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Cover Page Footnote

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Abstract

Bank loans are the main sources of financing the Small and Medium-Sized Enterprises (SME) sector of the Thai economy. This sector contributes to about 37% GDP and employs about 80% of the labor force. Recent data indicate a decline in bank lending; this necessitates the efficient use of available funds and strategies to diversify SME financing. Using data from 2007 – 2014, we analyze the performance of this sector by applying several measures of productivity. We find average productivity to be greater than one for: (a) SME output per unit of SME and (b) SME output per Baht loan. This satisfactory performance is the result of government stabilization policies to ensure adequate loan support to this sector together with effective risk management strategies. The decline in the ratio of SME nonperforming loans to total SME loans attests to prudent policies to maintain high asset quality during a period of economic fluctuation. Policies to supplement bank financing and to diversify the sources of funding include the widening and deepening of the capital market. Sustainable growth policies should emphasize human capital development to stem declining labor productivity and also increasing expenditures on R&D to promote innovation-led growth..

Key words: small and medium-sized firms, bank loans, productivity, efficiency

JEL: E44, E65, G28, G21

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1. Introduction

In recent years many countries (some with the support of international organizations) have implemented strategies for the establishment and expansion of Small and Medium sized Enterprises (SME) to promote economic growth, employment and income generation. This phenomenon is documented by The World Bank (2010) which provides several data sets to indicate the growth of Micro, Small, and Medium- sized Enterprises (MSME) worldwide; OECD (2016) also has recent data. There is a growing literature (Ayyagari et al 2007, Tybout 2000, Schiffer and Weder 2011) on various aspects of SME's operation and performance. The pattern of financing and growth is the focus of Ayyagari et al (2012), Calice et al (2012), Beck et al (2008, 2011), Tybout (2000) and Clarke et al (2005). Limited published data on SME activities in some countries have prevented any rigorous statistical analysis of productivity or performance.

Several researchers have addressed the efficiency aspect of SME, they contend that such performance is necessary to achieve economic growth, employment creation, and poverty reduction.[1] Dewatripoint and Maskin (1995) emphasize "credit efficiency" as an important goal in light of the financial challenges/constraints facing SME. Acs et

[1] Tybout (2000) lists several factors that may prevent scale efficiency in SME; some are (i) surplus unskilled labor and a lack of long term financing, (ii) poor infrastructure, including communication facilities and transportation network, and (iii) volatility in business environment which discourages mass production techniques.

al (2008) list the "efficiency-driven phase" as one of the three phases in the dynamic interaction between entrepreneurship and economic development. Besides Ramcharran (2017), the efficient use of bank loans in terms of productivity has not been empirically investigated despite various reports of its significant ramification in SME financing.[2] Further research in this area is warranted since the results could have important policy implications on capital allocation, strategies to improve productivity performance and to manage financial risks.

This research, using the latest available data, 2007 – 2014, examines the relationship between bank loans and the economic performance of the SME sector of Thailand. This sector comprises over 95% of all business enterprises; its contribution to GDP is about 37% and to total employment of about 80% of the labor force. Loans to SME comprise about 35% of total loans by the financial sector. The main sources of the data are: (a) *Asia SME: Finance Monitor 2014*, Asian Development Bank; (b) *Bank of Thailand*, Key Economic Indicators, 2015; and (c) *Financing SMEs and Entrepreneurs* (OECD 2016). Part of the analysis includes the computation and discussion of the following productivity measures: (a) output per unit of SME, (b) output per Baht loan, (c) output per employee, (d) exports per unit of SME, (e) exports per Baht loan and (f) exports per employee. This technique of assessing performance based on productivity

[2] The author uses a non-homogenous production function to estimate productivity (output elasticity) of bank loans and of labor as well as returns to scale in India's SME sector.

indicators adds to the current literature. The rigor of our methodology (statistical technique) is somehow restricted because of the small sample size of the data, however, the analysis and results still provide significant inferences regarding policy implications. Acs et al (2008) three- phase approach to analyze the growth performance of SME provides the general framework for our analysis. This paper is an extension of the existing literature of Thai SME. An earlier paper by Wiboonchutikula (2001), using data from 1987 – 1996, examines productivity measures, technical efficiency, and total factor productivity for different firm size.

The SME sector of Thailand provides an interesting case study for examining the impact of bank lending. The banking sector is the main sector of the Thai financial system and the major source of funds to SME. In the past decade the SME sector has grown significantly in terms of contribution to GDP, the level of employment, the number of units, and loans received from the banking sector. In recent years the growth rate of the economy has dropped significantly, real GDP growth has fallen from 7.2% in 2012 to 2.7% in 2013 and then to 0.83% in 2014 (see Table A1). The manufacturing sector performance is the worst since 2007 with significant volatility. The uncertainty in the economy has resulted in a decrease in SME loans as a percentage of total from 44.5% to 34.5% (see Table A2). As a key part of Thailand's manufacturing sector, a fundamental understanding of the productivity/efficiency dimension of its operation is necessary since the Government continues to commit resources to expand it**.** In 2012 the Thai

government, through the Office of National Economic and Social Development Board, has implemented an inclusive growth strategy aimed at increasing SME's contribution to GDP to 40% or more; the current contribution to GDP averages about 37% (see Table A2). The Bank of Thailand Five-Year Strategic Plan 2012–2016 also addresses the need to extend more loans and financial services to SME in order to create a higher value-added economy.[3]

Our analysis highlights some important challenges facing the financing of Thai SME and discusses some policies that could impact the future development and performance. The period under study is one of economic and political volatility (to be discussed later), this situation has prompted several government reactions to enhance the resilience of this sector. They include the implementation of stabilization and risk management policies. The decrease in funding from financial markets mainly from commercial banks (in 2014 they comprise 80% of SME funding) has been supplemented by mobilizing short-term sources of financing mainly in the form of working capital. Additionally, plans for long-term financing have also been implemented, these include policies and strategies to widen and deepen the capital market to increase the availability of funding as well as to diversify the sources of funding away from the heavily dependent financial market (this is discussed in another section of the paper).

[3] ASIA SME Finance Monitor, Asian Development Bank (2014), page 233.

The remainder of the paper is structured as follows. Section 2 describes the three phase approach to analyze the transformation and growth of SME. Section 3 provides an overview of the SME sector of the Thai economy. Section 4 discusses the literature on the financing of SME. Section 5 reviews the literature on SME financing in Thailand. Section 6 analyses the results and discusses the implications. Section 7 discusses other sources of financing, and Section 8 provides the summary and conclusion.

