

*Routledge Studies in Development Economics*

# **UNLOCKING SME FINANCE IN ASIA**

**ROLES OF CREDIT RATING AND CREDIT  
GUARANTEE SCHEMES**

Edited by

Naoyuki Yoshino and Farhad Taghizadeh-Hesary



## Unlocking SME Finance in Asia

There is limited access for small and medium-sized enterprises (SMEs) to bank credit. This book proposes new and sustainable models to help ease the access of SMEs to finance and boost economic growth and job creation in Asia. This book looks at the difficulties of SMEs in accessing finance and suggests ways on how to mitigate these challenges. It suggests how we can develop credit information infrastructures for SMEs to remedy the asymmetric information problem and to utilize credit rating techniques for the development of a sustainable credit guarantee scheme.

The book provides illustrations of various Asian economies that implemented credit guarantee schemes and credit risk databases and is a useful reference for lessons and policy recommendations.

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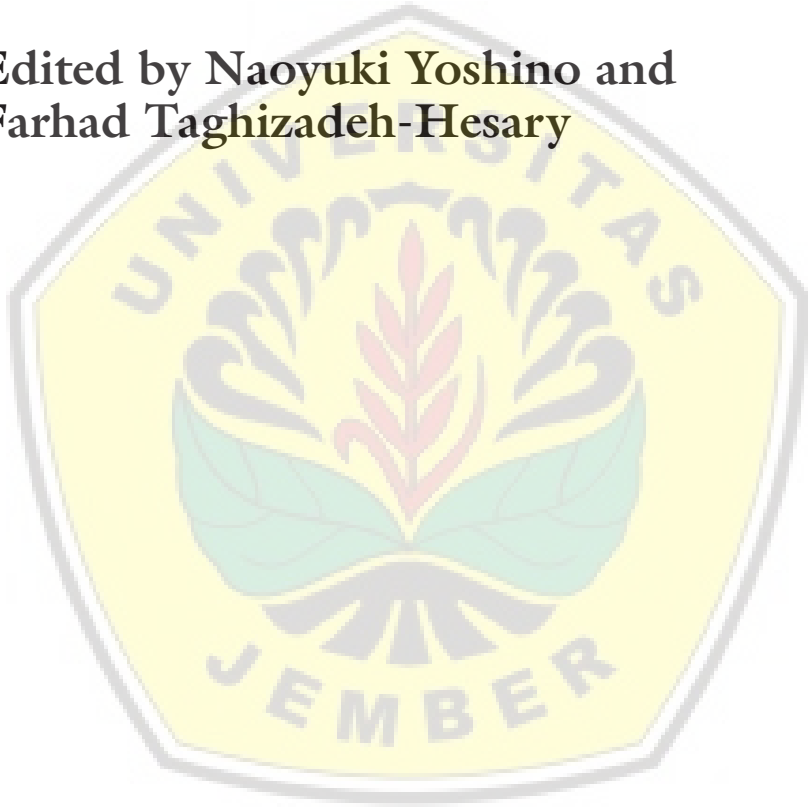


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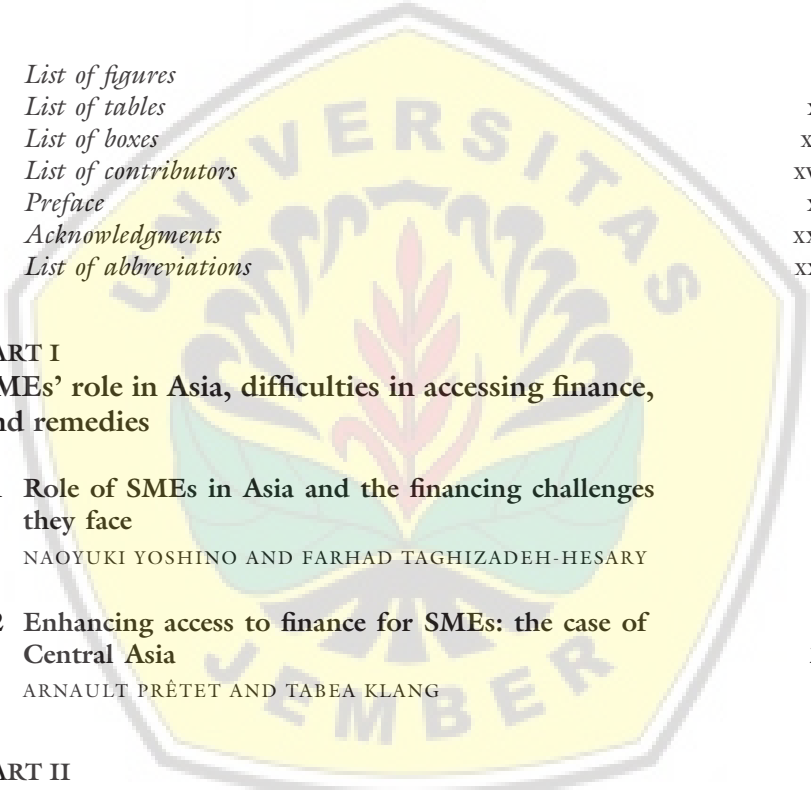
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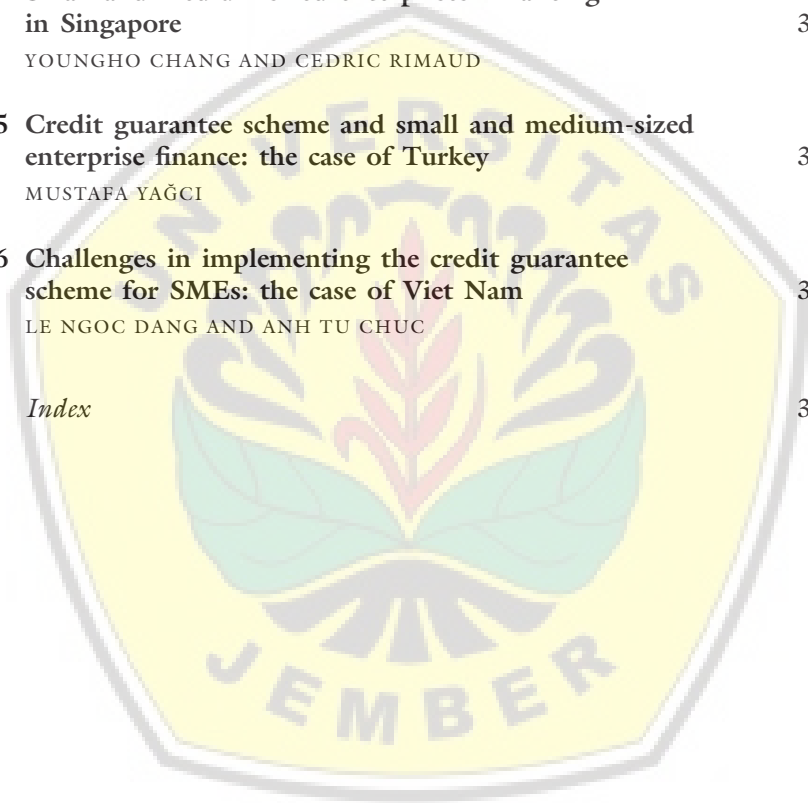


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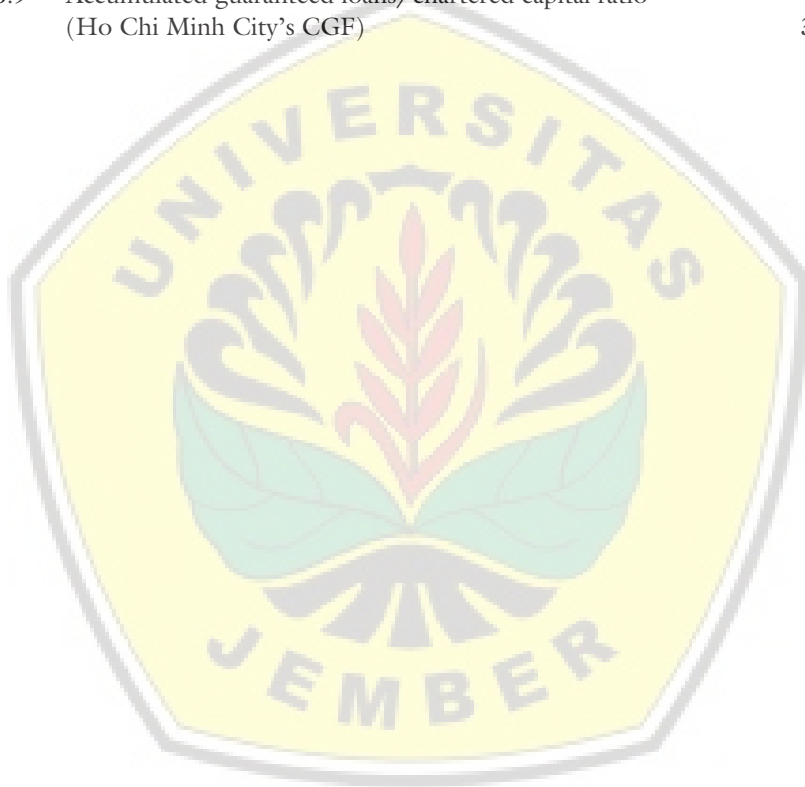
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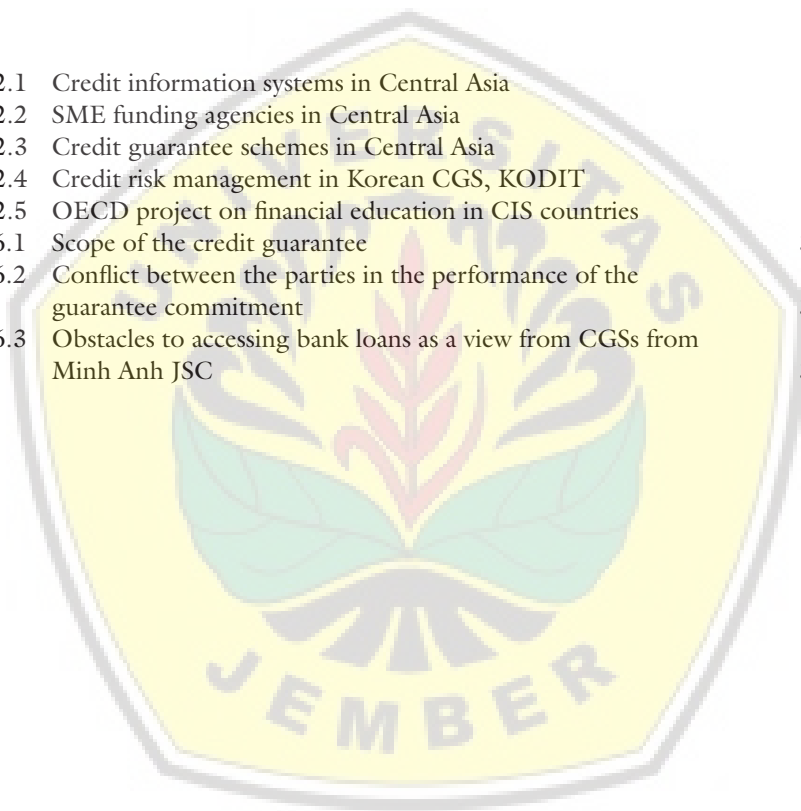


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## Preface

Asia has been growing continuously since the Asian financial crisis, and this growth has alleviated poverty and increased the number of middle-income countries in the region. A major cause of this continuous growth in many Asian economies is the small and medium-sized enterprises (SME) sector. SMEs form a significant portion of employment, economic output, and trade in most Asian economies; however, mainly due to an asymmetry of information between borrowers (SMEs) and lenders (banks), they are faced with severe difficulties in accessing finance. In the bank-dominated financial systems like in most Asian economies, new and sustainable models are needed to ease SMEs' access to finance to boost economic growth and job creation in the region. If SMEs, which are the backbone of the Asian economy, find it more difficult to access finance, this might endanger economic growth and employment in the region, especially in developing countries, which are more vulnerable. This suggests that further policy support for SME finance is needed, especially in low- and lower-middle-income economies. In particular, it is necessary to develop a financial infrastructure – such as credit risk databases and credit guarantee corporations. In addition, the establishment and development of SME specialized banks are required.

