



Development strategy and the MSMEs finance gap

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Abstract: In this paper, we investigate the root cause for large MSMEs finance gap. We advance five propositions for the mechanism through which the distorted financial structure generated by a comparative-advantage-defying (CAD) strategy leads to large MSMEs finance gap. We then use panel data from 115 countries to test the propositions and find that, the adoption of a CAD strategy accelerates the development of SOEs in capital-intensive industries, leading to concentrated banking sector and oversized SOEs obtaining high proportions of loans and enjoying low interest rate on borrowings. Finally, we use cross-sectional data in 2017 to show that the adoption of a CAD strategy is associated with large MSMEs finance gap. The paper suggests that the root cause for large MSMEs' finance gap is the government's inappropriate development strategy.

Keywords: the MSMEs Finance Gap, Development Strategy, Financial Structure

JEL classification: G21, G28, O20

Citation:

Justin Yifu Lin, Zirong Yang, Yingting Li, Yilin Zhang, "Development strategy and the MSMEs finance gap", Working Paper Series of New Structural Economics, E2022001, (Journal of Government and Economics, Forthcoming 2022.)

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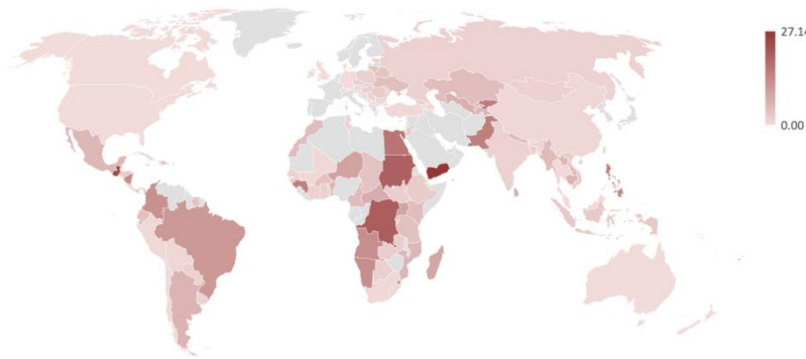
1. Introduction

The vitality of the micro, small and medium enterprises (MSMEs) is one of the key drivers for economic growth, and is crucial in achieving inclusive and sustainable development. According to the World Bank, MSMEs account for approximately 90% of businesses and more than 50% of employment worldwide. The influence of MSMEs to the economy is even greater in emerging economies, with 40% of GDP contributed by formal small and medium enterprises (SMEs). Furthermore, since MSMEs can work beyond dominant paradigms, and are more sensitive to technological or commercial opportunities, they are able to bring about radical innovations (OECD, 2017). UNDESA (2020) has demonstrated the relevance between the development of MSMEs and the achievement of UN Sustainable Development Goals (SDGs), emphasizing the role of MSMEs in job creation, supplementing formal education and reducing income and gender inequality. Thus, MSMEs play an important role in the economy to promote economic growth, create employment, push for innovation, and generate a healthy environment for inclusive and sustainable economic development.

Despite the merits brought by MSMEs, the financing difficulties of MSMEs have long been a worldwide phenomenon. For instance, 60% of China's GDP is produced by MSMEs but they have only received less than 30% of total formal financing. A common indicator for measuring the extent of financing difficulties is the level of finance gap faced by the MSMEs, which represents the shortfall of formal finance supply to meet the MSMEs' financing needs. The International Finance Corporation (2018) examines the credit constraints for MSMEs in 128 countries, and finds 40% of MSMEs in the sample are facing financing difficulties with a finance gap of \$5.2 trillion every year which is 1.4 times of the current size of MSMEs borrowing.

An illustration of the MSMEs finance gap is shown in Figure 1. By constructing an index of the MSMEs finance gap over the total supply of formal finance with the value of developed countries as benchmark, the value of the index is 4.38% on average. Moreover, the index exhibits large discrepancies between countries in different regions and with different level of economic development. With the value of developed countries as benchmark, Europe has the lowest value of 1.14% on average, followed by East Asia and Pacific with 3.74%. Countries in Latin America and Africa have the highest level of MSMEs finance gap with the index values at 5.02% and 6.23% respectively. The difference is even more pronounced when categorizing countries into income groups.

Fig.1 The Level of the MSMEs Finance Gap



Note: Australia, Canada, Denmark, Germany, Ireland, Israel, New Zealand, Switzerland, the United Kingdom, and the United States serve as benchmark by setting their levels of the MSMEs finance gap to zero. The grey areas indicate missing values.