2. Evaluating the performance of SME: The Three Phase Approach

Academics and policy makers have developed several approaches to evaluate the role of entrepreneurship and the performance of SME. Many researchers including Acs et al (2008) and Acs and Szerb (2007) have applied the Global Entrepreneurship Monitor (GEM) conceptual framework which depicts the multifaceted features of entrepreneurship, recognizing the proactive, innovative and risk response behavior of individuals and firms.[4] Economies are classified under three economic development levels; (a) the factor driven phase which is dominated by subsistence agriculture and extraction businesses with a heavy reliance on unskilled labor and natural resources, (b) the efficiency driven phase where the economy has become more competitive with more efficient production processes and increased product quality, and (c) the innovation –

[4] The GEM research program is an annual assessment of the national level of entrepreneurial activity. Initiated in 1999 with 10 countries, expanded to 21 in the year 2000 and 62 countries in 2016, the program covers both developed and developing countries.

driven phase where businesses are more knowledge-intensive and the service sector expands.

GEM (2016/17) classifies Thailand under the efficiency - driven phase. The transition into the innovation- phase is marked by an increase in entrepreneurial activities. Table A3 presents information on expert ratings of the entrepreneurial ecosystem for Thailand ranked out of 65 countries, developed and developing. Thailand ranks slightly above the average under all categories. Acs et al (2008) observe that a major short coming of the GEM data is the inability/ inadequacy of dealing with the issue of how to compare entrepreneurial activities in developed and developing countries. The authors list the difference in institutions as the primary factor since institutions are the critical determinants of entrepreneurial behavior.

3. An overview of the SME sector of Thailand

The main sectors of Thai economy are: (a) agriculture and food production, this sector employs more than 40% of the active population and contributes about 10% of GDP, (b) tourism, the main source of foreign exchange, (c) assembling and the production of automotive, Thailand is an assembly hub for international car brands, and (d) the assembling and exports of electronic products. The Thai government has always recognized the contribution of SME to the economic progress of the country with its labor intensive (capital scarce) factor endowment. The arguments, similar to Acs et al (2008) "factor – driven phase", for its expansion are: (i) small firms would create

additional employment opportunities, (ii) small firms are capable of producing large quantities of consumer goods and increasing demand and income would generate new investment in other industries; this process will create spill-over growth effects through forward and backward sectoral linkages, and (iii) SME could produce a wide range of new products with technology varying from traditional to state of the art, consistent with the "innovation- driven phase" .

In Thailand SME are classified in terms of fixed assets and employment. Under the Ministry of Industry regulation enacted in 2002: (a) SME in the manufacturing and service sectors are firms having not more than 200 employees or fixed assets (excluding land) of less than Baht 200 million, (b) SME engaged in wholesale trade are firms having not more than 50 employees or fixed assets of less than Baht 100 million, and (c) SME engaged in retail trade are firms having not more than 30 employees or fixed assets of less than Baht 60 million.[5] Regarding regulatory policies, the National Board of SME Promotion is responsible for promoting policies and plans; it is chaired by the country's Prime Minister. Also, the Office of Small and Medium Enterprises Promotion (OSMEP), a government agency for planning and coordinating national SME policies across government organizations, commenced operations in 2001. To date, three master plans have been formulated. The third SME Promotion Master Plan, covering 2012–

[5] ASIA SME Finance Monitor, Asian Development Bank (2014), page 228. The official definition for SMEs is not used by financial institutions in Thailand. In fact, each financial institution in Thailand is permitted to use their own definition of SMEs.

2016, include four strategies that address the following: (a) conducive business environment, (b) competitiveness, (c) balanced growth across the country, and (d) the business capability of SME to foster international economic integration.[6]

We discuss the economic importance of the SME sector under the following classifications: (a) number of units, (b) contribution to GDP, (c) employment, and (d) foreign trade. The SME sector comprises about 95% of all business enterprises in the country. The **number of units** has increased from 2,366,227 in 2007 to 2,763,997 in 2013 (by 16.8%).[7] At the sectoral level, as a percentage of total units, it has increased from 41.1% to 43.5% in the trade sector and from 30% to 39.1% in the service sector, however, it has decreased from 28.2% to 17.4% in the manufacturing sector (see Table A2).

SME's **output** has increased from Baht 3,298.5 bil. in 2007 to Baht 4,454.9 bil. in 2013 (by 35.05%). The 2011 floods caused a slight decrease. As a share of total GDP, its contribution averages about 32% over period, it remains stable except for slight decline in 2009 and 2010. SME activities are heavily concentrated in various sectors of the economy; manufacturing (about 30% of GDP), services (about 32.5% of GDP), trade (about 29% of GDP), and construction (about 6.37% of GDP). SME share of total

[6] ASIA SME Finance Monitor, Asian Development Bank (2014), page 232.
[7] The number of units could vary by (i) size, (ii) level of employment, (iii) age, (iv) location, (v) types of ownership, (vi) factor intensity, and (vii) institutional aspect of management etc. Disaggregate data are not available to separately identify these characteristics.

employment has increased from 76% in 2007 to 81% in 2013, with the main sectors being trade, services, and manufacturing. The **foreign trade** sector of SME activities have not improved during this period, mainly because of the global recession which has decreased foreign demand. SME's share of total export decreased from 30.1% to 25.5% while the share of imports remain fairly constant at about 30%. This has a negative impact on the trade balance (see Table A2, computed deficit of 412 billion Baht in 2011, 523 billion Baht in 2012, and 607 billion Baht in 2013).

4. Financing Small Business, Review of the Literature

A growing literature on the financing of SME includes a seminal paper by Ayyagari et al (2012) who examine financing pattern of 99 countries based on institutional and economic factors.[8] The important findings are: (i) debt financing (bank loans) is the major source of external financing, (ii) foreign bank entry has the potential of increasing lending, (iii) labor productivity is low because of a mix of financial and organization factors (poor access to finance and poor management), (iv) informal firms (unregistered) account for up to half of all economic activities in developing countries, and (v) informal financing channels play any important role in facilitating access to finance. Clarke et al (2005) find that because of financial liberalization foreign banks play a significant role in

[8] They analyze the pattern of financing based on the following stylized facts about firms : (i) concentration of ownership, (ii) capital structure choice, (iii) bank versus market sourcing, (iv) access to foreign capital, (v) cross border mergers, (vi) productivity, (vii) industry structure and entrepreneurship, (viii) the role of small firms, and (ix) informality.

lending to firms in some Latin America countries. Beck et al (2005, 2008) and De la Torre et al (2010) find that the sources (and pricing) of lending to SME in developing countries include large, small, private, government-owned, and foreign banks. This pattern is beyond "relationship" lending, the type of financing based on "soft" information generated by loan officers through direct and personalized contacts with owners of SME. Beck et al (2008) also find that size matters, small firms in countries with poor regulatory institutions use less external finance. Beck et al (2011) find the following variables to be significant in bank financing of SME: (i) ownership types, (ii) the presence of foreign banks, (iii) domestic banks, (iv) different lending technology, and (v) organization structure. Tybout (2000) lists other cultural/institutional factors affecting the financing of small firms, some include: (i) policies tends to favor large firms because they are low risk and cheaper to service, (ii) private sector credit is relatively scarce, (iii) information networking are poorly developed, (iv) binding interest rate contracts are very common, and (v) some small producers operate partly or wholly outside the realm of government regulation and rely heavily on the informal credit market. The recent increase in the use of microfinancing in developing countries is reviewed by Brau and Woller(2004).