*Unlocking SME Finance in Asia: Roles of Credit Rating and Credit Guarantee Schemes* brings together leading scholars, policy makers, and practitioners to study and provide practical examples of SME finance from developed and developing Asian economies to offer policy recommendations to the world.

The book consists of three parts:

Part I illustrates the role of SMEs in Asia and the difficulties that they have in accessing finance and provides practical remedies. This part consists of two chapters. The first chapter provides a general overview of the status of SMEs in Asia and introduces the tools and frameworks for supporting SME financing that will be discussed in detail throughout this book; the second chapter focuses on the constraints that must be overcome to improve access to finance in Central Asia. In addition, this chapter looks at the strategies and instruments that governments in Central Asia have developed to reduce these barriers.

Part II focuses on credit risk databases, credit risk assessment, and the credit rating of SMEs. This part consists of four chapters. The first chapter introduces a comprehensive method for credit risk assessment and credit rating of SMEs that is applicable for financial institutions, credit guarantee corporations, and other entities that are involved in SME financing and needs to assess their risk. The next three chapters are case studies of India, Japan, and Thailand on the same topic.

Part III introduces credit guarantee schemes as a suitable remedy for managing the credit risk of SMEs and for reducing the collateral burden for SMEs. This part consists of 10 chapters on 10 different countries: Kazakhstan, India, Indonesia, Iran, Japan, Republic of Korea, Pakistan, Singapore, Turkey, and Viet Nam. Each chapter reviews the available financing schemes for SMEs in each country by focusing on credit guarantee schemes. In addition, the chapters assess the effectiveness of these schemes and provide policy recommendations for increasing their productivity.

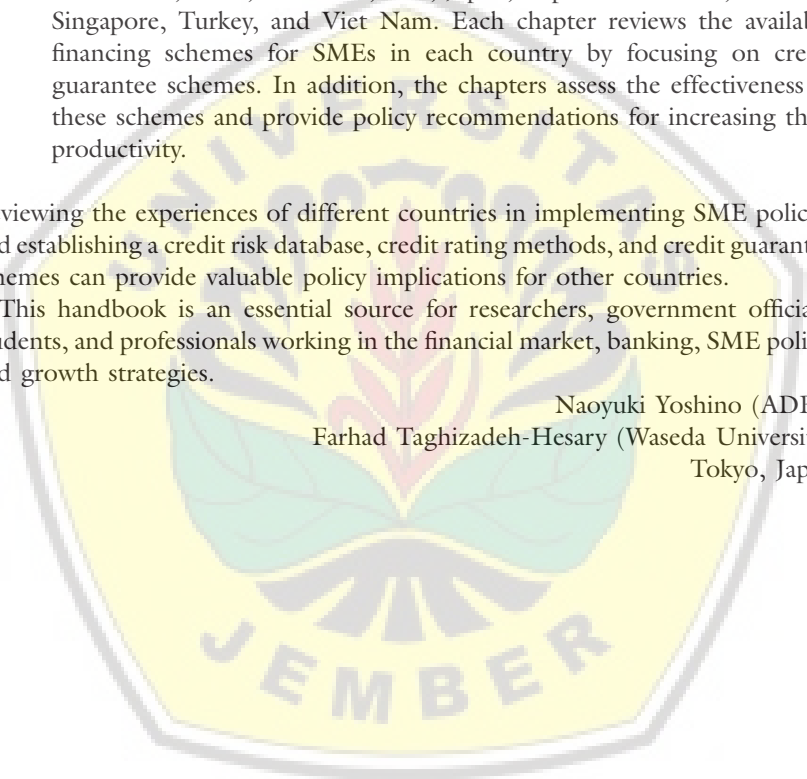
Reviewing the experiences of different countries in implementing SME policies and establishing a credit risk database, credit rating methods, and credit guarantee schemes can provide valuable policy implications for other countries.

This handbook is an essential source for researchers, government officials, students, and professionals working in the financial market, banking, SME policy, and growth strategies.

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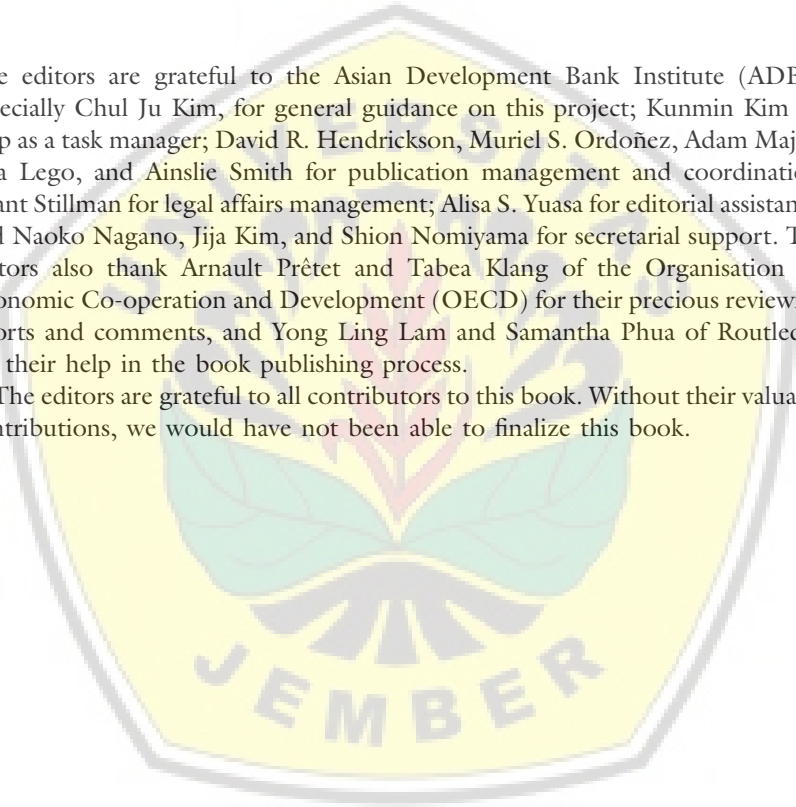
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## Acknowledgments

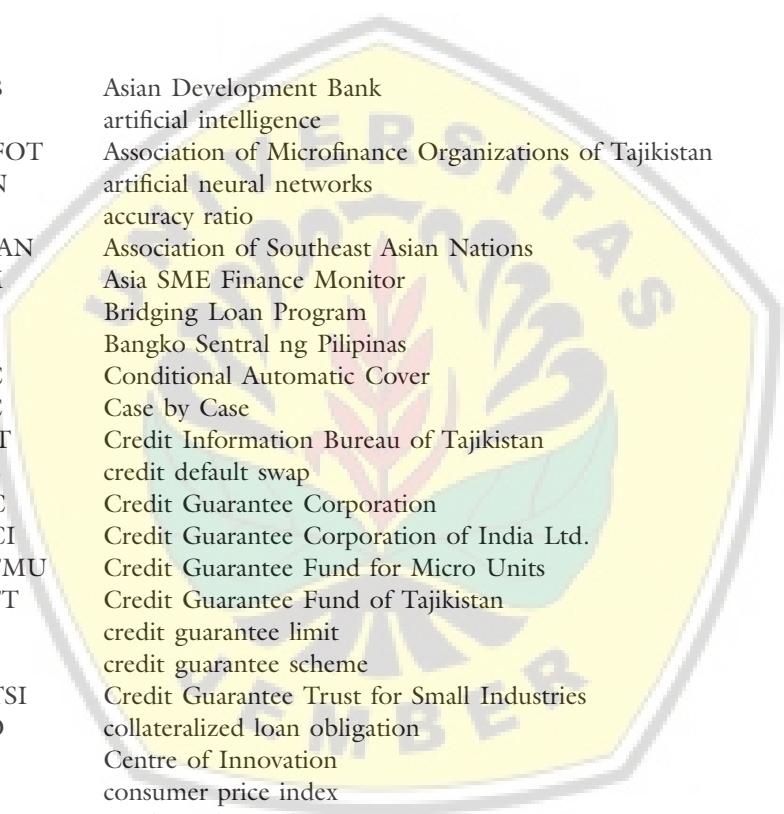
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## Abbreviations



ADB	Asian Development Bank
AI	artificial intelligence
AMFOT	Association of Microfinance Organizations of Tajikistan
ANN	artificial neural networks
AR	accuracy ratio
ASEAN	Association of Southeast Asian Nations
ASM	Asia SME Finance Monitor
BLP	Bridging Loan Program
BSP	Bangko Sentral ng Pilipinas
CAC	Conditional Automatic Cover
CBC	Case by Case
CBIT	Credit Information Bureau of Tajikistan
CDS	credit default swap
CGC	Credit Guarantee Corporation
CGCI	Credit Guarantee Corporation of India Ltd.
CGFMU	Credit Guarantee Fund for Micro Units
CGFT	Credit Guarantee Fund of Tajikistan
CGI	credit guarantee limit
CGS	credit guarantee scheme
CGTSI	Credit Guarantee Trust for Small Industries
CLO	collateralized loan obligation
COI	Centre of Innovation
CPI	consumer price index
CRD	Credit Risk Database
DBP	Development Bank of the Philippines
DFID	Department for International Development
DICGC	Deposit Insurance and Credit Guarantee Corporation
EA	economic additionality
EBRD	European Bank for Reconstruction and Development
EPF	Export Promotion Fund
ESFRD	Electronics Support Fund for Research and Development
ESKKK	<i>Esnaf ve Sanatkârlar Kredi ve Kefalet Kooperatifleri</i> (Tradesmen and Craftsmen Credit and Collateral Cooperatives)