Sources: IFC (2018).

While many existing literatures analyze the MSMEs finance gap through the characteristics of MSMEs and various economic structures, very few studies focus on the causes of and the mechanism behind the determinants that lead to the financing difficulties of MSMEs. This paper fills the void and proposes that the adoption of a CAD strategy is one of the major fundamental factors generating heterogeneity of the MSMEs finance gap. For a country adopting a development strategy inappropriate for its factor endowments and development phase, namely a comparative-advantage-defying (CAD) strategy, its economic and financial structure is associated with several traits. First, in the country with a CAD strategy, firms in the targeted industries are not viable in a competitive market, so the market is dominated by state-owned enterprises (SOEs) which are supported by the government. Then, the country has to establish a financial structure dominated by large banks to provide sufficient loans to SOEs on the one hand, and to subsidize SOEs by lowering interest rate on the other hand. This leads to sluggish growth of the banking sector and represses the development of small and local banks. Thus, the economic and financial structures associated with a CAD strategy would reduce the amount of financing available to the private sector and extrude MSMEs from the market.

The findings show that after controlled for the development stages, country-specific economic features, and various social conditions, the adoption of a CAD strategy is the root cause for the problem of the MSMEs finance gap. Our study draws the conclusion that, the solution for the addressing problem of large MSMEs finance gap lies in shifting away from a CAD strategy in the government's development thinking and policy orientation. Without the adjustment in development strategy, policies to promote banking sector deepening and eliminate credit rationing distortion are palliatives that only treat the symptoms but not the root cause.

The remaining sections are organized as follows. Section 2 provides literature review. Section 3 presents the theoretical background and propositions. Section 4 provides data description. Section 5 shows the empirical results and explains the mechanism for development strategies to affect the level of MSMEs finance gap. Section 6 presents the conclusion.

2. Literature Review

The financial constraint faced by MSMEs is one of the major reasons impeding the growth of MSMEs. Based on firm-level survey data of developing economies, Ayyagari et al. (2008) show that, out of all factors influencing growth of firms, access to finance is most robust. Beck et al. (2019) also use survey data from Uganda and find that higher small businesses' access to

external funding generates larger sales and profits as well as more skilled employment. On the one hand, financial constraint prevents MSMEs from investing in physical capital (Kaplan and Zingales, 1997). On the other hand, financial constraint affects the employment decisions of MSMEs as much as it does for capital investment (Benmelech et al., 2011). Bloom et al. (2010) suggests that small firms tend to face finance obstacles, which then limit the ability of existing MSMEs to hire professionals and competent managers, and restrain talented individuals from starting new businesses.

Many existing literatures examine the determinants of the MSMEs finance gap including the characteristics embedded in MSMEs, asymmetric information of market and the structure of banking sector, which lead to intertwined impacts on the MSMEs finance gap. Financial institutions are reluctant to lend to small businesses given the innate features of MSMEs and market failure. Moreover, a concentrated banking sector lack in depth would even worsen the borrowing environment for MSMEs, as small and local banks, who could build trust with MSMEs, have little share in the market.

First, the characteristics of small firms render loans to MSMEs as risky lending, which increases financing difficulties for MSMEs. The MSMEs face relatively higher credit constraints as they take on small loans and offer inferior collaterals that impose high transaction and monitoring costs upon banks (Beck and Demirguc-Kunt, 2006; Arraiz et al., 2014). Benavente et al. (2007) also suggest that the MSMEs often produce innovative assets that tend to have intangible nature and are unsuitable as collateral.

Second, market failure generates large MSMEs finance gap. The asymmetric information in the market increases the risk of moral hazard, which reduces the motivation of bank lending to the MSMEs and raises the MSMEs finance gap (Pagano and Jappelli, 1993). Love and Mylenko (2003) find that credit registry could alleviate the financing difficulties of MSMEs, especially the presence of private credit registries could significantly improve the borrowing conditions of MSMEs.

Third, a concentrated banking sector is dominated by large banks and tends to cause distortions of credit rationing, which leads to the persistence of large MSMEs finance gap. In general, there is a positive correlation between the size of banks and the size of enterprises, to which the banks provide loans (Berger and Udell, 1998; Jayaratne and Wplken, 1999). Berger and Black (2011) suggest that, large banks possess better lending technologies and loan supervision, so they use “hard information”, such as the personal credit scores of owners, to evaluate the borrowers, which lift the threshold for financing and are unfavorable to MSMEs; small-sized financial institutions, which have advantages in processing soft information, are more accessible to the MSMEs. More specifically, small regional banks have relatively simple information transmission channels and are able to collect, discern and convey soft information, thus could overcome information asymmetry and lower default risk when lending to the MSMEs.