Serval studies have examined the impact of bank loans on economic growth. King and Levine (1993a, 1993 b) and Levine (1997) articulate a positive relationship between financial development and economic growth. Ranjan and Zingales (1998)

provide evidence that firms/ industries with external financing grow faster. Levine and Zervos (1998) examine the impact of financing development on economic growth using the amount of bank loans available to firms as one of the indicators of financial development. The focus on the impact of bank loans on the economic growth of a specific sector of the economy (SME) is a significant contribution to the literature.

5. Financing SME in Thailand

5.1 Pattern of lending

The banking sector is the main entity in the Thai financial system, and a major source of SME financing.[9] As of the end of 2013, there were thirty commercial banks and six specialized financial institutions (SFI) active in providing loans to SME.[10] The Bank of Thailand, the country's central bank, guides financial institutions to apply the SME definition/classification (stipulated in the Ministry of Industry's regulation 2002), for lending operations. SME loan outstanding at the end of 2014 were Baht 5505 bil., of this amount Baht 4439 bil. (80.64%) were from commercial banks and Baht 1066 bil. (19.36%) were from Public Financial Institutions (PFI) (see Table 1). SME loans as a

[9] Total financial institutions include (i) Bank of Thailand; (ii) depository corporations: (a) commercial banks, (b) specialized financial institutions, (c) savings cooperatives and credit unions, and (d) money market mutual funds; (iii) non-depository corporations: (a) mutual funds, (b) insurance companies, (c) financial institutions development fund, (d) credit card and personal loan companies, (e) holding companies, (f) provident companies, (g) government pension fund, (h) securities companies, (i) leasing companies, (j) agricultural companies, and (k) pawnshops. ASIA SME Finance Monitor, Asian Development Bank (2014) page 228.

[10] Specialized financial institutions comprise six institutions: (i) Small and Medium Enterprise Development Bank, (ii) Government Savings Bank, (iii) Islamic Bank of Thailand, (iv)Bank for Agriculture and Agricultural Cooperatives, (v) Export-Import Bank of Thailand, and (vi) Government Housing Bank. ASIA SME Finance Monitor, Asian Development Bank (2014), page 228.

percentage of total loans decreases from 45% to 32.33%, and loans from commercial banks to SME as a percentage of total commercial banks loan decreases from 44.5% to 34.48%. The share of SME commercial bank loans to GDP is at 36.6% in 2014.

Table 1: Sources of SME financing

	TotalLoans (Baht bil.)			Loans to SME (Baht bil.)			SME Loan Distribution %			SME as % of Total		
Year	Total	ComBan	PFI	Total	ComBan	PFI	Total	ComBan	PFI	(A)	(B)	(C)
2007	7,994	6,229	1,765	3,557	2,775	782	100	78.01	21.98	44.50	44.55	44.31
2008	9,527	7,549	1,978	3,668	2,907	758	100	79.26	20.67	38.50	38.51	38.32
2009	10,178	7,807	2,370	3,394	2,609	790	100	76.86	23.27	33.35	33.42	33.33
2010	11,617	8,763	2,854	3,644	2,854	790	100	78.32	21.68	31.37	32.57	27.68
2011	13,224	9,782	3,442	4,330	3,292	1038	100	76.03	23.97	32.74	33.65	30.16
2012	14,954	11,278	3,677	4,693	3,646	1047	100	77.69	22.31	31.38	32.33	28.47
2013	16,369	12,342	4,026	5,227	4,208	1019	100	80.51	19.49	31.93	34.09	25.31
2014	17,030	12,873	4,157	5,505	4,439	1066	100	80.64	19.36	32.33	34.48	25.64

Source: *ASIA SME Finance Monitor*, Asian Development Bank, 2014.
Note: (A) = SMEL/TL = loans to SME as a % of total loans, (B) = SMECB/ToCB = comerical bank loans to SME as a % of total comercial bank loans, and (C) = SMEPFI/ToPFI = public financial institutions loan to SME as a % of total public financial institutions loan.

The most active SME sectors obtaining commercial bank loans in 2014 are trade (29.6%), service (25.9%), and manufacturing (22.3%), (see Table A4).

There are three major events during the period under study that must be noted since they contribute to the systematic volatility in Thai's financial market and lending to SME. They are: (a) the global financial crisis in the West which reduced the share of SME's export from 30.1% to 25.5%, (b) the flood of 2011 which shattered the industrial heartland and the agriculture sector, and (c) political instability beginning 2013 which created downward pressure on tourism, private sector investments and consumer

confidence. Both demand and supply side factors contribute to the decrease in lending. The growth rate since the global financial crisis has fallen. The reasons include Thailand's openness to international trade (the SME share of total exports is about 30%) which exposes it to the global slowdown, a decrease in private investment and the demand for loans. A decade of intermittent political conflict and a series of exogenous shocks have hampered policy making and weakened economic performance. A military coup in May 2014 ended political protests, nevertheless, there is still uncertainty about political stability and business confidence. The fall in tourist arrivals as a result of the political unrest has dampened service exports, a main activity of SME. With gloomy economic prospects and political unrest banks and SFI have become more cautious in lending to SME and individuals (IMF, 2015). A high rejection rate of loan application also occurred during this period. The disruption caused by floods triggered the government to intervene and stabilize the sector since most SME are family-run or owned by an individual, many with little or no collateral. After the May 2014 military coup there has been an improvement in private sector confidence and a modest recovery.

During this period of uncertainty the Bank of Thailand adopted an expansionary (but cautious) position towards lending as indicated by: (a) the lowering of interest rate on SME loans, it reached a peak of 8.10% in 2011 then dropped to 6.4% in 2013, (b) the narrowing of interest rate spread between loans to SME and to large enterprises, it reached a high of 2.65% in 2011 but dropped to 1.31% in 2013, (c) a high

rejection rate of loan application, and (d) the increasing value of collateral required by banks. Table 2 provides some relevant data. An important government reaction to the problem was the provision of guaranteed loans, this program includes a five-year

Table 2: Indicators of Lending to SME

Year	Rejection Rate (%)	Interest Rate (%)	Spread (%)*	GGL**	Collateral
2007	28.50	5.94	1.20	NA	793 bil.
2008	25.90	6.34	1.30	NA	2210 bil.
2009	14.90	6.60	1.42	20.4 bil.	3553 bil.
2010	26.90	7.14	NA	58 bil.	2855 bil.
2011	NA	8.10	2.65	76 bil.	9370 bil.
2012	NA	7.00	1.50	123 bil.	10658 bil.
2013	NA	6.40	1.30	223 bil.	NA

Source: *Financing SMEs and Entrepreneurs* OECD 2016.