FA	financial additionality
FY	fiscal year
GDP	gross domestic product
GOI	Government of India
GST	goods and services tax
GVA	gross value added
HCM	Ho Chi Minh
IBA	Indian Banks' Association
IBK	Industrial Bank of Korea
IFLS	Indonesian Family Life Survey
INFE	International Network on Financial Education
IT	information technology
JFC	Japan Finance Corporation
JFG	Japan Federation of Credit Guarantee Corporations
KASE	Kazakhstan Stock Exchange
KGF	<i>Kredi Garanti Fonu Anonim Şirketi</i> (credit guarantee fund)
KODIT	Korea Credit Guarantee Fund
KOREG	Korean Federation of Credit Guarantee Foundations
KOSGEB	Small and Medium Business Development and Support Administration
KOTEC	Korea Technology Credit Guarantee Fund
KUR	<i>Kredit Usaha Rakyat</i> (People's Business Credit),
LEFS	Local Enterprise Finance Scheme
LG	letter of guarantee
LIS	Loan Insurance Scheme
LPEI	Indonesia Export Financing Institution
MAI	Market for Alternative Investment
MCGF	Mongolian Credit Guarantee Fund
MFI	microfinance institution
MLI	member lending institution
MOMSME	Ministry of Micro, Small and Medium Enterprises
MSEs	micro and small enterprises
MSMEs	micro, small, and medium enterprises
MUDRA	Micro Units Development and Refinance Agency
NBFC	nonbanking financial company
NBFI	nonbanking financial institution
NBK	National Bank of Kyrgyz Republic
NBT	National Bank of Tajikistan
NCB	National Credit Bureau
NCGTC	National Credit Guarantee Trustee Company Limited
NFAS	non-financial advisory service
NFIS	National Financial Inclusion Strategy
NGO	nongovernment organization
NPA	nonperforming asset
NPL	nonperforming loan

NSIC	National Small Industries Corporation
OECD	Organisation for Economic Co-operation and Development
OSMEP	Office of Small and Medium Enterprises Promotion
PACT	Partnerships for Capability Transformation
PCA	principal component analysis
PCG	partial credit guarantee
PCRS	Performance and Credit Rating Scheme
PD	probability of default
PFI	partner financial institution
PFII	participating financial institution
PKPI	Indonesia Entrepreneur Credit Guarantee
PRC	People's Republic of China
RBI	Reserve Bank of India
RCC	Regional Coordinating Council
ROA	return on asset
ROE	return on equity
S&P	Standard & Poor's
SBC	Small Business Corporation
SBP	State Bank of Pakistan
SEBI	Securities and Exchange Board of India
SEEDS	Start-Up Enterprise Development Scheme
SFSBD	State Fund for Support of Business Development
SIDBI	Small Industries Development Bank of India
SMEA	Small and Medium Enterprise Agency
SMEDA	Small and Medium Enterprise Development Authority
SMEDF	SME Development Fund of Mongolia
SMEs	small and medium-sized enterprises
SMIEs	small and medium-sized industrial enterprises
SPC	special purpose company
SPRING	Standards, Productivity and Innovation Board
SWF	sovereign wealth fund
TCG	Thai Credit Guarantee Corporation
TCMB	Central Bank of the Republic of Turkey
TESKOMB	<i>Türkiye Esnaf ve Sanatkarlar Kredi ve Kefalet Kooperatifleri Birlikleri Merkez Birliği</i> (Center Union of Turkish Tradesmen and Craftsmen Credit and Collateral Cooperative Unions)
TOBB	Union of Chambers and Commodity Exchanges of Turkey
VCCI	Viet Nam Chamber of Commerce and Industry
VDB	Viet Nam Development Bank
WRF	warehouse receipt finance
YOY	year-on-year

Part I

**SMEs' role in Asia,  
difficulties in accessing  
finance, and remedies**





## 9 Role of credit guarantee for financing MSMEs

Evidence from rural and urban areas in Indonesia

*Adhitya Wardhono, Mohamad Ikhsan Modjo,  
and Eka Wahyu Utami*

### 9.1 Introduction

The existence of micro, small, and medium-sized enterprises (MSMEs) has become an important aspect of Asian economies. In Indonesia, MSMEs have underpinned the national economy, constantly increasing their contribution to gross domestic product (GDP). As of the end of 2013, 57.9 million MSMEs operated in Indonesia, accounting for 99.9% of all enterprises, with a 2.4% annual growth. According to the 2011 data, primary industry (agriculture, forestry, and fisheries) accounted for 48.8% of MSMEs, followed by trade (28.8%) as a combined figure of the wholesale and retail trade and the hotel and restaurant sector. The sector composition of SMEs in Indonesia has not changed for a long time. The MSME sector comprised 114.1 million employees, or 97% of the total workforce in the country, with 6% annual growth, in 2013. Although economic growth has been sluggish since 2011, the MSME sector has underpinned the national economy, with a constantly increasing contribution to GDP. In 2013 MSMEs' contribution to GDP was 60.3% (ADB 2015). MSMEs also play an important role in the village economy and employ local labor as well as providing opportunities to develop business skills (Tambunan 2006; Hill 2001; Hayashi 2002; Huda 2012); in Indonesia this is also the case, and the contribution of MSMEs to the rural and village economy is significant.

Arunagiri et al. (2015) and González-Loureiro and Pita-Castelo (2012) stated that MSMEs have a significant correlation to the increase of GDP. In addition, Liang et al. (2017) and Selcuk (2001) showed that MSMEs can contribute to addressing the employment problem. However, MSMEs still face external barriers in terms of financial problems due to inadequate access to formal financial sources (Schmitz 1982; Hayashi 2002; Yoshino and Taghizadeh-Hesary 2017).

The performance of MSMEs depends on adequate funding (Ganbold 2008). As can be seen in Figure 9.1 the highest MSME credit fund in 2014 was generated from the state-owned banks, reaching 50% because of the loan relief scheme through the People's Business Credit Program (*Kredit Usaha Rakyat* [KUR]) (Bank Indonesia 2015). KUR is a government program that supports MSMEs in the form of a credit policy for individual or business entities or groups that

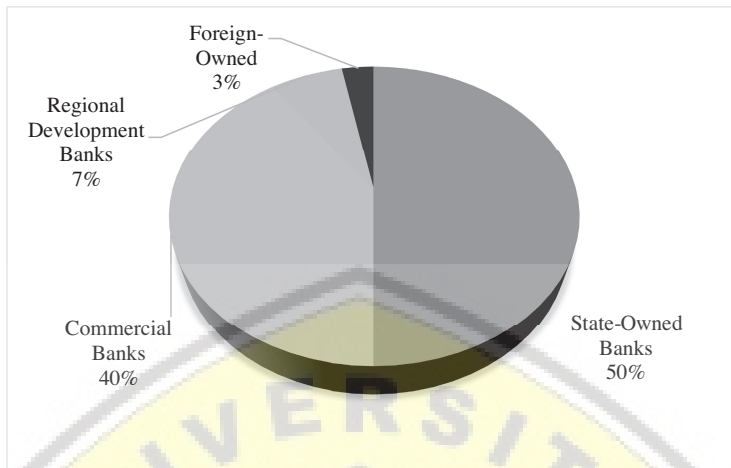


Figure 9.1 MSME funding sources in Indonesia

Source: Bank Indonesia (2017).

are productive and feasible but do not yet have collateral or their collateral is not enough.

Another contribution of 40% comes from commercial banks because most credit is still focused on consumption factors instead of productive sectors (Otoritas Jasa Keuangan 2017a). In addition, the Regional Development Bank (BPD) and foreign banks provided credit of as much as 7% and 3%, respectively. Credit given to MSMEs amounts to only 12% of all loans (Bank Indonesia 2014; Suryani 2015).

One of the major challenges to MSME financing that banks are facing is how to control nonperforming loans (NPLs) to MSMEs. Generally, MSMEs are weaker in terms of management skills, financial background, and human capital than large enterprises, and hence loans to MSMEs inherently involve a higher credit risk. In addition, because of the asymmetry of information that exists between MSMEs and banks, it is usually difficult for banks to distinguish healthy MSMEs from risky ones. Therefore, on average, the NPL ratio in the MSME sector is higher than in the large enterprise sector.

The Central Bank of Indonesia set the limit of the NPL ratio target at 5%. However, according to Bank Indonesia (2016), for MSME the NPL ratio exceeds this 5% limit. Based on business scale, small businesses recorded the highest gross NPL ratio at 5.35%, followed by medium enterprises (5.01%) and micro-enterprises (2.75%). Based on bank group,<sup>1</sup> however, BUKU 2 banks posted the highest gross NPL ratio for MSME loans at 8.29%, followed by BUKU 1 banks (5.55%), BUKU 3 banks (5.09%), and BUKU 4 banks (3.37%). The problem Indonesia is facing now is the high NPL ratio, which comes mainly

from the regional banks. Bank Indonesia is in the process of improving its regional bank performance, especially in dealing with micro-enterprises.

To mitigate risks associated with lending to SMEs, the government established the Credit Guarantee Scheme (CGS) (Stiglitz and Weiss 1981; Boocock and Shariff 2005; Saadani, Arvai, and Rocha 2011; Yoshino and Taghizadeh-Hesary 2018). One important policy recommendation to mitigate the NPL ratio for MSMEs is to introduce countermeasures against moral hazards, such as a decrease of the guarantee coverage against banks whose NPL ratio exceeds a certain level.

Indonesia has operated the CGS for more than 40 years along with several credit guarantee corporations both from the private sector and the government such as the Indonesian Entrepreneurs Credit Guarantee (PKPI), Indonesia Credit Insurance (ASKRINDO), Public Company Jamkrindo, and Jamkrida (Bank Indonesia 2010; Suryani 2015). However, the performance and the target of this scheme are still questionable. In 1998 approximately 75% of loans failed despite being protected by the credit guarantee corporation in Indonesia (Hiemann and Noorjaya 2001). In contrast, the studies by Graham (2004), Boocock and Shariff (2005), Riding, Maidill, and Haines (2007), and Zecchini and Ventura (2009) argued that such a credit guarantee scheme is effective. Nevertheless, credit has become a support for MSME activity, mainly for investment financing and capital goods (Aceleanua et al. 2014; Liang et al. 2017; Quartey et al. 2017). Several studies on MSMEs have focused on the access to credit. Surveys conducted by the Organisation for Economic Co-operation and Development found that MSMEs are facing difficulties in gaining access to credit. Moreover, the surveys emphasize that collateral is the most significant barrier (World Bank 2012). The CGS is one of the solutions for overcoming barriers to accessing credit for MSMEs. The scheme reduces banking risks in the distribution of credit to MSMEs, which means that the banks have applied their prudential principles (Al-Hyari et al. 2011; Boschi et al. 2014; Distinguin et al. 2016). This research aims to reveal the effectiveness of the CGS by using several vector variables of MSMEs to demonstrate how good their opportunities are to gain access to credit from financial institutions by performing a comparison analysis for rural and urban MSMEs in Indonesia.