Since the existence of small and local banks could ameliorate the financing condition of MSMEs, several studies propose that an improvement of the banking sector deepness is the cure for large MSMEs finance gap (IADB, 2005; Kersten et al., 2017). However, closer ties with MSMEs does not always lead to more lending. Clarke et al. (2005) have point out that, in many Latin American countries, large foreign banks provide more loans to MSMEs than domestic banks. Thus, there may exist a more complex mechanism affecting the level of MSMEs finance gap.

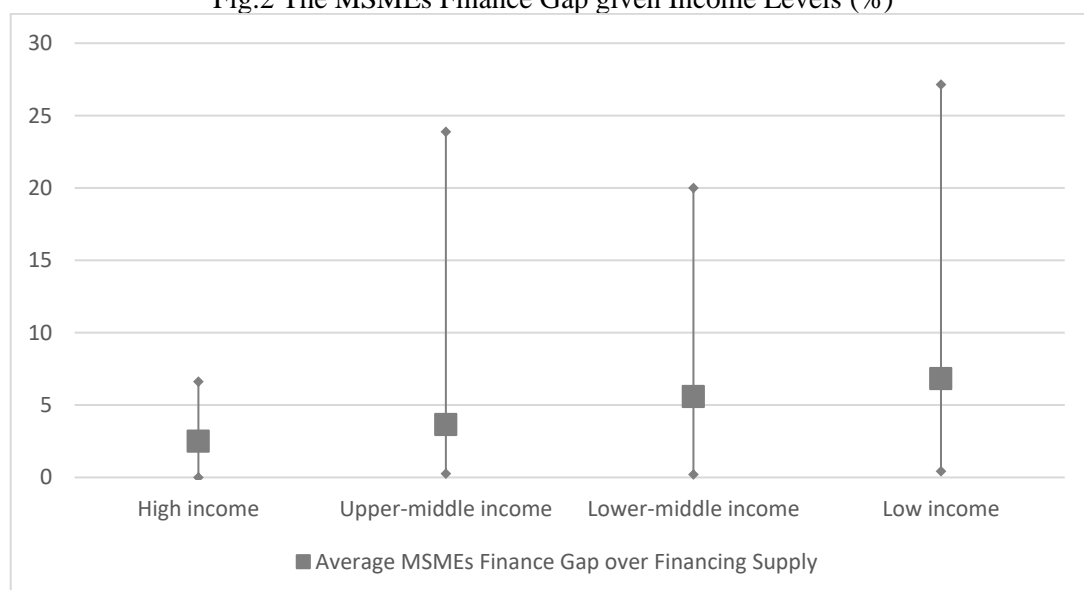
In comparison with the existing literatures, we argue that a large-bank dominated banking structure is only the proximate cause for the existence of large MSMEs finance gap. The root cause for the difficulties of MSMEs is the CAD strategy, which resulted in the distorted large-bank dominated banking structure. Inspired by Lin et al. (2013), which demonstrate the impact of a CAD strategy on the financial structure, this paper proposes that the type of development

strategies adopted in the country is a potential factor affecting the levels of the MSMEs finance. Following the categorization of Lin (2009), we classify the policy framework adopted by the government into two sets of strategies, namely a comparative-advantage-following (CAF) strategy and a comparative-advantage-defying (CAD) strategy. The adoption of a CAD strategy leads to a misalignment between demand required for growth of targeted comparative-advantage-defying capital-intensive industries and supply of essential inputs. The firms in the targeted industries are not viable in an open, competitive market. Profit-oriented private firms do not have incentives to invest in the targeted sector. As such, the government uses state-owned enterprises (SOEs) as vehicles to carry out the CAD strategy. To support the investment and operation of SOEs, the government often adopts a financial repression, carried out with a small number of large banks, to lower the interest rates as an implicit subsidy to the nonviable firms (Lin and Tang 1999, Lin 2009). Thus, MSMEs' finance gap in a country adopting a CAD strategy arises as a result of the financial structure dominated lopsidedly by a few large banks.