* Interest rate spread between loans to SMEs and to large enterprises.

** Government guaranteed loans.

Portfolio Guarantee Scheme for SME. This supplement the activities of the state own banks such as the Small Business Credit Guarantee Corporation (SBCGC) that provides credit guarantees to viable SME which do not have sufficient collateral. According to Intarakumnerd and Goto (2016), these are supply side technology and innovation policies (aimed at cost reduction) to meet, inter alia, liquidity constraints. Subhanij (2016) also identifies some commercial banks innovations (market friendly models and schemes) to help SME get access to credit on a sustainable basis.

5.2 Government policy reactions: risk management techniques.

Several studies, including Jacques et al (2016) on the USA, have documented the frequency of default and bankruptcy of SME in other countries, as well as the impact of government intervention policies. Recent data show that about 10% of the units of the SME sector in India are classified as "sick" (with outstanding accounts/debt remain overdue for a period over 2.5 years).[11] A special feature of SME financing in Thailand is the implementation of risk management strategies to ensure the continuous flow of funding and to minimize default risk. The three foremost are:

(a) *Credit Guarantee.* The Thai Credit Guarantee Corporation, a state- funded guarantee, which started in 2009 as part of Thai economic stimulus measures against the global financial crisis. Under this scheme, the government aims to support SME access to bank loans with a limited period of not more than seven years.[12]

(b) *Collateral.* In many countries SME are denied loans because of inadequate collateral; Kamesan (2003) documents this for India.[13] In Thailand, to mitigate the burden of collateral requirement by banks, the Government has drafted the Business Security Act

[11] Handbook of Statistics on the Indian Economy, (2010-11), Reserve Bank of India.
[12] ASIA SME Finance Monitor, Asian Development Bank (2014), page 229.
[13] Kamesam (2003) identifies other problems faced by India's SME sector, some include the following: (i) a limit for collateral free loans, many SME entrepreneurs are facing difficulties in providing collateral security (ii) high borrowing cost for loans, and (iii) considerable delay in the settlement of dues/payment of bills, and (iv) marketing, small SME have to sell output individually.

to expand the range of eligible collateral for loans, including movable assets, and to expedite foreclosure processes.[14]

(c) A*symmetric Information*. Several researchers, including Mishkin and Eakins (2015), have identified asymmetric information (adverse selection and moral hazard) as an important cause of financial crisis. In light of this the National Credit Bureau in 2005 provides both positive and negative credit information on individuals and enterprises to banks and nonbank financial institutions (NBFIs). Such information is calculated/ based on 25 million customer data and 70.7 million accounts data from seventy eight members, as of 2013.[15]

(d) *Asset quality*: An important impact of the strategies governing Thai SME financing is the significant improvement in asset quality; this is indicated by the downward trend in the share of SME nonperforming loans (NPL) to total SME loans (from commercial banks) from 7.1% in 2009 to 3.1% in 2014 (see Table A4). This, however, is slightly higher when compared with the gross NPL ratio to total commercial bank loans which has decreased from 4.8% to 2.2% during the same period.

6. Analysis of the results

Based on the data on Table 3, output from the SME sector increases by 35% over the period (average growth rate of 5.8%), total loans increase by 113% (average

[14] ASIA SME Finance Monitor, Asian Development Bank (2014), page 230.
[15] ASIA SME Finance Monitor, Asian Development Bank (2014), page 230-231.

growth rate of 16.14%), employment increases by 28% (average growth rate of 6.47%), and the number of the units of SME increases by 16.8% (average growth rate of 2.8%). The pattern of these variables is shown in Figure 1 and Figure 2. Loans to SME as a percentage of total loans decreases from 44.5% to 34.5%; however, as Table 2 indicates the decrease from 44.5% in 2007 to 32.3% in 2012, is followed by an increase to 34.5% in 2014 (see pattern in Figure 3). The main reasons for the decrease in lending have been fully discussed in Section 5.1.SME loans as a percentage of GDP exhibit a similar pattern, a decrease from 32.5% in 2007 to 28.2% in 2010, followed by an increase to

36.6% in 2014.

Table 3: SME Data

Year	Number	EMP	Output (mil)	Export (mil)	SMELoans (mil)	TLoans (mil)
2007	2,366,227	8,900,567	3,298,500	1,576,000	3,557,330	7,994,000
2008	2,827,633	NA	3,457,700	1,691,000	3,667,895	9,527,000
2009	2,896,106	9,701,354	3,417,900	1,564,000	3,399,452	10,178,000
2010	2,913,167	10,507,507	3,747,700	1,669,000	3,644,000	11,617,000
2011	2,646,549	10,995,977	3,859,600	1,971,000	4,330,000	13,224,000
2012	2,730,591	11,047,854	4,211,300	2,065,000	4,693,000	14,954,000
2013	2,763,997	11,414,702	4,454,900	1,762,000	5,227,000	16,369,000
2014	NA	NA	NA	NA	5,505,000	17,030,000

Source: ASIA SME Finance Monitor (2014) Asian Development Bank.
Note: Number = number of units; EMP = number of employees; Output = nominal GDP of SME (Bmil); Export = SME export (mil); Tloans = total loans;

Fig 1: SME output, loans, exports, and total loans (Bmil)