## 9.2 Access to finance for MSMEs in Indonesia

The credit growth (bank loans) among MSMEs fluctuated between 2011 and 2017. MSME credit is categorized by its scale from micro to small to medium enterprises. The growth of credit is based on scales with different movement patterns. The highest credit in MSMEs occurred in the micro scale, with IDR 1,938 billion in November 2014, compared to the previous period, with IDR 1,937 billion. However, after the period of 2014 to 2017 the credit growth in micro-scale enterprises experienced an increasing trend. This was caused by a decrease of credit for the micro scale from banks. It is indicated by the increasing credit demand for small-sector enterprises in nonbank institutions (Figure 9.2).



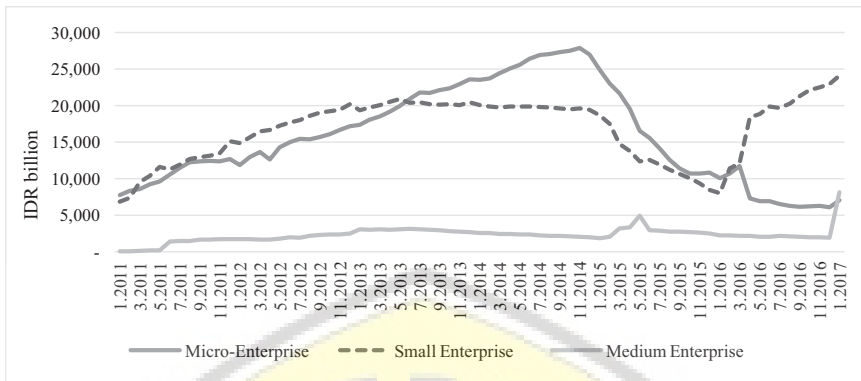


Figure 9.2 The credit position in micro, small, and medium enterprises based on their business scale in commercial banks, 2011–2017

Source: Otoritas Jasa Keuangan (2017a).

### 9.2.1 Bank financing for MSMEs in Indonesia

The conventional banking system is the main source of financing for MSMEs in Indonesia. Against a backdrop of weaker intermediation, MSME credit growth accelerated from 6.8% (year-on-year [YOY]) in 2015 to 8.0% in 2016 (YOY). The surge of MSME loans originated primarily from People’s Business Loans (KUR) due to the government’s interest rate subsidy scheme. Nominally, lending to micro, small, and medium enterprises (MSMEs) in the first semester of 2016 reached IDR 827.3 trillion, accounting for 19.7% of all disbursed bank loans. The growth of MSME investment loans increased from 9.2% (YOY) in the second semester of 2015 and 7.8% (YOY) in the first semester of 2015 to 9.6% (YOY) in the reporting period. Meanwhile, working capital loans accelerated slightly to 7.8% (YOY) from 7.6% (YOY) in the previous semester.

Stronger MSME credit growth affected several economic sectors as the demand for financing increased and public purchasing power improved. MSME credit growth accelerated in the wholesale and retail sector, increasing to 12.5% (YOY) from 11.6% (YOY) in the second semester of 2015 and 8.7% (YOY) one year earlier. Similarly, in the construction and real estate sectors, MSME credit growth accelerated, respectively, from 5.4% (YOY) and 9.3% (YOY) in the second semester of 2015 to 8.0% (YOY) and 11.7% (YOY). Conversely, both the agricultural and forestry sector and the manufacturing industry sector experienced slower MSME credit growth, decelerating, respectively, from 12.0% (YOY) and 10.0% (YOY) to 9.8% (YOY) and 5.3% (YOY). A significant change in the climate, which undermined production due to a delayed planting season, affected MSME credit growth in the agricultural and forestry sector, and low demand for goods and services in the manufacturing industry sector also eroded MSME credit growth (Bank Indonesia 2016).

### 9.2.2 *Financing from Islamic institutions*

Besides financing from conventional banks, sharia banks (Islamic banks) also have a strategic role in developing MSMEs. Sharia banks are one of the financial resources for MSMEs and have a strategic position. The position of sharia banks in MSMEs has increased compared to that of non-MSME financing. This proves that the role of sharia banks is highly significant in financing MSMEs for investment and working capital (Bank Indonesia 2016; Otoritas Jasa Keuangan 2017b). Empirically, in 2016, the total financing of sharia banks was higher than for non-sharia banks. This was due to the sharia banks targeting in particular MSMEs in agriculture, fisheries, and plantation. In addition, the government applies an unstrict requirement policy for financing by sharia banks.

Meanwhile, the risk of problem loans among sharia banks, which are also known as NPLs, indicated a critical situation, as mentioned in the notification issued by the Central Bank of Indonesia Number 17/19/DPUM Year 2015, stating that nonperforming financing (NPF) in sharia banks for MSMEs has a limit of 5%. Empirically, sharia banks' NPF exceeded the maximum limit set by the Central Bank of Indonesia. This can be seen from the sharia banks' NPF movement from 2014 to 2017, which was above 5%. This occurred as a result of sharia banks' optimism with regard to financing MSMEs.

### 9.2.3 *The government credit program*

In addition to issues on the domestic market, MSMEs are affected by export challenges and are always looking for export credit. Recently, Indonesia has faced an open international trade. This provides an opportunity to gain market access and to increase the nation's reserves (Ismail et al. 2017). Further, it affects MSME sectors to meet global economy challenges. Meanwhile, MSMEs still face obstructions related to capital and market access (Hutabarat and Pandin 2014; Eniola and Entebang 2015; Karadag 2016). The government has tried its best to provide alternatives to solve the problems by offering support through financing facilities provided by banks and nonbank institutions. The support for financing MSMEs is manifested by allocating a budget for credit guarantee, namely People's Business Credit (KUR) (Irfayanti and Azis 2012; Jaswadi and Sumiadji 2015; Fianto et al. 2017).

KUR is a credit for MSMEs and cooperatives that have not received credit or financing from banks or through the government credit program (Bank Indonesia 2017). Table 9.1 presents empirical evidence that the KUR program has successfully increased financial access for MSMEs to banks and nonbanks. The development of MSME credit in commercial banks has increased, as shown by the increase in MSME credit from IDR 526.3 trillion in 2012 to IDR 671.7 trillion in 2014 (Bank Indonesia 2015). The credit facility was mostly used for working capital credit of 73% and for investment of 27% (Otoritas Jasa Keuangan 2015).

*Table 9.1* Summary of MSME policy in Indonesia

<i>Policy Objectives</i>	<i>Form of Regulations</i>	<i>Details of Policy</i>
<b>Access broadening for financing MSMEs</b>	Regulation of Central Bank of Indonesia Number 17/12 /PBI/ 2015	<ul style="list-style-type: none"> <li>• Bank credit financing limit for MSMEs at no less than 5% in 2015, 10% in 2016, 15% in 2017, and 20% since 2018</li> </ul>
<b>Supporting MSME exports</b>	The agreement note of the Ministry of Cooperatives and MSMEs since 2008 Subsidy for the loan interest through the Indonesia Export Financing Institution (LPEI)	<ul style="list-style-type: none"> <li>• KUR provision</li> <li>• Reduction of interest rates of KUR from 22% to 12%</li> <li>• Provision of loans and credit for working capital with lower interest rates than commercial interest rates</li> </ul>

KUR = *Kredit Usaha Rakyat* (People's Business Credit), MSME = micro, small, and medium enterprise.

Source: Bank Indonesia (2017), Ministry of Cooperatives and MSMEs, Ministry of Finance (2017).

Besides the KUR issued by the government through interest subsidies, Bank Indonesia also provides broad access to financing through the regulation of Bank Indonesia Number 17/12/PBI/2015. The regulation arranges the minimum amount of credit provided by the banks for MSMEs. The minimum amount of credit for MSMEs was 5% in 2015, 10% in 2016, and 15% in 2017, and has been 20% since 2018. Basically, it should be expected to overcome the financing problems faced by MSMEs. The government also attempted to provide financing for MSMEs with export businesses through an interest rate subsidy by the Indonesia Export Financing Institution (LPEI). The LPEI offers loans or working capital credit with lower interest rates than commercial interest rates.

#### *9.2.4 Historical trend and current status of the MSME credit guarantee scheme in Indonesia*

MSMEs face barriers in terms of the amount of credit they can receive and collateral. There are several conditionally feasible MSMEs, but they still face difficulties in fulfilling the requirements for credit submission to the bank (Bank Indonesia 2010). The problems initiated the establishment of the Credit Guarantee Scheme. The CGS is a program used to support the financial development in MSMEs both in developing and developed countries (Cowling 2010). The guarantee companies, according to the regulation of the Ministry of Finance Number 222/PMK.010/2008 and Number 99/PMK.010/2011, are legal financial institutions performing guarantee activity (Figure 9.3).

A credit guarantee is an attempt to reduce loss on bad credit. The CGS is designed to support financial development for micro, small, and medium enterprises that find it difficult to obtain assistance from traditional financial institutions. Therefore, the objective of the CGS is to reduce the credit risk of MSMEs.



*Figure 9.3* Credit Guarantee Scheme for MSMEs in Indonesia

Source: Bank Indonesia (2010).

The program insures loan payments, either partially or the entire payment, to encourage creditors to provide credit for those enterprises that are unable to access loans under normal conditions.

Recently, Indonesia has developed credit scheme institutions at the national level, such as the Indonesia Entrepreneur Credit Guarantee Institution (PKPI), Indonesia Credit Insurance (PT ASKRINDO), the Indonesia Credit Guarantee Corporation (Perum Jamkrindo), and the Regional Credit Guarantee Corporation (Perum Jamkrida). At the province level, credit guarantee institutions are available and function by controlling and reporting to the central institution. In their practices, the credit guarantee institutions use two credit guarantee schemes, namely conditional automatic cover (CAC) and case by case (CBC). In the first scheme, CAC, the guarantee can be accomplished after an agreement between banks and credit guarantee institutions is made. For instance, Perum Jamkrindo and PT ASKRINDO have accepted bank proposals with a return payment of 50% to 80% from the total loan. In the second scheme, CBC, proposals can be made either by the bank or the debtor individually. The amount of the guarantee depends on the risk of the debtor's business.

