.949***	2.648***	2.563***	2.405***	2.473***
	(0.334)	(0.529)	(0.354)	(0.361)	(0.339)	(0.359)
Observations	145	137	141	142	142	142
R-squared	0.635	0.627	0.636	0.627	0.635	0.627

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

The estimated coefficients of owner's net worth, collateral, business plan, financial statement, and cash flow are all negative and statistically significant at the 10% level or more, suggesting that SMEs with wealthier owners and financially established and transparent SMEs are able to receive lower interest rates on loans offered by financial institutions.

In summary, when reading these three results together, we can conclude that there is potential credit rationing or risk premiums exercised by financial institutions on SMEs. The key findings from our analysis suggests that size and stage of country development (financial market development) do affect the conditions of external finance offered to SMEs, i.e., larger SMEs in more developed economies tend to get *larger loans, of a shorter duration due to lower need or dependency, at a lower interest rate.* We also find that owner's net worth, collateral, business plan, financial statement, and cash flow are critical for financial institutions in determining the financial conditions to be extended to SMEs. In other words, financial institutions seem to put higher risk premiums on opaque SMEs by offering less favorable financial conditions to less well established, and financially transparent SMEs. The financial characteristics of the owner also appear to be consistently important to financial institutions in determining willingness to lend, the duration of the loan and the interest rate on the loans to SMEs.

The findings suggest that financial institution behaviour is strongly linked to the legal, institutional and regulatory legal environment in which they operate. In an economy where the legal system does not adequately protect property rights and a bankruptcy law is lacking or non-existent, where there are inefficiencies in the operation of institutions themselves and the regulatory environment is lacking in terms of disclosure and transparency requirements relating to firm operations, it would be

perfectly rational for financial institutions to restrict credit or impose a risk premium on opaquely operating enterprises. Consequently, problems in accessing finance for SMEs may not be due solely to distortions or inefficiencies in the financial sector itself, but also by weaknesses in the legal, institutional and regulatory environment in which these institutions operate.

4.3. SMEs' Access to External Finance and Implications for their Performance

Having examined the motives of SMEs with regards to external finance and financial conditions imposed by financial institutions upon them, in this section we test hypothesis 3 to see whether SMEs' access to external finance has any bearing on their performance. The following general form of a statistical model is estimated:

$$P_i = \gamma_0 + \Gamma' X_i + \gamma_0 LTR_i + \varepsilon_i \quad \text{.....} \qquad (4)$$

where P_i is a binary variable representing the performance of SMEs, i.e., innovation capability and exporting activity. *i* represents firm *i* as in the previous section, X_i is a set of explanatory variables that captures firm characteristics, and LTR_i is loan size, term of loan, and interest rate offered to SMEs. Estimations are conducted only on the sample of SMEs that received external finance.

We checked the correlation matrix and found the presence of multi-collinearity amongst our main independent variables. Therefore, we introduce these variables one by one to the base model.

Table 14. Correlation Matrix of dependents and independent variable

	Variable	1	2	3	4	5	6	7
1	Innovation capability	1						
2	Export	0.3048***	1					
3	Age	-0.1337***	-0.1694***	1				
4	Size	0.4006***	0.3963***	-0.1591***	1			
5	Loan size	0.3776***	0.3970***	-0.1974***	0.7256***	1		
6	Term of loan	0.2954***	0.2120***	-0.2203***	0.4119***	0.4283***	1	
7	Interest rate	-0.2047***	-0.2090***	-0.0367	-0.5317***	-0.5479***	-0.2234***	1

As for the innovation capability, the estimated coefficients of firm size, loan size, and term of the loan are positive and statistically significant at the 1 and 10% level, but negative for the interest rate although at a lower level of significance. This suggests that larger SMEs with access to larger loan amounts, for a longer term and at a lower interest rate can enhance their innovation activity, since external finance with favorable conditions provides SMEs with sufficient time and resources to engage in enhancing their innovation capabilities.

Table 15. Relationship between SMEs Access to Finance and Performances

Independent variable	Dependent variable							
	Innovation capability				Export			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Age	-0.155	-0.142	-0.153	-0.196	-0.159	-0.296*	-0.149	-0.240
	(0.112)	(0.147)	(0.152)	(0.133)	(0.125)	(0.178)	(0.156)	(0.152)
Size	0.505***	0.387***	0.533***	0.509***	0.594***	0.455***	0.630***	0.560***
	(0.0643)	(0.0968)	(0.0813)	(0.0761)	(0.0839)	(0.129)	(0.101)	(0.0981)
Dummy (country, 1 for Cambodia Lao, Vietnam, or 0 otherwise),	0.149	0.0325	0.0559	0.197	0.337*	0.372	0.235	0.517**
	(0.173)	(0.206)	(0.217)	(0.233)	(0.194)	(0.254)	(0.234)	(0.260)
(Dummy var. for garment sector) i	-0.522***	-0.246	-0.910***	-0.628***	-0.0292	0.238	-0.106	0.0881
	(0.181)	(0.207)	(0.233)	(0.209)	(0.177)	(0.235)	(0.216)	(0.214)
(Dummy var. for auto parts and components) i	-0.393	-0.407	-0.988***	-0.662*	-0.403	-0.489	-0.730**	-0.358
	(0.263)	(0.346)	(0.384)	(0.350)	(0.300)	(0.378)	(0.365)	(0.320)
(Dummy var. for electronics, and electronics parts and component) i	-0.387**	-0.158	-0.436*	-0.479**	-0.358	-0.252	-0.449	-0.517*
	(0.188)	(0.241)	(0.240)	(0.216)	(0.238)	(0.286)	(0.282)	(0.283)
Loan size		0.104*				0.160***		
		(0.0547)				(0.0581)		
Term of loan			0.312***				0.0916	
			(0.0779)				(0.0713)	
Interest rate				-0.124				-0.517***
				(0.155)				(0.196)
Constant	-1.772***	-2.654***	-2.260***	-1.353**	-2.611***	-3.804***	-2.782***	-1.190
	(0.420)	(0.663)	(0.573)	(0.625)	(0.554)	(0.821)	(0.699)	(0.770)
Observations	468	347	352	374	468	347	352	374
R-squared	-0.155	-0.142	-0.153	-0.196	-0.159	-0.296*	-0.149	-0.240
	(0.112)	(0.147)	(0.152)	(0.133)	(0.125)	(0.178)	(0.156)	(0.152)