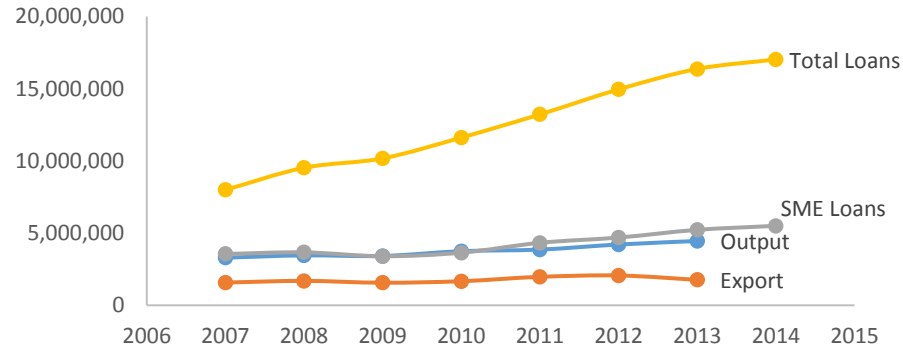


Fig 2: Number of SME and Employees

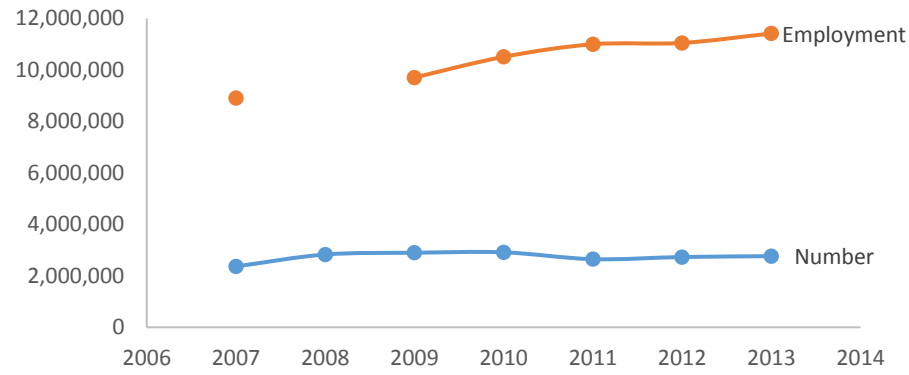
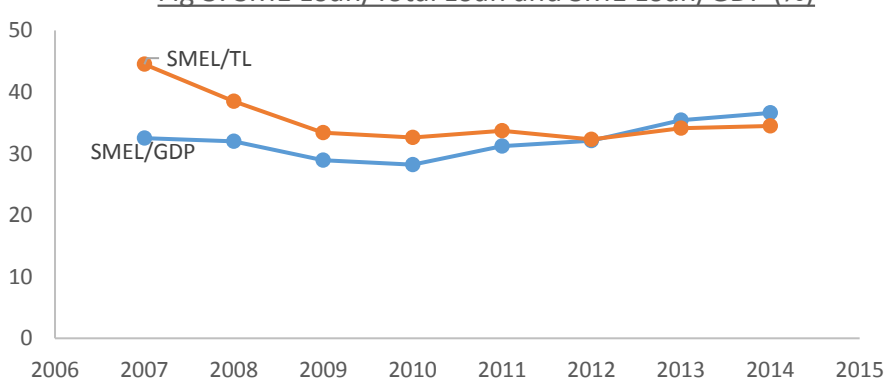


Fig 3: SME Loan/Total Loan and SME Loan/GDP (%)



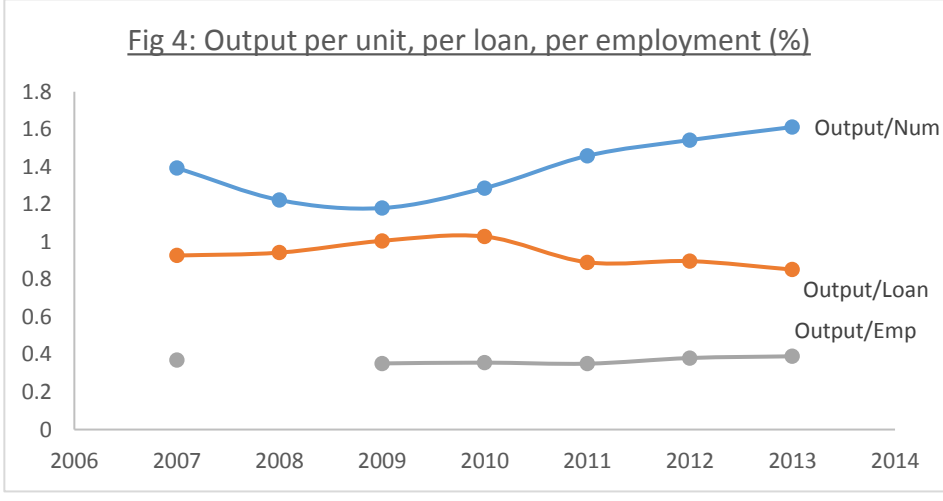
In terms of productivity, (see Table 4), SME output (million Baht) per unit of SME (average productivity) is positive and greater than one, however, it decreases from 2007 to 2009 (1.39 to 1.18) and increases after 2010 (to 1.61 in 2014). This performance is considered efficient. Another measure, the SME output (million Baht) per Baht value of loan, averages about 89% (ranging from 1.02 to 0.852), this performance is also considered efficient considering the state of the economy. Dewatripont and Maskin (1995) associate such performance with "credit efficiency". Ramcharran (2017) also reports increasing output elasticity of bank credit for India's SME. We also look at this performance from the perspective of "**factor intensity**" defined as SME loan per employee (SMEL/EMP). This ratio is a proxy for capital/labor ratio; it increases from 0.3997 to 0.4579, and indicates that labor has more capital asset (loan) to work with, thus improving performance.

Table 4: Ratios Indicators of SME productivity

Year	SMEL/GDP	SMEL/TL	SMEL/EMP	Out/num	Out/Loan	Out/emp	Exp/num	Exp/Loan	Exp/emp
2007	32.5	44.5	0.3997	1.3940	0.9272	0.3706	0.6660	0.4430	0.1771
2008	32	38.5	NA	1.2228	0.9427	NA	0.5980	0.4610	NA
2009	28.9	33.4	0.3504	1.1802	1.0054	0.3523	0.5400	0.4601	0.1612
2010	28.2	32.6	0.3468	1.2865	1.0285	0.3567	0.5729	0.4580	0.1588
2011	31.2	33.7	0.3938	1.4584	0.8914	0.3510	0.7447	0.4552	0.1792
2012	32.1	32.3	0.4248	1.5423	0.8974	0.3812	0.7562	0.4400	0.1869
2013	35.4	34.1	0.4579	1.6118	0.8523	0.3903	0.6375	0.3371	0.1544
2014	36.6	34.5	NA	NA	NA	NA	NA	NA	NA

Note: SMEL/GDP = SMELoans as a percentage of GDP; SMEL/TL = SMELoans as a percentage of Total Loans; Out/num = SME output per unit of SME; Out/Loan = SME output per Bloan; Out/emp = SME output per employee; Exp/num = The value of Export per unit of SME; Exp/Loan = The value of Export per Bloan; Exp/emp = The value of export per employee;

SME output (million Baht) per employee is fairly stable, averaging about 0.36; it increases after the post 2011 period from 0.35 to 0.39. The relatively low productivity of labor is consistent with the findings of other studies, for example Bloom and Van Reenen (2007) and Bloom et al (2010) in other developing countries. Ramcharran (2017) reports negative productivity (output elasticity) of labor in India's SME sector. Tybout (200), in analyzing the role of skilled workers in efficiency, notes that flexibility in the production process and the ability to absorb new technology are positively related to the stock of human capital. From a public policy perspective, Acs and Szerb (2007) contend that middle income countries like Thailand should focus on, inter alia, increasing human capital. Policies to address the low level of skills and surplus workers are needed to improve efficiency. This is a requirement for the transition into the "innovation-phase". The productivity pattern of all three variables are shown in Figure 4.



Despite the global recession, the performance of the SME sector shows no significant sign of stagnation except for the export sector. There are indicators of increasing lending to SME after the 2011 flood, especially special credit guarantee schemes. Funding demand by SME comes mainly from the need for working capital, short-term loans up to three years are typically provided. An important aspect of the SME performance is no evidence/indicator of any potential major default risk, this is indicated by the ratio of SME NPL to SME loans which decreases from 7.1% in 2009 to 3.1% in 2014, (TableA4).