The CGS is a solution provided by the government to overcome such problems (Boocock and Shariff 2005). The CGC objectives in Indonesia are to both participate in and encourage the implementation of a policy and government program both in the economy sector and in terms of national development by providing loans from credit guarantee institutions for MSMEs (Li and Lin 2017; Saito and Tsuruta 2014). Credit guarantee is a financing mechanism performed by banks in managing risks. Indonesia has several credit guarantee institutions, including PKPI, PT ASKRINDO, the Indonesia Credit Guarantee Corporation (Perum Jamkrindo), and the Regional Credit Guarantee Corporation (Jamkrida), with two schemes, CAC and CBC.

The CGS policy implementation is considered effective in increasing MSME growth (Gai, Ielasi, and Rossolini 2016; Zhang and Ye 2010). In line with this, Atagana and Kalu (2014), Gurmessa and Ndinda (2012), and Yamori (2015) explain that the CGS can be effective in terms of guarantee transaction cost,

the ability to pay the insurance premium to cover the transaction cost, the amount of discount, and the degree of recovery. A common indicator to assess debtors' performance is additionality, which consists of financial additionality (FA) and economic additionality (EA). Then, the real parameter from the creditors' performance participation is the number of claims (Jonsson 2009; Uesugi, Sakai, and Yamashiro 2010). In addition, Liang et al. (2017) and Saadani, Arvai, and Rocha (2011) support the implementation of CGS policy in conducting MSME financing. Thus, the CGS plays a crucial role in the MSME financing pattern.

## 9.3 Methodology and data

### 9.3.1 Description of data

The efficiency of the CGS as an attempt to solve problems in MSME capital is different in rural and urban areas in Indonesia (Rachmania et al. 2012; Katua 2014; Lubis et al. 2015). The performance differences in rural and urban areas are the focus of the analysis in this research. This subsection discusses the research design, starting with the data application from the Indonesian Family Life Survey (IFLS). The application of IFLS data is aimed at revealing in detail the characteristics of owners, firms, and loans in rural and urban areas. In addition, a probit analysis tool is employed to solve the problem of the research.

This research uses data obtained from the IFLS. The IFLS provides longitudinal data showing the socio-economic and household conditions in Indonesia. IFLS data in 1993 comprised 83%, or approximately 7,000 households and 33,000 individuals from the total population in Indonesia living in 13 out of 27 provinces in the country (North Sumatera, West Sumatera, South Sumatera, Lampung, Bali, West Nusa Tenggara, South Kalimantan, South Sulawesi, and all provinces on the island of Java). IFLS surveys were carried out in 1993, 1997, 2000, 2007, and 2014. The development of sample numbers from 1993 to 2014 is displayed in Table 9.2. The IFLS data used in this research include cross-sectional

Table 9.2 The development of IFLS samples

<i>IFLS/Year</i>	<i>Number of Households</i>	<i>Number of Individuals</i>	<i>Executors</i>
IFLS1/1993	7,200	22,000	RAND Corporation, LD-FEUI
IFLS2/1997	7,600	25,000	RAND Corporation, LD-FEUI
IFLS3/2000	10,400	31,000	RAND Corporation, PSKK UGM
IFLS4/2007	13,500	43,500	RAND Corporation, Survey Meter, PSKK UGM
IFLS5/2014	15,000	50,000	RAND Corporation, Survey Meter

IFLS = Indonesian Family Life Survey.

Source: Survey Meter (2017).

and panel data. The cross-sectional data are from IFLS 4 and IFLS 5. Meanwhile, the panel data comprise a combination of data from IFLS 4 and IFLS 5.

Sources of capital for MSMEs in the form of credit remain the biggest problem in Indonesia. This research aims to propose credit as the solution to this problem. It is expected that the result will provide a policy recommendation that can be implemented by the government. The research used data from the IFLS and applied three schemes. The first scheme was applied to uncover the relation of MSME to all financial institutions in Indonesia. The second and third scheme aim to reveal the details of credit distribution to enterprises carried out by financial institutions both in urban and rural areas. Each scheme employed three approaches to the data. The approaches were applied to cross-sectional IFLS 4 and IFLS 5 data, as well as panel data.

9.3.2 *Econometric model*

The correlation between MSMEs and financial institutions can be found by modifying the research by Parinduri (2014) and Vial (2011).

$$Types\ of\ Financial\ Institutions = f \begin{pmatrix} firm\ characteristics; \\ owner\ characteristics; \\ loan\ characteristics \end{pmatrix} \tag{1}$$

Equation (1) is transformed with equation (2) and equation (3):

$$FI_i = a_1 + a_2Ow_i + a_3Op_i + a_4Sec_i + a_5Prof_i + a_6Cap_i + a_7Build_i + a_8Gen_i + a_9Educ_i + a_{10}Place_i + a_{11}Loans_i + a_{12}Coll_i + \varepsilon_i \tag{2}$$

$$FI_{it} = a_1 + a_2Ow_{it} + a_3Op_{it} + a_4Sec_{it} + a_5Prof_{it} + a_6Cap_{it} + a_7Build_{it} + a_8Gen_{it} + a_9Educ_{it} + a_{10}Place_{it} + a_{11}Loans_{it} + a_{12}Coll_{it} + \varepsilon_{it} \tag{3}$$

Equations (2) and (3) explain that the corporation characteristics are proxied with the ownership of an MSME (Ow), operation (Op), MSME sector type (Sec), MSME profit (Prof), capital (Cap), and the establishment of an MSME (Build). Further, the owner characteristic variable can be seen from the use of the gender variable (Gen), education (Educ), place (Place), and loan characteristics with the amount of loan (Loans) and collateral (Coll) and can reveal the description of credit distribution in financial institutions. Credit distribution in Indonesia has several resources, such as banks, nonbank financial institutions, and informal financial intermediaries. The differences between Equations (2) and (3) lie in the use of data. Equation (2) uses IFLS 4 and IFLS 5 data of a cross-sectional type. The use of IFLS 4 and IFLS 5 in Equation (2) with a cross-sectional data aims to show the role of financial institutions in relation to MSMEs in Indonesia. On the other hand, Equation (3) employs panel data. The second and third scheme aim to look closely at the distribution of credit by the financial institutions to develop MSMEs in urban and rural areas. The

model applied in the research to answer the problems can be seen in the following equations:

- Research model of credit distribution in rural area

$$FI\ rural = f(Loan; Collateral; profit) \quad (4)$$

$$FI\ rural_i = a_1 + a_2 Loan_i + a_3 Coll_i + a_4 Prof_i + e_i \quad (5)$$

$$FI\ rural_{it} = a_1 + a_2 Loan_{it} + a_3 Coll_{it} + a_4 Prof_{it} + e_{it} \quad (6)$$

- Research model of credit distribution in urban area

$$FI\ urban = f(Loan; Collateral; profit) \quad (7)$$

$$FI\ urban_i = a_1 + a_2 Loan_i + a_3 Coll_i + a_4 Prof_i + e_i \quad (8)$$

$$FI\ urban_{it} = a_1 + a_2 Loan_{it} + a_3 Coll_{it} + a_4 Prof_{it} + e_{it} \quad (9)$$

Equations (4) to (9) are applied to determine how financial institutions distribute credit to MSMEs with the influence of collateral (Coll), the amount of loans (Loans), and the profit obtained (Prof) with rural and urban characteristics in Indonesia. Moreover, Equations (5) and (8) use cross-sectional data, and Equations (6) and (9) use panel data.

### 9.3.3 Description of the methodology

The base model equation was then derived in the form of a probit model. The probit model is one of the cumulative distribution function models applied to data with binomial distribution. It is employed to analyze models containing a dependent variable with a binary variable. The binary variable refers to a phenomenon relying on a latent variable in line with the IFLS data employed in the research. Hence, the research transformation model can be rewritten as follows:

#### 1 Probit model with cross-sectional data

- Probit model of the relation between MSMEs and financial institutions in Indonesia

$$Pi(fi = 0 Xi) = a_1 + a_2 Ow_i + a_3 Op_i + a_4 Sec_i + a_5 Prof_i + a_6 Cap_i + a_7 Build_i + a_8 Gen_i + a_9 Educ_i + a_{10} Place_i + a_{11} Loans_i + a_{12} Coll_i + \varepsilon_i \quad (10)$$

- Probit model of credit distribution in rural areas

$$Pi(FI\ rural = 0 X_i) = a_1 + a_2 Loan_i + a_3 Coll_i + a_4 Prof_i + e_i \quad (11)$$

- Probit model of credit distribution in urban areas

$$Pi(FI\ urban = 0 X_i) = a_1 + a_2 Loan_i + a_3 Coll_i + a_4 Prof_i + e_i \quad (12)$$

## 2 Probit model with data panel

- Probit model of the relation between MSMEs and financial institutions in Indonesia

$$\begin{aligned}
 Pi(f_i = 0 X_{it}) = & a_1 + a_2Om_{it} + a_3Op_{it} + a_4Sec_{it} + a_5Prof_{it} \\
 & + a_6Cap_{it} + a_7Build_{it} + a_8Gen_{it} + a_9Educ_{it} \\
 & + a_{10}Place_{it} + a_{11}Loans_{it} + a_{12}Coll_{it} + \varepsilon_{it}
 \end{aligned} \tag{13}$$

- Probit model of credit distribution in rural areas

$$Pi(FI_{rural} = 0 X_{it}) = a_1 + a_2Loan_{it} + a_3Coll_{it} + a_4Prof_{it} + e_{it} \tag{14}$$

- Probit model of credit distribution in urban areas

$$Pi(FI_{urban} = 0 X_{it}) = a_1 + a_2Loan_{it} + a_3Coll_{it} + a_4Prof_{it} + e_{it} \tag{15}$$

This research employed one dependent variable with financial institution as the binary variable. There are three binary financial institutional variables: banks, nonbanks, and informal financial intermediaries. Banks as the financial institutions consist of private and state banks. On the other hand, the nonbank institutions comprise cooperatives, agriculture banks, nongovernment institutions, regular society gatherings, small groups of farmers, pawnshops, and others. Informal financial intermediaries include employers, landlords, shop owners, treasuries of village-level organization, loan sharks, and offices where household members work. The use of bank as financial institution, nonbank and informal financial intermediary as the proxy from the financial institutional variable is based on the source of credit for Indonesians to establish the MSME.

