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Small and Medium Enterprises' Access to Finance: Evidence from Selected Asian Economies

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Abstract: *This paper sheds light on the issue of SME financing in selected Asian economies using a unique sample survey. It elaborates on (i) the key sources of external finance for SMEs (ii) the extent to which, if at all, the SME sector as identified by firm size, country and in aggregate for a sample of countries in Asia is systematically disadvantaged, or rationed, with respect to access to external financing, (iii) the key factors contributing to the extent of this rationing, focusing upon firm characteristics, owner characteristics and firm performance, and (iv) the importance of financial rationing for SME performance. Our empirical results confirm the salient characteristics of successful SMEs with regard to accessing external funding, their ability to access multiple financial institutions and types of finance, and identifying potential credit rationing or risk premiums imposed by financial institutions on SMEs. The results also reveal how risk premiums affect the innovation capability and exporting activity of SMEs.*

Keywords: small and medium enterprises (SMEs), external financing, rationing, firm characteristics, Asia.

JEL classification: G32, L22.

1. Introduction

Small and medium sized enterprises (SMEs) are the dominant form of business organisation in developed, emerging and developing economies. They account for 95-99% of enterprises, depending on the country, and are responsible for 60-70% of net job creation in OECD countries (OECD, 2006a). SMEs operating in the formal sector contribute up to 45 per cent of employment and up to 33 per cent of GDP in developing economies, and significantly more when SMEs operating in the informal sector are included (IFC, 2010). Estimates suggest that the informal sector accounts for up to 48 per cent of the total labour force and 37 per cent of GDP in developing countries (IFC, 2010). The corresponding percentages for developed countries are much lower, at 25 per cent of the total labour force and 16 per cent of GDP (IFC, 2010). SMEs are a key potential source of entrepreneurial dynamism, exports, productivity, efficiency, flexibility and participation in global and regional production networks. They also make an important but often under-rated contribution to innovation (Acs and Audretsch, 1990; Audretsch, 1990; Baldwin and Johnson, 1990) particularly in the context of new products (good and services) and ideas, which is a key source of competitiveness in knowledge-driven economies. SMEs are the emerging private sector in poor countries, and thus form the foundation for private sector-led growth (Hallberg, 2001).

The establishment, nurturing and growth of SMEs have become a policy imperative, but to achieve their full potential access to finance is required. Although cross country studies have questioned a causal link between SMEs and economic development, there is considerable evidence to suggest that this may be due to the fact that small firms face more substantive growth constraints and less access to

formal sources of external finance (Berger and Udell, 1998; Galindo and Schiantarelli, 2003; Beck and Demirguc-Kunt, 2006). Many SMEs encounter considerable difficulty relative to large firms in obtaining finance from banks, capital markets and other suppliers of credit, with this being particularly problematic in emerging or developing economies where such sources are underdeveloped as well as credit information sharing. Other potential sources of SME finance, such as leasing and factoring (Klapper, 2005; Klapper *et al*., 2006), are also less developed in emerging countries (IFC, 2010). Consequently, small firms rely on internal financing much more than large firms which can constrain their growth. The likelihood of a small firm, having access to a bank loan in low-income countries is about a third of what it is for a medium-sized firm, and less than half of what it is for a large firm.

The extent of this "financing gap" is, therefore, likely to vary by stage of country development. In developed knowledge-driven economies where the speed of innovation is fast there is less evidence of a financial gap in general with the exception of innovative high growth potential firms in high technology sectors, which do not fit the traditional SME financing mould. These SMEs tend to be newcomers to the market or are seeking financing for a new type of product or service, and usually have negative cash flows and untried business models. They represent higher risk to banks and cannot be assessed in the same manner as traditional SMEs or large firms. These enterprises, however, are potentially pivotal in raising productivity, growth, competitiveness and employment in developed economies.

On the other hand SME financing gaps are likely to be most endemic in developing and newly emerging market economies (OECD, 2006a, 2006b; IFC,

2010), where widespread shortage of financing occurs for all categories of SMEs and not just innovative high tech SMEs. Even though SMEs account for a large share of enterprises, and represent potential employment and economic growth in emerging economies (Snodgrass and Biggs, 1996), they receive a very low share of credit. Indeed, most are denied any access to formal financial markets largely because they remain informal. However, even for formal SMEs accessing finance is problematic for reasons largely related to their small size, limited resources, perceived risk and operating opaqueness.

Based on the premise that SMEs are the engine of economic development and that market and institutional failures have resulted in an inadequacy of funding for SMEs which has impeded their growth, governments have implemented a wide array of measures aimed at addressing this problem. Many of these pro SME initiatives are, however, highly contentious (e.g. Hallberg, 2001: Biggs, 2002), with little known with respect to the actual evaluation of these interventions in terms of additionality, outreach and sustainability. Instead, critics have stressed the importance of the business environment facing all firms, large and small. From this perspective, low entry and exit barriers, well-defined property rights, effective contract enforcement, and firm access to finance characterize a business environment that is conducive to competition and private commercial transactions and a levelling of the playing field for all firms.

This paper attempts to shed light on issues of SME financing in selected Asian economies emphasizing external sources of finance. In doing so it will elaborate on the following questions: (i) what are the key sources of external finance for SMEs? (ii) to what extent, if at all, is the SME sector as identified by size, country and in aggregate for a sample of countries in Asia systematically disadvantaged, or

rationed, with respect to access to external financing? (iii) what are the key factors contributing to the extent of this rationing focusing upon firm characteristics, owner characteristics and firm performance?, and (iv) how important is rationing for the performance of SMEs in a sample of Asian economies?.

The paper proceeds as follows. Section 2 reviews the literature to provide a framework for our analysis. Section 3 presents the methodology for the empirical exercise, including a brief description of the survey data used in this study. Section 4 presents empirical results from the study. Section 5 analyses the conditions or terms of the finance offered to SMEs to find if these are likely to be more stringent or onerous. Section 6 analyses whether there are discernible and significant effects of access to finance on SME performance focusing upon innovation capability and exporting activity. Section 7 concludes the paper.