We examine productivity in the export sector since it was affected by the global recession and there are future plans to expand the operation to enable it to be globally competitive. The data on Table 4 show all three measures of productivity (exports per unit of SME, exports per employee, and exports per Baht loan) are positive but less than one. The best indicator is exports per unit of SME which ranges from 0.54 to 0.575, it shows an increasing trend after 2010. Of importance is the declining trend of exports per Baht loan which declines significantly after 2010; the pattern is shown in Figure 5. This sector needs much structural and organizational adjustments if the government plans to promote it as the commercial hub of the South East Asian regional economy.[16]

[16] To support the expansion of the SME business globally, brought about by the Association of Southeast Asian Nations (ASEAN) Economic Community launched in late 2015, a national SME policy to strengthen the country's knowledge base and international networks has been implemented. To this effect, OSMEP conducted several feasibility studies (e.g., consumer behavior in ASEAN countries, promotion guidelines for Thai SME high growth sectors, financial structure analysis of SMEs, and construction business analysis in different Thai provinces).

The innovation-phase necessitates SME to be globally integrated and competitive in foreign markets. One major obstacle in achieving this is competition from China in the market for electronic goods.

7. Mobilizing other sources of capital in Thailand

Given the declining share of commercial bank and PFI loans to SME, it is imperative for the Thai government to explore other forms of capital formation to keep the SME sector (as well as the entire economy) vibrant. Several studies have documented the problems of developing and financing SME in developing countries. Some of these include: (a) undeveloped financial and capital markets, (b) inadequate regulatory and institutional environment, (c) poor physical infrastructure, (d) inadequate demand and (e) lack of entrepreneurial skills. Many countries, with the help of international

organizations, have implemented policies to eliminate some of these problems. Clarke et al (2005) document the role of foreign banks as provider of funding to SME. In India foreign bank loans average about 7% of SME financing. Other strategies focus on the development of domestic financial and capital markets. Thailand has made impressive efforts to mobilize other sources of funding for SME.

(a) *Nonbank Sector*. There are several types of NBFIs active in Thailand. While these institutions do not specifically focus on SME, their development is key to diversify SME funding options and to fill the supply-demand gap in SME finance.[17]

(b) *Venture Capital*. In many developing countries the prospects for venture capital is not promising since it is primarily for firms with high growth potential. The venture capital industry in Thailand, established in 1994, is still small in scale. The Thai Venture Capital Association, supported by the government, has launched several venture capital funds, e.g. the SME Venture Capital Fund in 2006. It acts as a funding source for SME entrepreneurs with high business potentials, and additionally, provides hands-on support for these SME in various areas such as marketing, management, and accounting.[18]

(c) *Capital Markets*. The Thai Securities and Exchange Commission (SEC) has continuously attempted to develop SME access to capital markets. **The Stock Market:**

[17] There are 1,884 savings cooperatives and credit unions, 556 pawnshops, and 47 leasing companies operating in the country, as of the end of 2013. However, the assets of NBFIs to total financial institutions are quite small (4.9% for savings cooperatives and credit unions, 0.2% for pawnshops, and 0.6% for leasing companies). ASIA SME Finance Monitor, Asian Development Bank (2014) page 231.

[18] ASIA SME Finance Monitor, Asian Development Bank (2014), page 232.

Several studies, including Levine and Zervos (1998), have documented a positive relation between stock markets, banks, and economic growth. Small firms in many countries are denied listing on the national equity market because of asset size and risk factors. The Market for Alternative Investment (MAI), established under the Stock Exchange of Thailand in 1998, aims to provide opportunities for entrepreneurs and SME to tap long-term growth capital. It has grown rapidly in recent years. During 2014 eighteen companies were newly listed on the MAI and four companies have moved to the main board. This indicates that the MAI has become a preparatory venue for SME to tap the regular market of the stock exchange.[19] **Thai bond market**: The SEC has implemented three programs: (i) educating and incentivizing SME to issue corporate bonds through free seminars, concessional rating fees, bond application fee exemption, and registration fee exemption in the Thai Bond Market Association, (ii) a program named Pride of the Province to assist local firms to tap capital markets through free training courses, consultations, and listing fee exemptions, and (iii) a program to allow accredited investors, including institutional investors and high net worth individuals, to invest in riskier products, e.g., unrated bonds.[20] The development of a "credit rating index" is highly recommended to: (a) protect banks/investors from

[19] As of 2 December 2014, the MAI held 109 listed companies, with total market capitalization of B392 billion and total turnover value of B859 billion. So far, 18 companies have successfully moved from the MAI to the main board of the stock exchange. The MAI offers concessional listing requirements for issuers as compared to the main board; e.g., 2 years business operations needed (3 years for the main board), minimum paid-up capital of B20 million after public offering (B300 million for the main board), and no fewer than 300 minority shareholders required (1,000 for the main board). ASIA SME Finance Monitor, Asian Development Bank (2014), page 231.
[20] ASIA SME Finance Monitor, Asian Development Bank (2014), page 233.

investing in risky SME, (b) reduce information asymmetry, and (c) reduce significant variation in cost of capital.

(d) Microfinance – provides access to finance for poor households and small businesses lacking opportunities to obtain financial services from traditional banks. The Thai private sector plays a small role in the microfinance business but it is the Thai government which has taken the leadership.

8. Policy Implications of the Results

In recent years Thailand has experienced a decline in growth rate as well as productivity. Charoenrat and Harvie (2014), using industrial census data for 1997 and 2007, also find Thai's SME with low average technical efficiency for both years. To address these challenges, it is imperative that the government focuses on strategies to foster innovation-led growth. GEM (2016-2017) classifies Thailand in the efficiency driven phase, this necessitates an increase in productive efficiency to exploit economies of scale, an educated work force to adopt to subsequent technological development and the ability to be competitive. The recent economic crisis has slowed Thai's progress. Thai's modest performance, compared with other countries at similar level of development in the region, is partly due to its relative weakness in its innovation system. The country has significant amount of assets to help it become an innovation-based economy or a transition into the innovation driven phase. However, there are significant obstacles that must be addressed. UNCTAD (2015) notes that substantial efforts are

needed in Thailand to improve science, technology and innovation (STI) education at all levels. Some inadequacies are: (a) the R&D expenditure/GDP ratio is 0.25%; this is lower than that of the most advanced countries in the region, (b) R&D are mainly from public sources (universities and public research institutions), not private, (c) there is wide rural-urban difference in the use and access of information and communication technology (ICT), it is heavily concentrated in the Bangkok region, (d) patent and grant applications are largely from non-residents, in 2013 only 5% (of a total of 1,263 applications) are granted to Thai residents, (e) inadequate agricultural innovation from small scale farmers, (f) exports comprise 40% of Thai's GDP; most of the exports include hard disk drives, integrated circuit packages, cars, and auto parts; the R&D (research, designing, developing and branding) of these export products are done outside of Thailand thus Thai's technology (in this sector) is import embodied, (g) the labor force employed in Science and Technology (S&T) has increased to reach 3.31 million in 2011 (9 per cent of a total workforce), however there is limited employment among S&T graduates; around 40 per cent of S&T graduates work in different areas other than S&T, this indicates a poor match between educational offer and market needs.