3. Theoretical background and propositions

Although the MSMEs finance gap exists in most countries, developing countries experience greater gap than developed countries. By dividing a sample of 115 countries into four categories according to their income level, the levels of the MSMEs finance gap as percentage of total formal financing supply are, on average, 2.50%, 3.65%, 5.58% and 6.82% for high income, upper-middle income, lower-middle income and low income countries respectively (Fig.2). This negative correlation is consistent with the findings of Ayyagari et al. (2007), who suggest that the share of MSMEs is higher in the countries with lower income, indicating that the developing countries have larger MSMEs finance gaps. Furthermore, the level of MSMEs finance gap demonstrates heterogeneity among the countries with similar economic development. For the four groups of countries with income level ranked from high to low, the lowest value for MSMEs finance gap in each group are 0%, 0.26%, 0.20% and 0.43%, and the highest values in each group are 6.62%, 23.88%, 20.0% and 27.14%. The MSMEs finance gap for several upper-middle income countries are even higher than the one for lower-middle income countries, indicating the presence of other factors affecting the level of MSMEs finance gap.

Fig.2 The MSMEs Finance Gap given Income Levels (%)



Note: Our sample presents the level of MSMEs finance gap in 2017 and contains 16 high income countries, 38 upper-middle income countries, 38 lower-middle income countries and 23 low income countries.

Sources: IFC (2018).

The major fundamental reason for this negative and heterogeneous correlation between development stages and the level of MSMEs finance gap lies in the types of development strategies adopted by the country. After the second world war, the world has reached the consensus that industrialization is the key for economic growth. Many developing countries have adopted a CAD development strategy to push forward the progress of industrialization and to prevent being caught in the middle-income trap and getting stuck with the production of low-skilled products. However, most developing countries have an endowment structure characterized by abundant unskilled workers and scarce capital. The capital-intensive industries are not their comparative advantages (Heckscher and Ohlin 1991; Ju, Lin, and Wang 2015). The firms in the CAD industries are not viable in an open, competitive market (Lin and Tang 1999). Profit-oriented private firms do not have incentives to invest in the targeted industries. As such, the government uses state-owned enterprises (SOEs) as vehicles to carry out the CAD strategy. In order to subsidize the SOEs, the country needs to provide them with sufficient loans and low interest rate on the borrowings. This requires a highly concentrated banking sector, in the sense that with a few large banks in the market, the government could integrate and utilize finance resources more easily and aid the development of SOEs in the targeted industries.

To investigate the impact of development strategies on the financing difficulties of the MSMEs, we provide five propositions to explain the causal relationship between the choice development strategies and the MSMEs finance gap in details.

Proposition 1. *The adoption of a CAD strategy accelerates the development of SOEs in capital-intensive industries leading to oversized SOEs incompatible with the country's current development phase.*

For a country adopting a CAD strategy, it aims to develop industries that are incompatible with the comparative advantage determined by its endowment structure, and firms in the industries are not viable in competitive market. To support the development of such industries, the government has to establish SOEs and distort the market with series of intervention in order to redirect capital to the comparative-advantage defying industries. In order to examine the type of development strategy, we follow the approaches of Lin (2009) and Lin and Wang (2019) to construct the Technology Choice Index (*TCl*) for an industry, which measures the deviation of a country from its optimal strategy. The testable implication of proposition 1 is presented as follows:

$$SOE_{i,t} = \alpha_0 + \alpha_1 TCl_{i,t} + \alpha Control_{i,t} + u_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

Where $SOE_{i,t}$ represents the importance of SOEs in country i at time t , $TCl_{i,t}$ is the index for development strategy, $Control_{i,t}$ is a set of control variables. We also capture the country-specific effects and time-specific effects with u_i and λ_t respectively, with $\varepsilon_{i,t}$ represents the error term. The adoption of a CAD strategy leads to more SOEs with larger size in the economy.

Proposition 2. *In a country adopting a CAD strategy, its banking sector is dominated by large banks.*

From the demand side perspective, the demand for financial services depends on the industrial structure in a country, which then determines its financial structure (Lin et al., 2013). For a country with a CAD strategy, its industrial structure is tilted towards the domination of

SOEs leading to massive financing demand which could only be provided large banks. The testable implication of proposition 2 is presented as follows:

$$bank_{i,t} = \beta_0 + \beta_1 TCI_{i,t} + \beta Control_{i,t} + u_i + \lambda_t + \varepsilon_{i,t} \quad (2)$$

Where $bank_{i,t}$ represents the weight of large banks in country i at time t . This equation aims to examine the impact of the types of development strategy on the structure of banking sector after controlling for the set of control variables and the country- and time-specific factors. The adoption of a CAD strategy leads to higher proportion of large banks in banking sector.