The independent variable in this research is MSME vector consisting of company, owner, and credit characteristics. Those three variables are selected to find out the characteristics of the company, owner, and credit to see whether they make it easy for MSMEs to obtain credit from financial institutions (Table 9.3). The

Table 9.3 Definitions of variables

	Variable	Note
<b>Dependent Variable</b>	FI	Financial Institution
		0 = bank
		1 = nonbank 2 = informal financial intermediary
<b>Firm Characteristics</b>	Owner	MSME Ownership
		1 = Sole ownership 0 = Otherwise
		Operating
1 = Inside home 2 = Partially inside/outside 0 = Outside home		

(Continued)



Table 9.3 (Continued)

	<i>Variable</i>	<i>Note</i>	
<b>Owner Characteristics</b>	Sector	Type of sector from MSMEs 1 = Agriculture, forestry, fisheries, hunting 2 = Mining and excavation 3 = Electricity, gas, and water 4 = Construction 5 = Transportation, warehouse, communication 6 = Finance, insurance, rentals, properties, land, and company services 7 = Restaurants, food stalls 8 = Industry: food processing and production 9 = Industry: clothing 10 = Industry: others 11 = Sales: books, food 12 = Services; government 13 = Services; professionals 14 = Services; transportation 15 = Services: others (tailoring, barbershops) 0 = Otherwise	
	Profit	Profit MSME	
	Capital	Amount of capital owned by MSME	
	Building	The establishment of MSMEs	
	Gender	Sex of MSME owner 1 = Male 0 = Female	
	Educ	Education of MSME owner 0 = Uneducated or elementary school dropouts 1 = Elementary school 1st grade 2 = Elementary school 2nd grade 3 = Elementary school 3rd grade 4 = Elementary school 4th grade 5 = Elementary school 5th grade 6 = Elementary school 6th grade 7 = Junior high school 1st grade 8 = Junior high school 2nd grade 9 = Junior high school 3rd grade 10 = Senior high school 1st grade 11 = Senior high school 2nd grade 12 = Senior high school 3rd grade 13 = Undergraduate or diploma 14 = Undergraduate 2nd semester 15 = Undergraduate 3rd semester 16 = Undergraduate 4th, 5th, 6th, and 7th semester 17 = Postgraduate 1st semester 18 = Postgraduate 2nd semester 19 = Postgraduate 3rd semester 20 = Postgraduate 4th semester 21 = Postgraduate 5th semester 22 = Doctorate 4th, 5th, 6th, 7th semester	
	Place	Place of MSME owner 1 = Rural 0 = Urban	
	<b>Loan Characteristics</b>	Log loans	Log from the value of loans in IDR
		Collateral	MSME Collateral for Loans 1 = Use collateral 0 = Do not use collateral

Source: Indonesian Family Life Survey ([IFLS] 2007, 2014).

proxy of company characteristics can be seen from MSME ownership, operation, sector, profit, capital from its beginning, and its development. The owner characteristics variable in this research is determined by gender, education, and the location of respondents: rural or urban areas. The loan characteristics use the amount of loan and the value of collateral

#### 9.4 Empirical results

The government policy to increase the number of MSMEs as a solution to alleviate poverty and increase economy growth increases the number of MSMEs in rural and urban areas in Indonesia. Such a vast development causes risks in terms of funding for MSME businesses (Sisilia et al. 2015; Wardhono et al. 2015; Rothenberg et al. 2016). The right funding solution is a credit loan, but this results in the worst situation for the MSME. This is because the number of banks providing loans for MSMEs is still outnumbered. Banks prefer providing credit for consumption sectors.

The results of the determinant test for MSME access to financial institutions in both rural and urban areas in Indonesia using IFLS data from 2007 and 2014 are displayed in Table 9.4. The probit analysis has only slight differences in each model. The characteristic significance in MSMEs in the ease of access to credit from financial institutions can be seen through the probability value. Additionally, the coefficient level can be identified by the effect marginal value in each independent variable.

The access condition in MSMEs in terms of obtaining credit from financial institutions in 2007 and 2014 was different due to government policy. Government policy in providing access to MSME credit through KUR began in 2007. Probit analysis for 2007 reveals that the characteristics of MSMEs such as sector, MSME operation, level of education, location of MSME, amount of credit, and the amount of collateral have a significant effect on access to financial institutions. In the sector variable, which has an effect on financial access with a significant value of 0.00 below the alpha value ( $\alpha = 5\%$ ), this is accompanied by a coefficient value seen through its marginal effect of  $-0.01$ . The significant relation between sector and financial institution indicates that when the number of sectors in MSMEs increases, the financial institution decreases the financial access by as much as 0.01.

Whether the MSME operating location is near to or far from the owner's residence also becomes a factor for financial institutions in distributing credit. This circumstance is displayed in the probability value of an operating variable of 0.02, which is smaller than the alpha value of  $\alpha = 5\%$ . Additionally, the value of marginal effect on the sector variable indicates  $-0.34$ , which means the farther away the operating location, the lower the credit access provided by the financial institution. Furthermore, the characteristic of MSME owner seen from the level of education affects access to financial institutions. Education becomes a positive significant variable to financial institution, as seen from the probability value of 0.01, which is smaller than the alpha value ( $\alpha = 5\%$ ), and the coefficient of

Table 9.4 Determinants of MSMEs in the financial institutions in IFLS 2007 and 2014

Variable	2007			2014		
	Model 1 Indonesia	Model 2 Rural	Model 3 Urban	Model 1 Indonesia	Model 2 Rural	Model 3 Urban
<b>Owner</b>	0.03 [0.42] (0.67)	-	-	-0.09 [-0.46] (0.64)	-	-
<b>Operating</b>	-0.34* [-2.23] (0.02)	-	-	-0.02 [-0.93] (0.35)	-	-
<b>Sector</b>	-0.01* [-2.27] (0.00)	-	-	-0.01 [-1.57] (0.11)	-	-
<b>Log Profit</b>	0.00 [0.43] (0.67)	0.01 [0.09] (0.92)	0.01 [0.79] (0.42)	-0.012 [-0.66] (0.50)	-0.00 [-0.02] (0.98)	-0.03 [-1.52] (0.12)
<b>Log Modal</b>	0.00 [0.10] (0.91)	-	-	-0.02* [-2.17] (0.03)	-	-
<b>Building</b>	0.00 [0.09] (0.93)	-	-	-0.00 [1.07] (0.28)	-	-
<b>Gender</b>	0.02 [-1.20] (0.23)	-	-	-0.20 [0.43] (0.66)	-	-
<b>Educ</b>	0.00* [2.45] (0.01)	-	-	0.00 [-1.11] (0.26)	-	-
<b>Place</b>	-0.06* [2.43] (0.01)	-	-	0.14* [2.27] (0.01)	-	-
<b>Log_loans</b>	-0.09* [-8.43] (0.00)	-0.10* [-6.43] (0.00)	-0.18* [-6.44] (0.00)	-0.04* [-2.64] (0.01)	-0.00 [-1.47] (0.35)	-0.06* [-3.25] (0.00)
<b>Collateral</b>	-0.26* [-9.32] (0.00)	-0.18* [-3.9] (0.00)	-0.30* [-8.80] (0.00)	-	-	-
<b>C</b>	- [0.41] (0.67)	- [5.50] (0.00)	- [5.79] (0.00)	- [-0.80] (0.42)	- [0.92] (0.35)	- [3.76] (0.00)

Source: IFLS (2007, -).

(\*) significant  $\alpha = 5\%$

[...] = Z-statistics

(...) = probability

0.00. The positive significant relation between education and financial institution indicates that the higher the education of the MSME owner, the higher the trust of the financial institution in terms of giving credit. The financial institution believes that highly educated individuals will improve the MSME business with their innovations.

A variable place significance of 0.01 smaller than the alpha value of  $\alpha = 5\%$ , with a marginal effect value of as much as  $-0.06$ , means that MSMEs located in urban areas have less access to financial institutions. This is due to the existence of capital investment, primarily construction capital sharing, which provides funding from other sources than merely financial institutions. Furthermore, the amount of credit also affects the financial institution giving access to credit, which can be indicated from the probability value of 0.00 smaller than the alpha value of  $\alpha = 5\%$ . However, when the coefficient value of the loan variable is  $-0.09$ , it indicates that the higher the amount of loan proposed by the MSME, the more likely the financial institution will be to reduce the amount of the loan due to the trust level.

The collateral variable also presents similar cases. The significant value of collateral of 0.00 is smaller than the alpha value of  $\alpha = 5\%$ . What is more, the collateral variable of  $-0.26$  is interpreted as negative. This indicates that when no collateral is available, it is difficult for the financial institution to give access to credit.

The probit regression test in Model 2 indicates that two variables significantly affect the MSME access to financial institutions. The first variable, the load variable, and collateral have a probability Z-statistic value of 0.00. The Log\_loans variable with a marginal effect of 0.10 means that the amount of loans received by MSMEs increases. It indicates that the possibility is decreasing by 0.10 for the MSMEs. Meanwhile, when the number of assets for collateral increases, the possibility for individuals to access the financial institution will decrease as much as 0.18, as shown in the marginal effect value of the collateral variable, which is as much as  $-0.18$ .

Model 3 on IFLS 4 demonstrates that only the Log\_loans and collateral variables have a significant effect on MSME access to financial institutions. The probability value of the Log\_loans and collateral variables has the same value of 0.00. Then, the marginal effect from the log loan variable of  $-0.08$  indicates that when the amount of credit obtained by an MSME increases, the possibility of accessing the financial institution will decrease by as much as 0.08. A similar case can be seen in the number of assets used for collateral, which causes a decrease in the possibility of accessing a financial institution of 0.30, as stated in the marginal effect value of the collateral variable of  $-0.30$ .

The results of prediction analysis using the probit model with IFLS 2007 data are presented in Table 9.5. Model 1 explains that when education is up one level, using agriculture, plantation, and forestry, a guarantee is applied. Meanwhile, operating and place are considered static, with a probability value of individuals of 0.522. Furthermore, for each individual who does not employ financial asset, it is as much as 0.478. It can be concluded from Models 2 and 3

Table 9.5 The prediction of the probit model from IFLS 2007

Variable	Model 1		Model 2		Model 3	
	Coef.	Value	Coef.	Value	Coef.	Value
C	-	-	5.77	-	4.59	-
Operating Sector	-0.13	1	-	-	-	-
Educ	-0.04	1	-	-	-	-
Place	0.03	1	-	-	-	-
Log_loans	0.23	1	-	-	-	-
Collateral	-0.35	0	-0.38	1	-0.08	1
P = 1/ 1+E^Z	-0.99	0	-0.68	0	-0.03	0
	0.522		0.995		0.48	

Source: IFLS (2007, 2014).

that when the amount of loan increases and the location of the MSME remains stable, the probability value of the individuals obtaining access to a financial institution is 0.995 and 0.48 for the model, respectively. Meanwhile, the probability of individual who do not use access to a financial institution is 0.005 and 5.52 for each model, respectively. To sum up, every single independent variable alteration in each individual affects significantly an individual's decision making with regard to accessing finance.