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Similarly, we find that, at the 1% significance level, except for the term of the loan, larger SMEs with access to larger loan amounts over a longer term and at a lower interest rate are particularly conducive to enhancing their participation in export markets.

5. Policy Implications

In order to address the previously identified shortcomings in terms of SMEs' access to finance, particularly in emerging market and developing economies, a number of policy measures need to be addressed, in particular the following:

First, regional governments, particularly in emerging market and developing economies, will be required to address macro policy measures that contribute to sizeable budgetary imbalances with resulting national savings and investment imbalances, compounding difficulties for the private sector in general in gaining access to finance. Government policies that place emphasis on rapid industrialization through discriminatory measures that favor large firms will also add to the problems facing SMEs wishing to gain access to finance.

Second, on the supply side, measures will be required to deepen and broaden financial markets in regional economies with the aim of encouraging greater competition in terms of providers, reducing the cost of borrowing, and greater provision of sources of finance (non bank financial institutions, equity markets, venture capital markets etc.) that will enhance the provision of diversified products and services, bringing them more into line with meeting the needs of SMEs.

Third, the empirical results suggest that smaller SMEs in emerging market and developing economies have most difficulty in obtaining finance, and face higher interest rates. This is not surprising, and consistent with the literature, in the context of economies where a lack of transparency in firm operations and poor corporate governance contributes to

asymmetric information and greater lending risk as perceived by financial institutions. In this context it is essential to implement policy measures aimed at improving the legal, institutional and regulatory framework. The legal framework should ensure property rights and contain provisions that protect lenders against bankruptcy and delinquent loans, encouraging lending institutions to lend to SMEs. In addition, they should also contain provisions that ensure access to land and land-use rights, which is particularly important for SMEs as a source of collateral. The institutional and regulatory framework should encourage the formal registration of SMEs and not contain bureaucratic and regulatory processes that make the costs of formalization (compliance costs) greater than the benefits obtained from formalization. The regulations should be as transparent and simple as possible, aimed at improving corporate governance and transparency arising from the adoption of stringent book-keeping and accounting standards.

Fourth, microeconomic policies aimed at opening up markets and creating a level playing field for all enterprises will encourage more efficient resource allocation and improve productivity. The establishment and nurturing of a vibrant SME sector will encourage greater competition. This should also be encouraged in the financial sector, with the objective of, promoting access to finance, in general as well as reducing the cost of finance.

Fifth, encouraging the establishment of industry organizations for SMEs that will represent the interests of members and provide market information and capacity building.

Finally, the introduction of credit guarantee schemes subject to rigorous and viable business plans, credit rating and information systems. The establishment of specialized and more effective development financial institutions such as an SME bank, and the provision of business development services that can assist SMEs with embedding business training (e.g. management, business planning, book keeping, accounting, and financial literacy) and network promotion.

However, loan quotas imposed on commercial banks to private sector SMEs, interest rate subsidies to SMEs, and tax concessions should be avoided since they are ineffective due to an absence of sound legal and institutional capacities (weak governance).

6. Concluding Remarks

What emerges from our analysis is that a significant number of SMEs still rely on their internal resources or both start-up and business expansion. External finance is very important for domestically-owned, smaller-sized SMEs, making lower profits, with business aspirations but financially constrained in less developed economies. Moreover, size of SMEs and stage of country development, reflecting financial market conditions, affects SME choice of financial institutions and financial products.

We also find that there is potential credit rationing or risk premiums exercised by financial institutions on SMEs. The key findings from our analysis suggest that size and stage of country development (financial market development) do affect the conditions of external finance offered to SMEs, i.e., larger SMEs in more developed economies tend to get larger *loans, with longer terms,* at *lower interest rates.* We also find that owner's net worth, collateral, business plan, financial statement, and cash flow are critical for financial institutions in order to devise their financial conditions extended to SMEs. In other words, financial institutions seem to put higher risk premiums on opaque SMEs by offering less favorable financial conditions to less well established and financially transparent SMEs.

Financial access has a significant impact on the innovation capability and participation in export markets by SMEs. This study suggests that larger SMEs with access to larger loans, longer duration of loans and lower interest rates benefit from improved innovation capability and exporting activity, since these external finances with favorable conditions provide SMEs

with sufficient time and resources to engage in improving their innovation capabilities and enter foreign markets.

There are numerous important policy implications arising from the empirical results presented that straddle macroeconomic policy, financial markets, the legal, institutional and regulatory framework and microeconomic reform. It also seems that there is considerable opportunity for start-up in the emerging and developing economies of East Asia. However, these are the very enterprises that are finding the greatest difficulty in accessing external finance. Unless their owners are relatively wealthy, they appear to experience great difficulty in obtaining external finance. Given their employment generating potential there is likely to be the need to develop specific policies and institutions that can provide them with the finance they require if such potential is to be realized.

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