For the Thai economy to grow through innovation (creating new products and processes) increasing R&D is required, it is one of the key aspects of innovation.[21]

[21] It also involves the actions taken by economic actors to upgrade technological level, enhances their organization and production methods and develop competitive strategy and new products (UNCTAD 2015).

Thailand has sizeable financial and human resources devoted to S&T but not sufficient to support broad-based growth and enable innovation-led economic development. Some recommendations (UNCTAD 2015) are: (a) use matching funds to support collaborative R&D, (b) review current tax incentives for R&D and innovation, (c) provide incentives for collaboration between industry and research centers and universities, (d) foster awareness about intellectual property (IP) and the potential for commercializing research, and (f) upgrade the education system.

9. Summary and Conclusion:

We analyze the performance of the Thai SME sector within the general framework of the three phases of economic development. Primary emphasis is on the productivity of bank financing, the efficiency driven phase. The result show satisfactory performance (average productivity greater than one) for SME output per unit of SME and for SME output per Baht loan. Two contributory factors to this performance are (a) the stabilization/prudent policies by the Thai government to ensure adequate loans to support the operation of the SME sector, and (b) the implementation of viable risk management techniques. The effectiveness of these policies is reflected in the declining ratio of SME NPL to total SME loans. With declining loans to SME, the government has implemented strategies to diversify the sources of financing from the heavily dependent financial markets to capital markets for long-term financing. This strategy will also be helpful to the underperforming export sector to compete globally particularly to

take advantage of the expanding ASEAN market. The policy implications of this study are very important for SME in other countries facing economic and financial uncertainty, confronting financing constraints and hoping for government intervention and planning to access long-term financing through capital market reform/deepening. Increasing and sustainable growth for the Thai economy requires, besides the existing and planned economic policies, increasing R&D to foster innovation and human capital development (including labor market reform). The "efficiency-driven phase" has been moderately successful; the "innovation-driven phase" is slowly developing.[22]

The availability of additional time-series data could enable a better analysis of this important topic using a rigorous analytical technique. Furthermore, the availability of data on the distribution/location of SME across Thailand could enable further research on the impact of SME to reduce regional economic disparity consistent with the goal of the 2012 – 2016 SME performance Master Plan of achieving balanced economic growth across Thailand.

[22] The latest R&D and innovation survey conducted in Thailand, covering activities in 2011, provides some insights into the innovation features of the private sector. As in other countries, smaller firms in Thailand tend to engage less in R&D and innovation activities than larger ones, and when they do so, their activities tend to be less sophisticated. Conducting quality control or testing activities is conducted a quality control or testing activity in 2011. However, less than 40 per cent of small firms have acquired or adapted external technologies or designed products or processes. (UNCTAD 2015)

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Table A1: GDP growth by sectors

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gross Domestic Product									
New series (reference year = 2002)	**5.0**	**5.4**	**1.7**	**-0.7**	**7.5**	**0.8**	**7.2**	**2.7**	**0.8**
Agricultural sector	**5.9**	**1.9**	**2.9**	**-0.2**	**-0.5**	**6.3**	**2.7**	**0.8**	**0.7**
Agriculture, Hunting and Forestry	2.9	2.6	2.6	-0.4	-0.4	6.9	3.5	1.5	0.9
Fishing	9.7	-2.3	5.5	0.9	-0.8	0.5	-6.0	-7.0	-2.0
Non-agricultural sector	**5.1**	**5.8**	1.6	**-0.8**	8.4	**0.2**	7.8	**2.9**	**0.8**
Mining (including fuel)	8.9	3.6	6.5	1.2	7.0	-1.6	7.7	1.8	-1.6
Manufacturing	5.6	7.2	2.4	-3.3	11.4	-4.8	6.9	1.7	-0.2
Electricity, gas and water supply	2.4	5.5	5.1	4.0	6.7	1.0	9.8	-1.0	2.7
Construction	1.2	3.9	-5.3	3.6	8.5	-4.3	7.9	0.1	-3.7
Wholesale and retail trade	5.2	7.0	0.0	-2.6	9.1	0.3	5.5	0.8	-0.5
Hotels and restaurants	9.5	3.8	4.2	-1.7	9.3	12.3	14.1	10.1	2.4
Transport and communications	8.5	8.4	1.6	-1.3	7.3	3.0	9.1	5.6	3.4
Financial intermediation	-0.5	3.1	-0.7	11.2	3.9	6.1	15.3	14.1	6.8
Real estate and renting	8.0	3.1	1.1	-7.2	7.1	5.5	10.8	2.6	0.5
Public administration and defense	2.9	7.6	3.4	3.9	4.0	3.6	3.9	0.2	1.3
Education	3.3	4.4	0.6	4.1	5.2	2.8	4.9	2.1	0.9
Health and social work	4.4	4.6	1.5	8.0	5.9	5.1	6.8	0.5	2.7
Other community service	-2.7	-9.5	-0.2	-3.9	5.5	6.7	9.9	6.8	-0.1
Private households	-8.3	4.4	-6.6	9.2	-1.8	6.0	2.3	-7.3	-4.4

Source: *Bank of Thailand*, Key Economic Indicators, (2015)