In contrast, the result of probit on IFLS 2014 in Model 1 indicates that the MSME capital, MSME location, and the amount of loan influence the financial institution in providing financial access (Table 9.6). This is supported by the probability value of each variable that is smaller than an alpha value of  $\alpha = 5\%$ . Capital becomes the most important factor for financial institutions in giving credit to MSMEs. This is because capital reflects the size of the MSME. The location of the MSME also becomes a determinant for a financial institution in granting credit. The correlation between the location and the financial institution is negative and significant, with a level of significance of 0.01 smaller than the alpha value of  $\alpha = 5\%$ . The urban and rural locations of MSMEs generate different credit services provided by financial institutions. Moreover, a marginal effect value of the loan variable of -0.04 indicates that when the amount of loan obtained by the MSME increases, the possibility of an MSME accessing a financial institution will decrease by as much as 0.04.

The Z-statistics probability value in Model 2 in IFLS 5 (2014) indicates that there is no independent variable either in the form of capital or a loan affecting access to financial institutions in rural areas. Nevertheless, capital and loans have a negative coefficient effect in corresponding to the previous probit regression result in Model 1. This indicates that when the amount of loans and capital among MSMEs decreases, all access to financial institutions will increase, albeit insignificantly.

The results of probit regression in Model 3 in 2014 show that only one variable shows a significant value in affecting MSME access to financial institutions. This is the loan variable, with a probability value of 0.00. The marginal effect of a loan is  $-0.06$ , indicating that if the amount of MSME loans increases, the probability of accessing financial institutions will decrease by as much as 0.06.

Based on the logistic regression value, prediction on one particular model can be performed. Table 9.6 displays an illustration of an individual experiencing capital increase, loan decrease, and urban location an MSME. The calculation of the independent variable value alteration generates the value of individual probability to decide on saving or lending from the financial institution, both of banks and nonbanks, as well as nonformal in as much as 0.55. Meanwhile, the probability value of the individual without the product of financial institution used is 0.45. This indicates that when the independent variable value alteration occurs in each individual, it will significantly affect the decision to access the financial institution. On the other hand, when a decrease occurs in the amount of loan, the individual probability value in making the decision to access the financial institution is as much as 0.98, whereas the probability value of an individual without access to a bank is 0.02.

The ability of MSMEs to obtain loans from financial institutions can also be seen from the development year to year indicated by the use of panel data that combine IFLS 4 and IFLS 5. The estimated results using probit show that the sector variable, the amount of capital, areas of MSME location, and the amount of loan remain important variables in accessing credit in financial institutions. This is because the sector variable, capital and MSME location, and amount of loan affect the financial institution significantly. The sector variable has a marginal effect value of as much as  $-0.01$ , which means that when a decrease occurs in the MSME sectors, it will increase the access of MSMEs to financial institutions by as much as 0.01 or vice versa. It can be interpreted that when sectors experience increases causing large variations in MSMEs, the financial institutions need to evaluate which are prospective sectors in the future and will not default on the loan. The same applies to the correlation between capital and financial

Table 9.6 The prediction of the probit model from IFLS 2014

Variable	Model 1		Model 2		Model 3	
	Coef.	Value	Coef.	Value	Coef.	Value
C	-	-	-	-	4.38	-
Log_modal	-0.08	1.00	-	-	-	-
Place	0.43	1.00	-	-	-	-
Log_loans	-0.13	1.00	-	-	-0.19	1.00
$P = 1 / 1 + E^Z$	0.55		-		0.98	

Source: IFLS (2007, 2014).

institutions. The capital variable has a marginal effect value of  $-0.02$ , which means that the larger the amount of capital obtained by an MSME, the more capital source is owned by the MSME, not only from credit, but also from shares.

The loan amount also becomes one of the most important indicators in granting credit to an MSME due to the probability value of the loan variable of  $0.00$  smaller than the alpha value of  $\alpha = 5\%$ . The reason is that when the amount of capital should be high among the requirements, the bank needs to identify the development of the MSME. The MSME location area also becomes a factor for financial institutions in providing credit because MSMEs located in urban areas will have quicker access to finance. The result is supported by the evidence of this research showing a significant result of  $0.00$  smaller than the alpha value ( $\alpha = 5\%$ ).

The relation between MSMEs and financial institutions in rural areas shows that the amount of the loan is a requirement in granting credit, with a probability value of  $0.00$  smaller than the value of alpha ( $\alpha = 5\%$ ) (Table 9.7). This emphasizes that larger loan amounts will cause distrust among financial institutions when granting credit. A different result is shown by the characteristics of MSMEs in obtaining credit from financial institutions. The amount of capital becomes a reference for financial institutions in granting credit in urban areas, with a probability value of  $0.00$  smaller than the alpha value ( $\alpha = 5\%$ ). High loan amounts and larger profit will affect financial institutions in terms of granting credit.

The logistic regression value can be determined by a prediction on a model as shown in Table 9.8. The result indicates that when using agriculture, fisheries, and forestry, increasing capital and increasing the amount of credit are considered constant, and the value of individual probability using access to financial institutions is  $0.514$ . Model 2 shows that when only the amount of the loan increases, the individual probability value in accessing financial institutions is  $0.938$ . Meanwhile, Model 3 demonstrates that when an increase in the profit and loan amount occurs, the individual probability value in accessing a financial institution is  $0.9984$ .

The estimation using probit analysis using the three-schemes approach shows that generally a financial institution grants credit by considering the amount of loan, the type of sector, and the location of the MSME. In rural areas, the credit for an MSME is granted based on the amount of its capital loan. However, in urban areas, the amount of capital loan and profit are the important factors in obtaining credit for MSMEs.

The MSME becomes more and more important in terms of development as a result of the increasing number of MSMEs. MSMEs are divided into several sectors (Olawale and Garwe 2010). However, this variety can drive financial institutions to reconsider these sectors. The reason is that the different types of MSME sectors will cause financial institutions to mitigate the risk in granting credit (Okten and Osili 2004; Shinozaki 2015; Wardhono et al. 2016). This is because MSMEs need to see the prospect of the sectors' sustainability in Indonesia.

*Table 9.7* The determinants of MSMEs on financial institutions based on panel data (IFLS 2007, 2014)

<i>Variable</i>	<i>Model 1 Indonesia</i>	<i>Model 2 Rural</i>	<i>Model 3 Urban</i>
<b>Owner</b>	-0.01 [-1.4] (0.14)	-	-
<b>Operating</b>	-0.01 [-0.63] (0.52)	-	-
<b>Sector</b>	-0.01* [-2.71] (0.00)	-	-
<b>Log_profit</b>	-0.00 [-0.61] (0.54)	0.00 [1.36] (0.17)	-0.03* [-2.18] (0.02)
<b>log_modal</b>	-0.02 [-1.12] (0.21)	-	-
<b>Building</b>	0.00 [0.18] (0.85)	-	-
<b>Gender</b>	0.00 [-0.47] (0.63)	-	-
<b>Educ</b>	0.00 [-0.47] (0.63)	-	-
<b>Place</b>	0.14* [4.09] (0.00)	-	-
<b>log_loans</b>	-0.09* [-7.76] (0.00)	-0.09* [-4.97] (0.00)	-0.11* [-8.00] (0.00)
<b>C</b>	- [-0.72] (0.47)	- [2.45] (0.01)	- [7.77] (0.00)

Source: IFLS (2007, 2014).

(\*) significant  $\alpha = 5\%$

[...] = Z-statistics

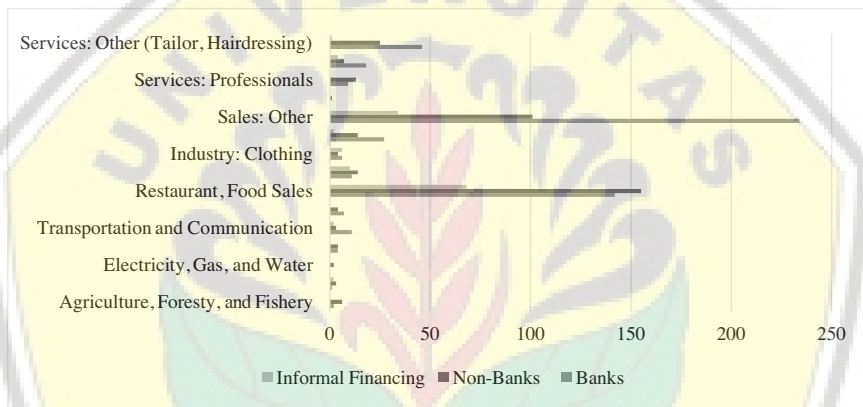
(...) = probability



*Table 9.8* Prediction results of probit model based on panel data (IFLS 2007, 2014)

Variable	Model 1		Model 2		Model 3	
	Coef.	Value	Coef.	Value	Coef.	Value
<b>C</b>	-	-	2.73	-	-	-
<b>Sector</b>	-0.04	1.00	-	-	-	-
<b>Log_modal</b>	-0.08	1.00	-	-	-	-
<b>Place</b>	0.43	1.00	-	-	-	-
<b>Log_profit</b>	-	-	-	-	-0.11	1.00
<b>Log_loans</b>	-0.13	1.00	-0.328	0	-0.352	1.00
<b>P = 1 / 1+E^Z</b>	0.514996		0.938		0.998424	

Source: IFLS (2007, 2014).



*Figure 9.4* The development of the number of sectors in MSMEs' accessing financial institutions

Source: IFLS (2014).

Figure 9.4 shows the development of MSMEs in accessing financial institutions based on their sectors. The figure indicates that there are several sectors that can access financial institutions, including services such as transportation, food sales, and the restaurant business. This supports our analysis, which reveals that the more sectors available, the more credit will be granted due to the prospects of the sectors.

The amount of loans proposed by MSMEs to obtain funding based on credit shows a negative significant relation. The reason behind this is that the MSMEs' proposed loans mostly amount to less than 20 million. This is in line with research carried out by Carbo-Valverde, Rodriguez-Fernandez, and Udell (2012), Domeher (2012), and Kung'u (2013), which stated that the amount of loan affects the sustainability of an MSME. Furthermore, financial institutions such

as banks are still trusted institutions in distributing credit (Figure 9.5). This is because the largest numbers of sectors with such access are medium sectors, such as transportation, food sales, and restaurants. Thus, the role of financial institutions in improving MSMEs is still limited to several sectors with low access.

The MSME location is also a factor for financial institutions in providing credit. This is due to the characteristics of MSMEs in rural and urban areas (Figure 9.6). Consequently, financial institutions provide different credit provision policies, as the loan characteristics of financial institutions in rural and urban areas are different (Hu 2010; Ardic et al. 2011; Cowan et al. 2015). The characteristics of the amount of the loan in urban and rural areas differ. The highest amount of loans in rural areas is 51 million, whereas in urban areas it reaches 100 million. The average amount of rural and urban loans is 20 million.