2. Literature Review

Overview of key issues

Access to funding is the lifeblood of any enterprise, facilitating access to resources, output growth, employment generation, profitability, efficiency, exports, productivity and return on assets (Audretsch, 1990; Beck *et al*., 2005a, 2006, and 2008, OECD, 2006a, 2006b, IFC 2010). Three major sources of finance for SMEs can be identified from the literature - formal sources (mainly from commercial banks), informal sources (the curb or grey market) and, the most important source of funding for between 75-90% of SMEs, internally generated funds (own savings and borrowing from family and friends). The focus of this study is upon access to formal sources of finance and in this context SMEs compare unfavourably to large

enterprises, both in terms of access to and cost of funds[2]. Without adequate access to formal sources of finance SME performance and development, as well as the establishment of new small firms, must inevitably be hindered with adverse consequences for productivity and growth (Ayyagari *et al*., 2005; Beck *et al*., 2005c;.Beck and Demirguc-Kunt, 2006: Cull and Xu, 2005; Klapper *et al*., 2006). Market failure in formal lending to SMEs has been variously ascribed to a number of reasons: the characteristics and intrinsic weaknesses of SMEs (Beck *et al*., 2006: Beck and Demirguc-Kunt, 2006), a weak legal and regulatory environment (Beck *et al*., 2004b; Beck *et al*., 2005b; Johnson *et al*., 2002; Cull and Xu, 2005), deficiencies and weaknesses in the banking and financial system (Beck *et al*., 2006, Berger *et al*., 2004), and macroeconomic policy (OECD, 2006b).

By their nature SMEs are relatively small, lack resources and collateral, operate in an opaque manner, are perceived by lenders to be more risky as they have a more volatile pattern of growth, profitability, and cash flow and earnings which enhances default risk and business insolvency compared to larger firms (Petersen and Rajan, 1994; Berger and Udell, 1998; Hyytinen and Pajarinen, 2008). This is compounded by a lack of credit history and credit rating if the business has not borrowed in the past. A limited bank-client relationship makes it difficult for a bank to assess the viability and track record of the company's finances, resulting in a high loan process time and cost for loan approvals. SMEs may also lack the necessary information and skills to access external finance, including the compilation of a bankable business plan.

Should an SME be successful in accessing a loan it is likely that its cost and terms (duration) are less advantageous relative to a large firm due to risk and compliance related factors: greater perceived likelihood of default and insolvency

by SMEs relative to large enterprises, a lack of clear ownership of collateral (e.g., real estate), a limited track record of having received credit already and, therefore, no credit rating upon which banks can proceed with the loan (Pagano and Jappelli, 1993; Miller, 2003; Love and Mylenko, 2003), and higher compliance, assessment and processing costs for banks and SMEs relative to the amount borrowed.

While SMEs in general have innate disadvantages in accessing finance certain types of SMEs are particularly disadvantaged, due to: (1) size, such as micro and informal enterprises, (2) age, as start-up and younger enterprises have a limited or no credit track record, less experienced entrepreneurs, limited collateral particularly in the form of fixed assets. The latter category is of particular concern as these can provide a key source of output and employment growth.

Difficulties facing SMEs are further compounded in emerging-market and developing economies arising from: private sectors which are in an embryonic form, discrimination against SMEs, a business environment that lacks transparency with many SMEs choosing to remain in the informal sector (due to the tax and regulatory regime), state owned and private monopolies operating in the economy, financial markets that are underdeveloped with an incomplete range of financial products and services ill-suited to meet the needs of SMEs, a weak and rudimentary legal and regulatory environment, inadequate information for both banks and SMEs, a lack of interest by financial institutions in lending to SMEs, a lack of commercial lending knowledge, and by financial institutions heavily embedded in lending to state owned large enterprises.

A weak legal system may not adequately provide protection for the rights of creditors and investors (Beck *et al*., 2004b; Johnson *et al*., 2002; Cull and Xu, 2005), and may be relatively inefficient in resolving cases of delinquent payments

and bankruptcy which stifles bank lending. The tax and regulatory system may discourage the formalization of SMEs. If this becomes prohibitive entrepreneurs may abandon the formal system altogether and operate in the informal economy, sidestepping taxes and regulations but unable to make a full contribution to economic growth and job creation due to a lack of access to formal lending.

The characteristics of the banking system in developing and emerging markets frequently inhibit SME lending. Many banks are state-owned with credit allocated on the basis of government guarantees or in line with government targeting to specific sectors. Banks are often subject to ceilings on the interest rates they can charge, making it difficult to price credit in a way that reflects the risk of lending to SMEs. Many banks may have ownership and other ties to industrial interests and tend to favour affiliated companies. In a market where banks can earn acceptable returns on other lending, it will not develop the skills needed to deal with SMEs. Many banks lack the necessary skills to lend to SMEs. There are also likely to be lingering deficiencies in the enabling environment for financial services such as the financial infrastructure (accounting and auditing standards, credit reporting systems, and collateral and insolvency regimes), and in the legal and regulatory framework for financial institutions and instruments. Furthermore, financial markets may not contain the necessary range of products and services to meet the needs of SMEs.

There may also be a number of rigidities of a macroeconomic, institutional and regulatory nature that may bias the entire banking system against lending to SMEs (OECD, 2006b). Macroeconomic policies may lead to excess demand for available domestic savings by governments running large budgetary deficits, while government policy may favour industrialization though imposing import protection for large scale capital intensive firms that makes them more profitable, less risky

and more desirable to lend to. This gives large domestic firms privileged access to finance. Hence, the overall macroeconomic, legal, regulatory and financial framework is a critical determinant of SMEs' access to finance.

Many policies have been tried by governments to channel funds to private sector SMEs. These include: loan quotas imposed on commercial banks to private sector SMEs, interest rate subsidies to SMEs, tax concessions, guarantee loans, the establishment of specialized lending institutions such as an SME bank, and the provision of business development services that can assist SMEs with business training (e.g. compiling a business plan) and network promotion. Macroeconomic policy settings and performance (low inflation and low interest rates), establishing and deepening financial markets with the requisite regulatory and institutional environment and appropriate microeconomic policies can establish a sound footing for development of the overall private sector and for the establishment, nurturing and growth of SMEs (Beck *et al*., 2006). Many initiatives conducted by policy makers in the context of SMEs have, however, been unsuccessful. The micro-finance literature and experience can shed some light on how such policies can be made more effective. However, risk-sharing facilities, coupled with the introduction of best practice SME lending approaches, are key interventions that can help banks provide credit to SMEs. These interventions need to be accompanied by enhancements to the enabling environment for SME lending, such as improved credit bureaus, collateral and insolvency regimes.