Table A2: SME Landscape

	2007	2008	2009	2010	2011	2012	2013
Number of SMEs							
SMEs (number)	2,366,227	2,827,633	2,896,106	2,913,167	2,646,549	2,730,591	2,763,997
SMEs to total (%)	99.6	99.7	99.8	99.6	99.8	97.2	97.2
SMEs growth (%)	3.3	19.5	2.4	0.6	(9.2)	3.2	1.2
Trade (% to SMEs)	41.1	46.7	47.4	47.5	44.5	43.6	43.5
Service (% to SMEs)	30.0	33.8	33.7	33.8	37.7	38.7	39.1
Manufacturing (% to SMEs)	28.2	19.3	18.9	18.7	17.8	17.7	17.4
Employment by SMEs							
SME employees (number)	8,900,567	…	9,701,354	10,507,507	10,995,977	11,047,854	11,414,702
SME employees to total (%)	76.0	…	78.2	77.9	83.9	81.0	81.0
SME employees growth (%)	3.1	…	…	8.3	4.6	0.5	3.3
Trade (% to SME employees)	27.3	…	30.0	30.9	34.8	32.0	31.7
Service (% to SME employees)	33.8	…	35.8	35.8	35.6	44.1	44.7
Manufacturing (% to SME employees)	38.9	…	34.2	33.3	29.6	23.9	23.7
SMEs Contribution to GDP							
Nominal GDP of SMEs (B bil.)	3,298.5	3,457.7	3,417.9	3,747.7	3,859.6	4,211.3	4,454.9
SME contribution to GDP (%)	38.7	38.1	37.8	37.1	36.6	37.0	37.4
GDP Composition of SMEs (% to SME GDP)							
Mining	1.5	1.7	1.6	1.7	1.8	1.9	1.9
Manufacturing	30.7	32.0	30.4	32.3	31.2	30.9	29.6
Construction	6.3	6.2	5.9	5.9	5.8	6.0	5.8
Trade and maintenances	29.1	28.5	29.9	28.3	28.0	27.7	27.7
Service	32.2	31.4	32.0	31.6	33.0	33.3	34.8
Electricity, gas and water supply	0.2	0.2	0.2	0.2	0.2	0.3	0.3
SME Exports and Imports							
SME exports (B bil.)	1,576	1,691	1,564	1,669	1,971	2,065	1,762
SME imports (B bil.)	1,453	1,772	1,384	1,810	2,383	2,588	2,369
SME to total exports (%)	30.1	28.9	30.1	27.3	29.4	29.9	25.5
SME to total imports (%)	29.8	29.8	30.1	30.0	31.0	33.1	30.9
SME exports growth (%)	10.1	7.3	(7.5)	3.6	27.7	4.8	(14.7)
SME imports growth (%)	(8.8)	21.9	(21.9)	28.3	21.6	8.6	(8.5)

GDP = gross domestic product, SME = small and medium-sized enterprise.

Source: Office of Small and Medium Enterprises Promotion SME White Paper 2008, 2009, 2010, 2011, 2012, 2013, and 2014 also ASIA SME Finance Monitor 2014 Asian Development Bank.

Table A3: Thailand: GEM Ratings of Entrepreneurial Ecosystem (ranked out of 65 countries)

	Categories	Rank	Value	Mean
1	Entrepreneurial Finance	20/65	4.66	4.1
2	Government Policies: Support and Relevance	34/65	4.14	4.2
3	Government Policies: Taxes and Bureaucracy	38/65	3.84	3.9
4	Government Entrepreneurship Programs	50/65	3.58	4.3
5	Entrepreneurial Education at school stage	33/65	3.06	3.1
6	Entrepreneurial Education at post school stage	31/65	4.74	4.6
7	R&D Transfer	31/65	3.92	3.8
8	Commercial and legal infrastructure	38/65	4.89	4.9
9	Internal Market Dynamics	10/65	6.10	4.9
10	Internal Market burdens or entry regulation	26/65	4.23	4.2
11	Physical Infrastructure	30/65	6.67	6.5
12	Cultural and Social norms	19/65	5.16	4.7

Weighted average 1=highly insufficient, 9 = highly sufficient. **Source**: GEM (2016/17)

Table A4: Banking Sector - SME Loans

	2007	2008	2009	2010	2011	2012	2013	2014
Loans Outstanding								
SME loans to GDP* (%)	32.5	32	28.9	28.2	31.2	32.1	35.4	36.6
SME loans to total loans* (%)	44.5	38.5	33.4	32.6	33.7	32.3	34.1	34.5
SME Loans -Total (B bil.)	…	…	…	3,644	4,330	4,693	5,227	5,505
SME loans—PFIs** (B bil.)	…	…	…	790	1,038	1,047	1,019	1,066
SME loans—CBs (B bil.)	2,775	2,907	2,609	2,854	3,292	3,646	4,208	4,439
Total loans—Total (B bil.)	7,994	9,527	10,178	11,617	13,224	14,954	16,369	17,030
Total loans—PFIs** (B bil.)	1,765	1,978	2,370	2,854	3,442	3,677	4,026	4,157
Total loans—CBs (B bil.)	6,229	7,549	7,807	8,763	9,782	11,278	12,342	12,873
SME Laons by Sector*								
Primary industry (B bil.)	83	77	69	70	69	76	84	83
Mining (B bil.)	10	15	16	15	18	13	14	15
Manufacturing (B bil.)	749	739	681	723	801	843	947	989
Electricity, gas, and water supply (B bil.)	82	82	72	71	93	129	178	205
Construction (B bil.)	113	113	100	108	116	127	137	140
Wholesale and retail trade (B bil.)	705	714	697	783	930	1,093	1,245	1,314
Transportation (B bil.)	66	75	72	72	88	107	126	132
Service (B bil.)	720	827	670	781	907	942	1,085	1,148
Real estate (B bil.)	245	264	227	224	264	311	387	407
Others (B bil.)	0.2	0	3.6	5	6.6	5.8	5.6	5.1
Primary industry (% share)	3	2.7	2.7	2.5	2.1	2.1	2	1.9
Mining (% share)	0.4	0.5	0.6	0.5	0.5	0.3	0.3	0.3
Manufacturing (% share)	27	25.4	26.1	25.3	24.3	23.1	22.5	22.3
Electricity, gas, and water supply (% share)	2.9	2.8	2.8	2.5	2.8	3.5	4.2	4.6
Construction (% share)	4.1	3.9	3.8	3.8	3.5	3.5	3.3	3.2
Wholesale and retail trade (% share)	25.4	24.6	26.7	27.5	28.3	30	29.6	29.6
Transportation (% share)	2.4	2.6	2.8	2.5	2.7	2.9	3	3
Service (% share)	26	28.4	25.7	27.4	27.6	25.8	25.8	25.9
Real estate (% share)	8.8	9.1	8.7	7.8	8	8.5	9.2	9.2
Others (% share)	0	0	0.1	0.2	0.2	0.2	0.1	0.1
Nonperforming Loans (NPLs)*								
SME NPLs (B bil.)	…	…	186	154	131	126	138	138
Gross NPLs (B bil.)	…	…	376	313	266	254	266	277
SME NPLs to SME loans (%)	…	…	7.1	5.4	4	3.5	3.3	3.1
SME NPLs to total loans (%)	…	…	2.4	1.8	1.3	1.1	1.1	1.1
Gross NPLs to total loans (%)	…	…	4.8	3.6	2.7	2.3	2.2	2.2

*CB = commercial bank, GDP = gross domestic product, L/G = letter of guarantee, PFI = public financial institution, NPL = nonperforming loan, SME = small and medium-sized enterprise, TCG = Thai Credit Guarantee Corporation. * based on commercial bank loans.** six PFIs combined: Small and Medium Enterprise Development Bank, Government Savings Bank, Islamic Bank of Thailand, Bank for Agriculture and Agricultural Cooperatives, Export-Import Bank of Thailand, and Government Housing Bank. Total loans exclude personal, financial, and public administration and large debtors who borrow over B100 million.*

***Source**: ASIA SME Finance Monitor 2014 Asian Development Bank*