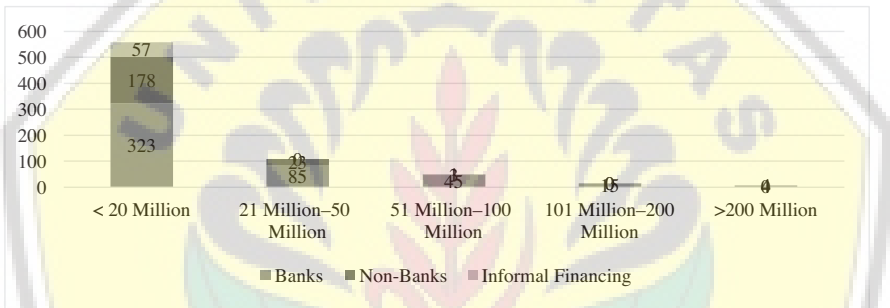


Figure 9.5 The number of MSMEs accessing credit from financial institutions  
Source: IFLS (2014).

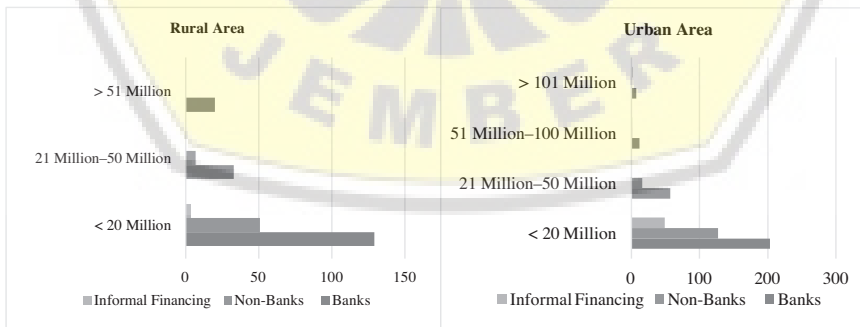


Figure 9.6 The amount of loans from financial institutions in (a) rural and (b) urban areas

Source: IFLS (2014).

The result of rural and urban indicates similarity, showing that the access of MSMEs to financial institutions is still low with regard to financing.

The low access of MSMEs to financial institutions is caused by business feasibility in terms of the requirements fulfilled by the MSMEs in order to obtain funding from banks (Hartungi 2007; Honohan 2010; Hyun 2017). The reason behind this is that financial institutions, particularly banks, still dominate the sources of funding among MSMEs. The obstacles faced by MSMEs in accessing financial institutions include (Bank Indonesia 2015):

- 1 Additional collateral for credit

MSMEs can provide collateral such as fixed assets like land, construction, and vehicles, or assets from the business, including a well-managed cash flow. However, in reality, additional collateral is not a requirement for banks with a value chain financing scheme for eligible customers.

- 2 Company legality

This aspect is important to see the sustainability of an MSME and the business's obedience to the law.

In granting credit, banks provide loans for prospective debtors who have run their business for at least six months.

#### *9.4.1 Impact on government policies*

The government has increased the number of MSMEs through the KUR program (public business credit) to stimulate MSME credit without collateral as a requirement. KUR is provided by banks with intervened interest rates for a subsidiary of 12% per year (Bank Indonesia 2015). The government also provides guarantees of as much as 70% to 80% of the total credit as performed by PT Askrindo and PT Jamkrindo. The implementation of KUR with low interest rates, as well as a government guarantee, still experiences problems, such as the limit on source funding for KUR.

- 1 The funding of KUR is generated from the banks. The government only supplies subsidies at the level of interest rates. Therefore, the capacity of banks to provide KUR is limited to the funding available in banks assigned by the government (Bank Indonesia 2015).
- 2 The role of private companies in guaranteeing KUR.

The involvement of private parties in the KUR guarantee scheme has been established by the government through the regulation of the Ministry of the Economy. However, the implementation of zero involvement of private companies in KUR guarantees is due to unclear technical direction from the government. However, when the policy is put into force, the limit of guarantee capability carried out by PT Askrindo and PT Jamkrindo can be broadened.

- 3 There is no integrated MSME information system that can be accessed by the banks. Thus, banks do not have potential MSME data on the basis of which they can grant credit.

Due to the heterogenic characteristics of each MSME in all economy sectors and the complexity of problems of related parties, a supportive policy from the government is an important factor in developing MSMEs in Indonesia, and such a policy is required to create a supporting business atmosphere for their growth. The situation is required to guarantee business assurance, to increase efficiency, and to create a healthy competition for MSME founding. Hallberg (2001) proposed that from the perspective of industry organization theory, a clear and well-arranged policy is determined to achieve balance in resources such as abundant natural and human resources, institutions, and technology.

The direction of government policy in developing MSMEs is different across nations. In developing countries, the policy direction emphasizes more innovative, techno-based, and highly sophisticated technology development of MSMEs (Kruja 2013; Harvie and Charoenrat 2015; Bremus and Neugebauer 2018). On the other hand, in Indonesia, the policy direction is more related to creating employment, income equity, poverty alleviation, climate development, business independence, and economic growth. In the globalization and free-trade era, to encourage nonfuel exports, Indonesia prioritizes MSME development in improving competitiveness, particularly for small and medium enterprises, by increasing efficiency and productivity in every aspect.

The real manifestation of the Indonesian government's policy to create a conducive business atmosphere is passing regulations assuring the business, such as the regulation for MSMEs, to register the company, making the process easy, reasonable, less time consuming license for new business, institutions functioning to socialize policy and MSME founding, proper infrastructure, and incentives such as fiscal, and competent human resources for MSME founding. The government assigned high-level institutions, such as departments or ministries and the Central Bank, to coordinate MSME policy. In Indonesia, the coordination for developing MSMEs, particularly in terms of operation, is executed by the Ministry of Cooperatives and SMEs, and the coordination of policy is performed by the Ministry of the Economy.

Because the financing aspect in developing MSMEs is considered crucial and the condition of the sector is limited in terms of bank access, it is important for Indonesia to create innovation and a pattern for financing and providing specific credit suitable for MSME financing, particularly for micro and small enterprises. The funding for such a credit pattern comes from either the Central Bank or the government, as well as from the banks. The characteristics of the credit pattern for MSMEs from the Central Bank or government include its value focusing on business worth, low-interest rates below the market rates, simple procedures, and no collateral (collateral is generally project funded by the credit).

Furthermore, to improve access to MSME financing, specifically banks, Indonesia has designed a breakthrough innovation to solve the limited collateral problem faced by companies. The innovation includes empowering supporting facilities such as credit or insurance guarantee institutions like PT Askrindo, and Perum PKK in Indonesia, searching or creating (collateral substitute) such as group saving or joint responsibility to grant credit in a group. Moreover, it is also done by developing a working pattern between small and micro-enterprises and big companies such as the plasma core pattern in plantation projects or the subcontracting pattern in the industrial sector. One of the functions of big enterprises in this pattern is as credit guarantors for MSMEs whose credit is granted by banks. By applying this approach, eligible MSMEs with nonbankable status due to limited collateral become bankable ones.

## 9.5 Conclusions and policy recommendations

The development of MSMEs has become a great way to increase economic growth and employment. One of the reasons that banks are reluctant to lend to SMEs is information asymmetry. In order to solve this problem, the development of a nationwide SME credit risk database similar to the credit risk database of Japan that accumulates SME databases and acts as a credit scoring company for SMEs needs to be established in Indonesia. This could be a useful soft infrastructure for the development of SMEs in this country (Kuwahara et al. 2015). The sector in which an MSME operates also affects the decision to grant credit. In addition, the location of an MSME in rural or urban areas is a determining factor for financial institutions in granting credit.

In addition, banks have to follow more rules and regulations in granting credit than nonbank financial institutions do. The rules include collateral requirements, financial reports, and business licenses and other prudential provisions that should be obeyed by potential customers. On the other hand, most MSMEs, particularly micro and small enterprises, generally have not yet been informed about the system and the procedures for borrowing from banks. Consequently, in many cases, their loan applications are not complete in terms of document requirements and are returned by the bank. The procedures are then thought to be time consuming for the MSME. What is more, the banks have little information on the business or potential commodities to be funded and on other MSME data. The other problem is the relatively high operational cost of providing credit for micro and small enterprises compared to credit for large enterprises both in rural and urban areas.

The development and empowerment of MSMEs must not be singular or generic, but based on the conditions and characteristics of each region. The development of the CGS is another policy recommendation that can reduce the information asymmetry, as well as the risk of lending from banks to SMEs, as a portion of the risk is covered by the government. The government guarantee will act as collateral, and hence it will make the lending of banks to MSMEs

easier (Yoshino and Taghizadeh-Hesary 2018). However, the effectiveness of the CGS differs in rural and urban areas in Indonesia.

The objective of this research was to evaluate and compare the performance of the CGS in rural and urban areas of Indonesia. Our results show that this CGS does not function optimally for MSMEs that have no credit guarantee. MSMEs that do not have a credit guarantee do not have much opportunity to gain access to credit from formal microfinance institutions. In addition, MSMEs in rural areas have significantly fewer opportunities to access credit from formal institutions than MSMEs in urban areas.

Based on the data provided in this chapter, at the national level the access of MSMEs to credit in Indonesia is improving. However, the improvement needs to be consistent. Not only does the total amount of credit need to be increased, but inclusive finance for both urban and rural MSMEs is important. It should be admitted that not all banks have experience and competence with regard to MSME lending. Currently, several banks are still focusing on providing credit for large corporations. In terms of quantity, the Central Bank has issued regulations on credit provision by commercial banks and technical assistance to develop MSMEs. The regulations also point out to the banks that since 2015 they have had to provide at least 5% of the funding to MSMEs out of their total credit or financing. Furthermore, in 2018, the credit ratio or financing for the UMKM is determined at least to the amount of 20% of total credit or financing. Meanwhile, in terms of quality, the banks should have an in-depth understanding of the MSME business profile, so that their credit is right for the target and generates well-qualified and payable one.

## Note

- 1 There are four categories in the Indonesian banking sector (BUKU) based on the size of their core capital. For more information, see page 20 of: [www.ey.com/Publication/vwLUAssets/EY-the-indonesian-banking-industry-unfolding-the-opportunity/\\$FILE/EY-the-indonesian-banking-industry-unfolding-the-opportunity.pdf](http://www.ey.com/Publication/vwLUAssets/EY-the-indonesian-banking-industry-unfolding-the-opportunity/$FILE/EY-the-indonesian-banking-industry-unfolding-the-opportunity.pdf) (accessed 3 November 2018).

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