Theoretical and empirical contributions

The issue of access to external finance by firms can be traced back to the theory of imperfect information in capital markets. The seminal contribution of Stiglitz and

Weiss (1981) shows that uncertainties arising from agency problems (principal-agent), asymmetric information, adverse credit selection and monitoring, mean lending institutions find it difficult to distinguish between good and bad risk, resulting in adverse selection and moral hazard problems. As a result, financial institutions may rationally choose to adopt credit rationing measures favouring firms most able to provide collateral or that have a more established credit record. This can result in potential market failure in lending to SMEs with borrowers unable to gain access to credit. Such credit rationing can be observed to occur if: (1) among loan applicants who appear to be identical, some receive credit while others do not; or (2) there are identifiable groups in the population that are unable to obtain credit at any price. In this context lending institutions such as banks find it less risky and less costly to lend to large enterprises, and rational to apply credit rationing to SMEs due to their greater opaqueness and perceived risk.

Petersen and Rajan (1994) argue that the amount of information banks can acquire is usually much less for the case of small firms, due to limited information about their managerial capabilities and investment opportunities. In addition, the extent of credit rationing applied to small firms may occur simply because they are not well-collaterised. de la Torre *et al*. (2010) also attribute hindrances of SME access to finance to ‘‘opaqueness”, making it difficult to ascertain if firms have the capacity to pay (by investing in viable projects), and/or the willingness to pay (due to moral hazard). This opaqueness particularly undermines credit access from institutions that engage in more impersonal or arms-length financing that requires hard, objective, and transparent information. Gertler and Gilchrist (1994) also argue that firm size itself is a critical determinant of access to external finance.

There are a number of notable empirical findings on the issue of SME access to finance, although our review is by no means exhaustive. Watson and Wilson (2002), using UK data, find that the pattern of coefficients in their study is consistent with 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.[3] 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[4] and pecking order arguments. However, Frank and Goyal (2003), using data for 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.

In a study by Vos *et al.* (2007), using UK and US data, they find that SME financial behaviour demonstrates substantial financial contentment, or 'happiness', mainly due to the fact that most SMEs in the UK do not seek high growth while US SMEs do not have problems in accessing working capital. Their analysis also finds that financial performance indicators (such as growth, return on assets and profit margin) are not determinants of SME financing activities. They also find that younger and less educated SME owners more actively seek external financing, while older and more educated SME owners are less likely to seek external funding. Growth oriented SMEs are more active in the use of and access to external sources of funds in comparison to low growth firms. In addition, they find that social networks (connections) are important to accessing finance. The findings of this study are consistent with the view that in developed economies the issue of access to

finance is a less pressing than for SMEs operating in emerging or developing economies.

Beck *et al.* (2008) find that small firms and firms in countries with poor institutions use less external finance, especially bank finance, 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) studied 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. The amount and diversity of sources of external financing are associated with high levels of property rights, contract enforcement, and corruption protection.

As far as 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 profitability, political connections via state minority ownership as 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 organizational collateral to facilitate access to bank loans.

In the following section we conduct an empirical analysis focusing upon the importance of SME characteristics in accessing finance from formal financial

institutions for the case of eight countries in Asia, drawing upon the issues highlighted in this section. A key aim is to identify the existence of credit rationing and whether small firms are at a disadvantage in acquiring finance, if the terms of the finance are more restrictive and whether small firms face higher costs of borrowing.

3. Data, Hypotheses and Statistical Methodology

Data

Data for this study was generated by means of a structured questionnaire survey of SMEs conducted in eight Asian countries (Cambodia, China, Indonesia, Lao PDR, Malaysia, the Philippines, Thailand and Vietnam) during the second half of 2010. A total of 150 useable samples were obtained from each country. The questionnaire aimed to collect information on SME characteristics and sources and usage of finance. Information on the following characteristics of SMEs was collected: size, age, ownership type, cost and input structure, performance, sources of finance and usage, capability to innovate, and managerial/entrepreneur background.

Firm size is defined in terms of employment and the sample only contains firms with a maximum of 200 employees. A total of 1055 firms were surveyed. Table 1 and Table 2 summarize the key characteristics of the surveyed SMEs. SMEs between 6 and 49 employees accounted for 52% of the total sample, followed by 24%, 13%, and 11% for the employment groups of 1-5, 50-99, and 100-200, respectively. Distributed by industry, 32% are in the garments sector, more than 9%

from the parts, components and automotive sector, 17% from the electrical, electronic, parts, and machinery sector, and 41% are in other sectors. The average age of the SMEs was more than 10 years, and most of them are domestically owned and sold their products domestically.

Table 1: 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%

Source: ERIA SME survey (2010).

Some adjustments were made to the data to prepare it for this study, emphasizing the need 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 missing information with predicted values.

Table 2: 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 SME Survey (2010).

Hypotheses

From the previous literature review a number of testable hypotheses can be identified. The major ones in the context of this study are as follows:

Hypothesis 1:

SME access to external finance by sources and type are related to: (i) firm attributes: size, firm age, sector of operation, country stage of development,

business life cycle, ownership type; (ii) owner attributes: managerial experience, net worth, running more than one business; and (iii) a firm's past performance record: profitability, and sales growth.

The dependent variable here 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 credit 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 that the relationship between the dependent and independent variables can be summarized in Table 3 as follows:

Table 3: 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	+/-

The stage in a firm's business cycle could have a negative or positive correlation with external finance and by various types of finance. At the start-up and rapid growth phase a firm is likely to require greater access to external finance while at the mature or declining stage access to finance is likely to decline. Greater foreign ownership could increase or reduce the need for external finance. Foreign ownership may directly enhance funding through such investment, or increase the need for finance if the objective of the foreign investment is to spur firm expansion and growth. The impact of owner's managerial experience is ambiguous. More finance could be made available by financial institutions to firms where there is proven managerial experience, alternatively such experience could lead to better usage of existing resources and reduce the demand for funds. Owner's net worth is also potentially ambiguous. Greater net worth enhances available collateral and the capacity to borrow, but could also reduce the need to borrow as owner funds are adequate to meet the needs of the firm. An owner with multiple businesses is also likely to have greater collateral and potential to expand the size of the firm and hence access more funds, but at the same time may be able to generate enough funding internally without the need to borrow. More rapid sales growth could provide the firm with more liquid resources to meet the demand for funds, or, alternatively, to sustain the growth of sales and expand market share may require more investment in capacity which would require greater access to funds. A greater profit margin is likely to reduce the demand for loans as larger profits generate greater internal finance. If the firm wishes to expand its activities and productive capacity it is likely to require greater access to finance, unless it has already generated sufficient internal funds. Sufficient internal funds to meet firm aspirations will likely reduce the demand for access to finance.

In terms of the control variables there is likely to be considerable ambiguity in terms of the demand for funds. Age of the firm could work for or against the demand for funds. If the firm is young and has the potential for growth and owner resources are scarce, the demand for funds is likely to be high but the supply may be limited due to a lack of collateral. On the other hand, if the firm is more established and has an ongoing track record of a strong client-borrower relationship it may be easier to get access to finance. The size of the firm may also exert a positive or negative influence on access to finance. Small firms with limited resources and greater opaqueness in their operation are likely to experience difficulty in accessing finance, compared to larger SMEs that have greater access to resources and collateral. However the potential advantages of size could be offset by firms having a poor credit rating from previous borrowings and they too may operate in a system with a poor legal and regulatory environment. So that size in this case may not be an advantage in accessing finance. Country of location, less or more developed, could exert an important impact on SME access to finance. In more developed economies the financial system is likely to be more developed, have greater depth and multiple sources and types of finance. Consequently, stage of economic development is likely to be positively related to access to and type of finance available to SMEs. Sector of operation could also be important for access to finance and types of finance available. This will be influenced by the characteristics of the sector (e.g. average firm size, extent of foreign investment in the sector, demographics of firm age and ownership type). However the likely nature of the relationship between each of the above factors and access to finance, types of finance and source of finance must be determined empirically for the sample of firms and countries used in this study.

Hypothesis 2:

The conditions of the loan - size, duration 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 4 summarizes the expected nature of the relationship between the major explanatory variables and the size of loan provided, the duration or term of the loan and the cost of the loan (interest rate).

Table 4: Dependent Variable: Loan size, Term of Loan, and Interest Rate Offered to SMEs

	Independent variables	**Expected Sign against dependent variables**		
		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, that is 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 (see Table 5).

Table 5: Dependent Variable: SMEs' Innovation Capability and Export Performance

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	+/-	+/-

Statistical methodology

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 Y represents the dependent variable(s), *i* represents firm *i* and X 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 to capture 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 more developed ASEAN countries (i.e., Thailand,

Malaysia, Indonesia, the Philippines) and China, or the group of new but less developed ASEAN member countries (i.e., Cambodia, Lao PDR, and Vietnam).

Besides the industry and country-group dummy variables described in the previous section, 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:

Financial Variables

Three dummy variables are created to measure the SME need for external finance. 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 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 log form. Lastly, the loan interest rate is measured by the interest rate on the loan that 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.

Firm Characteristics

Firm size is proxied by the number of employees. Other common alternatives, such as output, 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. 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 stage in the 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 a value of unity, or zero otherwise. The foreign ownership dummy is determined by the percentage share of foreign ownership of a firm. It takes a value of unity if foreign ownership is more than 50%, or zero otherwise.

Three variables are defined to capture owner attributes: managerial experience, net worth, and running more than one business. The owner's managerial experience is determined by 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 logs. The last dummy variable takes a value of unity if the owner is concurrently running other businesses, or zero otherwise.

Firm Performance Variables

In order to assess the relationship between SMEs' access to finance and their performance, two performance variables are considered against the financial variables, i.e., loan size, term of the loan, and interest rate. The first performance variable is SMEs' innovation capability and the second is exporting activity. The first dummy variable takes a value of unity if a firm reports that it has conducted process and product innovation, 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 contained in Table 6.

Table 6: Variable Definitions and Summary Statistics

Variable	Definition	N	Mean	S.D
Applied for external finance	Dummy variable takes a value of 1 for a firm that has 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	0.5498	0.4978
Access to more than 2 financial institutions	Dummy variable takes a value of 1 for a firm accessing more than two financial institutions in the past 12 months, or 0 otherwise	580	0.1121	0.3157
Access to at least 2 types of external finance	Dummy variable takes a value of 1 for a firm accessing at least two types of external finance in the past 12 months , or 0 otherwise	481	0.4366	0.4965
Loan size	Logarithm of firm's amount of loans offered	379	10.1733	2.4492
Term of loan	Logarithm of firm's average number of years of loans offered	376	3.0778	0.8636
Interest rate	Logarithm of firm's average interest rate paid	440	2.3860	0.7293
Innovation capability	Dummy variable takes a value of 1 for a firm having, business, process, product innovation capability, or 0 otherwise	1055	0.2152	0.4111
Export	Dummy variable takes a value of 1 for a firm participating in the export market, or 0 otherwise	1055	0.1773	0.3821
Business-life cycle	Dummy variable takes a value of 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 a value 1 for a firm with a foreign ownership share of more than 51%, or 0 otherwise	1055	0.0815	0.2738
Owner's managerial experience	Logarithm of firm owner's years of managerial experience	834	2.4036	0.8277
Owner's net worth	Logarithm of firm owner's net worth of private and business assets	838	11.6518	1.6811
Owner's multiple businesses	Dummy variable takes a value of 1 for a firm owner's running of other businesses, or 0 otherwise	1005	0.3592	1.3476
Sale growth $_{t-1}$	Logarithm of firm's sales 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 a value of 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 a value of 1 for a firm's reportage of having sufficient funds to finance its expansion plan, or 0 otherwise	972	0.4064	0.4914
Collateral	Dummy variable takes a value of 1 if a firm is required to provide collateral as a condition for financial approval, or 0 otherwise	553	0.6184	0.4862
Financial statement	Dummy variable takes a value of 1 if a firm is required to provide a financial statement as a condition for financial approval, or 0 otherwise	569	0.5272	0.4997
Business plan	Dummy variable takes a value of 1 if a firm is required to submit a business plan as a condition for financial approval, or 0 otherwise	568	0.4120	0.4926
Cash flow	Dummy variable takes a value of 1 if a firm is required to provide evidence of 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 establishment	1026	2.4308	0.7352
Size	Logarithm of firm's number of employed workers	1055	2.8112	1.3093
Dummy country	Dummy variable takes a value of 1 for Cambodia, Lao, Vietnam, or 0 otherwise	1055	0.4483	0.4976
Dummy sector	Dummy variable takes a value of 1 for the garment sector, or 0 otherwise	1055	0.3223	0.4676
	Dummy variable takes a value of 1 for the auto parts and components sector, or 0 otherwise	1055	0.0957	0.2944
	Dummy variable takes a value of 1 for the electronics, and electronics parts and components sector, or 0 otherwise	1055	0.1687	0.3747
	Dummy variable takes a value of 1 for other sectors, or 0 otherwise	1055	0.4133	0.4927

4. Empirical Results and Discussion

SMEs' Access to External Finance by Sources and Type

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 shown in Tables 7a, 7b, and 7c confirm that SMEs use internal finance first (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 (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 – SME Survey, 2011.

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

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

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 a binary choice model (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 proceeding with the maximum likelihood regression the correlation matrix of the dependent and independent variables was checked. No serious multi-collinearity between the independent variables was found so all of them are included in the regression models. Regression results using maximum likelihood estimation of Equation 2 for each of the SMEs' access to external finance variables are presented in Table 8. The Wald test of overall significance in all specifications passes at the 1 % level. The table reports robust standard errors for the heteroscedastic variance.

Table 8: 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	0.0164	-0.957	0.885***
	(0.219)	(0.715)	(0.302)
Foreign ownership	-1.138**	-	0.421
	(0.485)	-	(0.705)
Owner's managerial experience	0.161	0.138	-0.227
	(0.124)	(0.329)	(0.203)
Owner's net worth	0.0726	-0.114	0.0277
	(0.0668)	(0.141)	(0.0922)
Owner's multiple businesses	0.0401	-0.0134	0.291**
	(0.0813)	(0.107)	(0.138)
Sales growth $_{t-1}$	0.0296	-0.0838	0.0279
	(0.0945)	(0.203)	(0.125)
Profit margin $_{t-1}$	-0.145*	-0.138	-0.147
	(0.0865)	(0.131)	(0.101)
Expansion plan	0.472***	0.359	0.109
	(0.172)	(0.480)	(0.286)
Sufficient internal funds	-0.556***	0.0135	0.0591
	(0.179)	(0.433)	(0.285)
Age	-0.0661	0.875***	0.0918
	(0.170)	(0.332)	(0.249)
Size	-0.0301	0.129	0.145
	(0.0931)	(0.221)	(0.137)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or 0 otherwise)	0.0326	-1.309***	-0.795**
	(0.218)	(0.384)	(0.314)
(Dummy var. for garment sector) i	-0.0360	0.567	0.111
	(0.206)	(0.421)	(0.333)
(Dummy var. for auto parts and components) i	0.573	0.411	0.231
	(0.397)	(0.642)	(0.465)
(Dummy var. for electronics, and electronics parts and component)i	0.387	1.275**	-0.443
	(0.296)	(0.528)	(0.463)
Constant	-0.573	-2.627	-0.732
	(0.887)	(1.686)	(1.246)
Observations	274	160	156

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

SMEs' Need for External Finance

First, with regards to general issues relating to accessing external finance (applying for and having already obtained external finance), Table 8 shows that younger and smaller SMEs at the start-up and fast-growth stage, wishing to expand

but constrained by low profit margins and internal funds, with predominantly domestic based owners running multiple businesses and operating in more developed economies are inclined to seek external finance and from more diverse sources. Access to external sources of finance for SMEs operating in all three industrial sectors considered in this study is quite variable.

The results also indicate that foreign-owned SMEs are financially self-reliant and are not actively seeking external finance, while SMEs reporting higher profit margins and sufficient internal funds are not inclined to seek external funding which is consistent with the pecking order hypothesis. Finally, SMEs with business expansion plans actively seek external finance.

SMEs Applying for Funding

SMEs that were applying for external funding had the characteristics of wishing to engage in expansion of the business but were constrained by inadequate profits and internal funding and had limited foreign ownership involvement.

SMEs' Access to Financial Institutions

For those SMEs that had received external funding, we attempt to identify their distinctive characteristics enabling them to gain access to funding from more than two financial institutions. We find statistically significant results are obtained for those SMEs that are more mature, are located in more developed economies and are operating in the electronics and electronics parts and components sectors.

SMEs' Access to different Types of External Finance

With regard to SME access to different types of external finance (bank loans, leasing, equity, grants, or trade credits from suppliers) the results from Table 8 indicate that, at the 1 or 5 % significance levels, SMEs at the start-up and fast-growth stage, with owners running multiple businesses and operating in more developed economies are more likely to be able to access more than two types of external finance and, hence, are less reliant upon financial institutions for access to finance.

In summary, although the results suggest a significant number of SMEs still rely on internal resources for both start-up and business expansion, external finance is very important for SMEs with particular characteristics. This is the case for domestically-owned, high growth, mature and low profit making SMEs, but which have business expansion aspirations while lacking sufficient internal funds and operating in more developed economies. The need for external finance also cuts across SMEs operating in many industrial sectors. Moreover, the size, age, owner's wealth and stage in the business cycle of the SME have an important bearing in terms of choice in accessing finance through financial and/or non-financial institutions. Of particular note is the fact that SMEs located in a less developed country have much greater difficulty in accessing finance irrespective of the source(s) of this external finance.

5. Conditions of Finance Offered to SMEs

This section extends the previous analysis by gauging firm characteristics that allow SMEs to receive favourable or unfavourable conditions in terms of loan size, term of the 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:

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

where LTR is loan size, term of loan, or interest rate, respectively, offered to SMEs, i represents firm i as in the previous section, X is a set of explanatory variables that captures firm characteristic determinants, and F 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.

A check of the correlation matrix indicates multi-collinearity amongst the main independent variables, especially amongst owner's net worth, collateral, business plan, financial statement, and cash flow. Therefore, these variables are introduced one by one and separately into the base model.

Loan Size

The results of a regression analysis with loan size as the dependent variable are presented in Table 9. We find that among firm characteristics: foreign ownership,

larger firm size and SMEs located in more developed economies are most able to secure bigger loans. Those SMEs in the garment and auto parts sectors tend to obtain smaller 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.

As far as owner's net worth, business plan, financial statement, and cash flow are concerned, the estimated coefficients are positive and statistically significant. The collateral variable is found to be positive but not statistically significant. This finding suggests that financial institutions 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.

Table 9: Dependent Variable: Loan Size

Independent variable	Dependent variable: Loan Size					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	-0.0270	-0.0736	0.164	0.00354	0.0542	0.145
	(0.359)	(0.319)	(0.350)	(0.341)	(0.338)	(0.338)
Foreign ownership	2.269*	2.857***	2.180*	2.026	1.873	2.026
	(1.248)	(0.705)	(1.300)	(1.263)	(1.335)	(1.280)
Owner's managerial experience	-0.144	-0.378	-0.187	-0.106	-0.161	-0.180
	(0.313)	(0.265)	(0.307)	(0.323)	(0.310)	(0.315)
Owner's multiple businesses	0.0744	-0.0490	-0.115	-0.139	-0.112	-0.116
	(0.161)	(0.0749)	(0.0887)	(0.0896)	(0.0696)	(0.0731)
Sale growth $_{t-1}$	-0.0651	-0.0367	-0.0313	-0.0208	-0.137	-0.0351
	(0.152)	(0.132)	(0.144)	(0.161)	(0.167)	(0.160)
Profit margin $_{t-1}$	-0.249	-0.201	-0.324*	-0.254	-0.267	-0.324*
	(0.168)	(0.147)	(0.168)	(0.174)	(0.176)	(0.168)
Age	0.249	0.268	0.357	0.289	0.266	0.298
	(0.331)	(0.297)	(0.306)	(0.333)	(0.314)	(0.318)
Size	0.865***	0.472**	0.886***	0.716***	0.786***	0.821***
	(0.184)	(0.181)	(0.194)	(0.182)	(0.196)	(0.188)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or otherwise)	-1.092*	-0.989	-1.061*	-0.810	-1.098*	-0.976*
	(0.575)	(0.602)	(0.560)	(0.598)	(0.564)	(0.571)
(Dummy var. for garment sector) i	-0.715*	-0.0263	-0.826**	-0.919**	-0.852**	-0.763*
	(0.391)	(0.387)	(0.386)	(0.374)	(0.381)	(0.392)
(Dummy var. for auto parts and components) i	-1.495**	-1.376	-1.519**	-1.801**	-1.494**	-1.479**
	(0.722)	(0.918)	(0.761)	(0.784)	(0.703)	(0.747)
(Dummy var. for electronics, and electronics parts and component) i	-0.289	-0.181	-0.444	-0.469	-0.507	-0.499
	(0.404)	(0.345)	(0.359)	(0.330)	(0.335)	(0.350)
Owner's net worth		0.652***				
		(0.101)				
Collateral			0.490			
			(0.428)			
Financial statement				1.042***		
				(0.377)		
Business plan					0.788**	
					(0.366)	
Cash flow						0.591**
						(0.293)
Constant	9.181***	2.873*	8.711***	8.711***	9.404***	9.139***
	(1.381)	(1.670)	(1.531)	(1.508)	(1.427)	(1.423)
Observations	150	140	147	147	147	147
R-squared	0.482	0.646	0.521	0.538	0.530	0.527

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

Term of Loan

As for the regressions using the term of loan as the dependent variable, we find that, at the 1 to 10% significance levels, older SMEs with owners running multiple businesses are inclined to secure longer term loans (see Table 10). Foreign-owned SMEs and SMEs in more developed economies tend to obtain shorter term finance, presumably because they are better financially equipped and because financial institutions in less developed economies are less developed and focus on short term lending respectively. The coefficients for owner's net worth and collateral are positive and very statistically significant at the 1% level, suggesting that SMEs with wealthier owners and sufficient collateral are able to secure a longer term loan. The garments sector which is one of the key sectors in less developed economies tends to be able to obtain shorter term finance.

Table 10: Dependent Variable: Term of Loan

Independent variable	Dependent variable: Term of Loan					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	-0.0649	-0.124	-0.0638	-0.0938	-0.108	-0.0488
	(0.177)	(0.179)	(0.152)	(0.179)	(0.183)	(0.175)
Foreign ownership	-1.248	-2.344**	-1.146*	-1.261	-1.320	-1.219
	(0.905)	(0.954)	(0.656)	(0.900)	(0.870)	(0.911)
Owner's managerial experience	0.142	0.0790	0.0728	0.143	0.133	0.154
	(0.103)	(0.116)	(0.0884)	(0.103)	(0.104)	(0.104)
Owner's multiple businesses	0.0585*	0.0454	0.0449	0.0522	0.0604	0.0582*
	(0.0344)	(0.0424)	(0.0318)	(0.0354)	(0.0393)	(0.0318)
Sale growth $_{t-1}$	-0.0423	0.0149	-0.0549	-0.0449	-0.0758	-0.0379
	(0.0753)	(0.0747)	(0.0748)	(0.0750)	(0.0791)	(0.0763)
Profit margin $_{t-1}$	-0.00464	0.0822	-0.0226	0.00348	0.00747	-0.00135
	(0.0634)	(0.0641)	(0.0650)	(0.0617)	(0.0621)	(0.0648)
Age	0.151	0.0574	0.301***	0.157	0.160	0.137
	(0.106)	(0.120)	(0.107)	(0.108)	(0.109)	(0.107)
Size	-0.0169	-0.0550	-0.00809	-0.0396	-0.0406	-0.00289
	(0.0842)	(0.0782)	(0.0756)	(0.0940)	(0.0871)	(0.0875)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or otherwise)	-0.395*	-0.347	-0.524**	-0.367	-0.417*	-0.398*
	(0.227)	(0.231)	(0.215)	(0.234)	(0.228)	(0.227)
(Dummy var. for garment sector) i	-0.449**	-0.335*	-0.471***	-0.467**	-0.454**	-0.466**
	(0.179)	(0.193)	(0.172)	(0.182)	(0.179)	(0.179)
(Dummy var. for auto parts and components) i	-0.210	-0.395	-0.232	-0.253	-0.199	-0.216
	(0.503)	(0.428)	(0.438)	(0.504)	(0.505)	(0.494)
(Dummy var. for electronics, and electronics parts and component) i	0.182	0.269	0.275	0.180	0.187	0.179
	(0.214)	(0.200)	(0.189)	(0.212)	(0.207)	(0.208)
Owner's net worth		0.188***				
		(0.0553)				
Collateral			0.914***			
			(0.204)			
Financial statement				0.153		
				(0.218)		
Business plan					0.214	
					(0.191)	
Cash flow						-0.156
						(0.148)
Constant	2.948***	0.924	2.145***	2.895***	3.001***	2.954***
	(0.599)	(0.875)	(0.597)	(0.598)	(0.591)	(0.600)
Observations	132	127	132	132	132	132
R-squared	0.202	0.311	0.349	0.206	0.210	0.209

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

Cost of the loan - Interest Rate

Examining the regression results with the interest rate charged to SMEs as the dependent variable (see Table 11), we find that larger SMEs located in more developed economies pay lower interest rates, and this is statistically significant at the 1 to 5% levels of significance. Demonstrated sales and revenue growth is also a key factor reducing the cost of borrowing. The estimated coefficients for owner's net worth, , business plan, and cash flow are all negative and are statistically

significant at the 5 and 10% levels. This suggests that SMEs with wealthier owners, a clear business plan and with liquidity receive lower interest rates on loans offered by financial institutions.

Table 11: Dependent Variable: Interest Rate

Independent variable	Dependent variable: Interest Rate					
	(1)	(2)	(3)	(4)	(5)	(6)
Business-life cycle	-0.0479	-0.0162	-0.0538	-0.0268	-0.0205	-0.0442
	(0.0835)	(0.0877)	(0.0828)	(0.0873)	(0.0842)	(0.0825)
Foreign ownership	-0.282	-0.203	-0.337	-0.301	-0.220	-0.296
	(0.267)	(0.415)	(0.270)	(0.292)	(0.271)	(0.309)
Owner's managerial experience	-0.0916	-0.0529	-0.0892	-0.104	-0.0932	-0.0884
	(0.0910)	(0.0986)	(0.0914)	(0.0924)	(0.0855)	(0.0869)
Owner's multiple businesses	0.0533	0.0547	0.0544	0.0595	0.0531	0.0531
	(0.0675)	(0.0622)	(0.0676)	(0.0676)	(0.0578)	(0.0618)
Sale growth $_{t-1}$	-0.0725*	-0.0709*	-0.0708*	-0.0762**	-0.0455	-0.0721*
	(0.0371)	(0.0415)	(0.0364)	(0.0363)	(0.0373)	(0.0375)
Profit margin $_{t-1}$	0.00636	-0.0105	0.00854	-0.00589	-0.0119	0.00820
	(0.0532)	(0.0492)	(0.0518)	(0.0540)	(0.0529)	(0.0508)
Age	0.0701	0.0845	0.0564	0.0720	0.0700	0.0667
	(0.0965)	(0.0944)	(0.0944)	(0.0961)	(0.0898)	(0.0920)
Size	-0.137***	-0.109**	-0.140***	-0.117***	-0.106***	-0.124***
	(0.0425)	(0.0479)	(0.0421)	(0.0404)	(0.0398)	(0.0397)
Dummy (country, 1 for Cambodia, Lao, Vietnam, or 0 otherwise)	0.784***	0.789***	0.791***	0.751***	0.808***	0.777***
	(0.104)	(0.138)	(0.103)	(0.111)	(0.109)	(0.105)
(Dummy var. for garment sector)i	0.127	0.0674	0.127	0.139	0.138	0.114
	(0.101)	(0.103)	(0.100)	(0.0980)	(0.0971)	(0.103)
(Dummy var. for auto parts and components)i	-0.193	-0.111	-0.119	-0.0942	-0.159	-0.141
	(0.181)	(0.195)	(0.186)	(0.197)	(0.196)	(0.193)
(Dummy var. for electronics, and electronics parts and component)i	0.129	0.111	0.120	0.126	0.129	0.129
	(0.116)	(0.117)	(0.115)	(0.118)	(0.118)	(0.116)
Owner's net worth		-0.0707**				
		(0.0356)				
Collateral			-0.0977			
			(0.112)			
Financial statement				-0.144		
				(0.107)		
Business plan					-0.252**	
					(0.103)	
Cash flow						-0.132*
						(0.0790)
Constant	2.580***	3.220***	2.681***	2.675***	2.553***	2.594***
	(0.313)	(0.461)	(0.327)	(0.319)	(0.285)	(0.306)
Observations	136	129	135	135	135	135
R-squared	0.619	0.606	0.614	0.617	0.633	0.620

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

In summary, the key findings from our analysis suggest that stage of country development (and related financial market development) and owner's net worth consistently affect the conditions of external finance offered to SMEs. That is SMEs in more developed economies with wealthy owners tend to get *larger loans of a longer duration and , at a lower interest rate.* Hence the financial characteristics of the owner are consistently important to financial institutions in determining their willingness to lend, the duration of the loan and the interest rate on the loans to SMEs.. We conclude that there is potential credit rationing or risk premiums imposed by financial institutions on SMEs.

We also find that foreign ownership, firm size, business plans and cash flow are also important in determining the size of the loan extended and the conditions attached to the loan. Larger SMEs, with foreign ownership, a business plan and good cash flow tend to have access to larger loans of a shorter duration and at a lower interest rate. SMEs in the garment sector borrow less and for a shorter duration while SMEs in the auto parts and components sector also tend to borrow little. SMEs with a high profit margin tend to borrow less, which is consistent with the pecking order hypothesis, More mature SMEs have easier access to longer term finance, and a sound track record of sales growth can reduce the interest rate on loans. The possession of collateral is beneficial for an SME when it wishes to obtain longer term finance while the preparation of financial statements assists SMEs in attaining larger loans.

Overall, we find that financial institutions offer less favourable lending conditions to smaller, less well established, opaquely operating, domestically owned SMEs, operated by less experienced and wealthy owners, located in less developed economies that are struggling with sales growth and cash flow.

The findings suggest that the behaviour of financial institutions is likely to be 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, a bankruptcy law is lacking or non-existent, 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.[5] Consequently, problems in accessing finance for SMEs may not be due solely to distortions or inefficiencies in the financial sector itself, but also from weaknesses in the legal, institutional and regulatory environment in which these institutions operate.

6. Access to External Finance and SME 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 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 is a set of explanatory variables that captures firm characteristics, and LTR 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.

After checking the correlation matrix for the dependent and independent variables we once again found the presence of multi-collinearity amongst our main independent variables.[6] Therefore, we introduce these variables one by one to the base model. The regression results are presented in Table 12. For innovation capability the estimated coefficients of firm size and loan size are positive and statistically significant at the 1 and 5% levels, while positive coefficients are found for term of loan and negative for the interest rate but they are not statistically significant. 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 favourable conditions provides SMEs with sufficient time and resources to do so. Similarly, we find that at the 1% to 5% significance levels, 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 participation in export markets.

Table 12: Relationship between SMEs Access to Finance and Performance

Independent variable	Dependent variable							
	Innovation capability				Export			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Age	-0.156	-0.114	-0.194	-0.178	-0.347**	-0.286*	-0.355**	-0.430**
	(0.138)	(0.139)	(0.156)	(0.146)	(0.161)	(0.164)	(0.173)	(0.180)
Size	0.484***	0.359***	0.498***	0.440***	0.586***	0.398***	0.613***	0.542***
	(0.0698)	(0.0920)	(0.0767)	(0.0789)	(0.0964)	(0.118)	(0.0995)	(0.107)
Dummy (country, 1 for Cambodia Lao, Vietnam, or 0 otherwise),	0.0970	0.152	0.0631	0.210	0.341	0.456*	0.178	0.455
	(0.196)	(0.196)	(0.221)	(0.244)	(0.239)	(0.240)	(0.262)	(0.288)
(Dummy var. for garment sector) i	-0.479**	-0.352*	-0.586***	-0.500**	-0.0114	0.156	-0.0544	0.0405
	(0.199)	(0.200)	(0.224)	(0.212)	(0.211)	(0.224)	(0.227)	(0.229)
(Dummy var. for auto parts and components) i	-0.508	-0.447	-0.689*	-0.546	-0.524	-0.500	-0.624	-0.594
	(0.337)	(0.344)	(0.381)	(0.385)	(0.364)	(0.373)	(0.387)	(0.364)
(Dummy var. for electronics, and electronics parts and component) i	-0.276	-0.233	-0.234	-0.269	-0.350	-0.288	-0.244	-0.556**
	(0.230)	(0.232)	(0.260)	(0.242)	(0.264)	(0.274)	(0.281)	(0.280)
Loan size		0.109**				0.166***		
		(0.0527)				(0.0554)		
Term of loan			0.0242				0.0435	
			(0.107)				(0.116)	
Interest rate				-0.191				-0.461**
				(0.159)				(0.223)
Constant	-1.723***	-2.681***	-1.659**	-1.133*	-2.227***	-3.712***	-2.222***	-0.799
	(0.500)	(0.643)	(0.661)	(0.682)	(0.654)	(0.773)	(0.823)	(0.911)
Observations	364	364	307	329	364	364	307	329

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

7. Concluding Remarks

This study of SMEs located in eight Asian economies confirms that a significant number are heavily reliant on internal funding resources for both start-up and business expansion. External finance, while potentially important, remains beyond the reach of many domestically-owned, smaller-sized SMEs, making lower profits, with business expansion aspirations but financially constrained and operating in less developed economies. Moreover, size of SME and stage of country development, reflecting financial market conditions, affects the choice of financial institutions and financial products that an SME can access.

Our analysis reveals potential credit rationing or risk premiums imposed by financial institutions on SMEs, particularly in the case of smaller, recently established SMEs in emerging market and developing economies. This is consistent with the literature 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. We also find that an owner's net worth, collateral, business plan, financial statements, and cash flow are important in determining the access, terms and conditions of SMEs to loans from financial institutions. In other words, financial institutions put higher risk premiums and offer less favorable financial conditions to SMEs seen as less well established, less financially transparent and financially weak. These SME conditions are most likely to hold in low income developing economies.

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, thereby 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.

Access to finance is found to have a significant impact on the innovation capability and export market participation by SMEs. This study suggests that larger SMEs, by having access to larger loans, of a longer-term duration and with a lower interest rate, are in a better position to benefit from improved innovation capability and exporting activity. Obtaining external finance on more favourable conditions provides these SMEs with more time and resources to engage in improving their innovation capabilities and in entering foreign markets.

While there is considerable opportunity for start-ups firms in the emerging and developing economies of Asia, 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, otherwise this potential is unlikely to be realized. The specific policies should not distort the traditional financial markets but to complement them with other mechanisms, ranging from providing basic information and advisory services

to the promotion of credit guarantee/insurance schemes, access to alternative finances (angel, venture capitals, equity funds, and stock markets), competitive grants for start-ups, innovation and R&D, and access to capacity-building and training to improve managerial capacity and financial literacy for SMEs.

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[2] A study by IFC and McKinsey and Company (McKinsey) found that 45 to 55 per cent of formal SMEs (11-17 million) in emerging market economies do not have access to formal institutional loans or overdrafts. They also found that 65-72 percent of all micro and SMEs (240-315 million) in emerging market economies lack access to credit. The proportional size of this finance gap was found to vary widely across regions and is particularly severe in Asia and Africa (IFC, 2010).

[3] The pecking order hypothesis asserts that due to the presence of information asymmetries between a firm and potential financiers, the relative costs of finance will vary between internal sources of finance (retained earnings, savings of existing owners) and external sources (bank loans, leasing, equity (Watson and Wilson, 2002; Frank and Goyal, 2003; Cassar and Holmes, 2003). The cost of external finance is likely to be greater. Therefore, profitable firms with retained profits prefer to use this for financing before accessing outside sources.

[4] 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).

[5] This is more likely to be the case for smaller SMEs and informal firms.

[6] The correlation matrix can be obtained from the authors by request.

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