Proposition 3. *Loans from large banks mainly flow to SOEs.*

Large banks and SOEs have mutual attraction. On the one hand, large banks are more organizationally complex, so they rely on standard information and are dissuaded from collecting soft information, such as the ability and character of firm owners and managers, and local market conditions etc. (Stein, 2002). On the other hand, the size of enterprises matters for its financing choice as there are economies of scale in financial transactions based on hard information (Chen and Ritter, 2000). The transaction costs, such as expenses spent on financial audits, information disclosure, security marketing and selling, contract negotiation and implementation etc., are almost fixed for every enterprise and large firms have lower average transaction cost per unit of capital raised, which propels large firms to borrow from large banks that require hard information. The testable implication of proposition 3 is presented as follows:

$$PLOAN_{i,t} = \gamma_0 + \gamma_1 bank_{i,t} + \gamma Control_{i,t} + u_i + \lambda_t + \varepsilon_{i,t} \quad (3)$$

Where $PLOAN_{i,t}$ represents the proportion of loans received by MSMEs in country i at time t . This equation aims to examine the correlation between the structure of banking sector and the level of financing received by MSMEs, after controlling for the set of control variables and the country- and time-specific factors. The higher the proportion of large banks in banking sector, the less loans are available for MSMEs in the economy.

Proposition 4. *The adoption of a CAD strategy enables the government to manipulate the policy rate and subsidize SOEs with lower interest rate on their borrowings.*

The country with a CAD strategy is likely to suppress real interest rates on bank lending as an implicit subsidy to the SOEs because the nonviable SOEs require subsidies for investment and operation. This further reduces the incentives of large banks to lend to MSMEs as banks are unable to obtain higher returns by lending to MSMEs while have to bear greater risks. The testable implication of proposition 4 is represented as follows:

$$IR_{i,t} = \delta_0 + \delta_1 TCI_{i,t} + \delta Control_{i,t} + u_i + \lambda_t + \varepsilon_{i,t} \quad (4)$$

Where $IR_{i,t}$ represents the interest rate in the market in country i at time t . This equation aims to examine the impact of the types of development strategy on the level of interest rate. The adoption of a CAD strategy is associated with a lower level of interest rate.

Proposition 1 to 4 demonstrate the mechanism through which the adoption of a CAD strategy affects the financing conditions of MSMEs. This explains the differences of the level of MSMEs finance gap between countries with similar development stages. Although most developing countries have a concentrated banking sector, the causes of a large-bank dominated banking structure are manifold. The distorted banking sector generated by a CAD strategy is the root cause for large MSMEs finance gap. Thus, countries with a CAD strategy tend to have larger MSMEs finance gap than the ones with a CAF strategy. This leads to proposition 5, which is our main point.

Proposition 5. *The adoption of a CAD strategy leads to insufficient financing of MSMEs, which then creates large MSMEs finance gap.*

The reason for large MSMEs finance gap lies in the government's decision of adopting a CAD strategy to support the development of SOEs. The adoption of a CAD strategy distorts the financial structure, facilitates the growth of large banks, and provides finance to SOEs with inaptly low interest rate. The testable implication of proposition 5 is represented as follows:

$$FGAP = \theta_0 + \theta_1 TCI + \theta_2 Control + \varepsilon \quad (5)$$

Where $FGAP$ represents the level of MSMEs finance gap and ε represents the error term. This equation aims to examine the impact of the types of development strategy on the level of finance gap faced by MSMEs. Based on the mechanism shown by propositions 1 to 4, in comparison with the adoption of a CAF strategy, the adoption of a CAD strategy will enlarge the MSMEs finance gap.

4. Data and descriptive statistics

4.1 Key independent and dependent variables

In this paper, we investigate the five propositions presented in section 3, with the first four propositions outlining the mechanism behind Proposition 5 that the types of development strategies could determine the level of MSMEs finance gap. To test our propositions, we construct appropriate indicators to measure the level of MSMEs finance gap and the corresponding variables in the mechanism.

In general, the level of MSMEs finance gap is usually measured by potential demand of formal financing instead of actual demand, as actual demand is constrained by total supply of loans under the market-clearing condition. Based on the assumption of Rajan and Zingales (1998) that an industry's dependence on external financing in the US could serve as benchmark for the degree of dependency in other countries, the IFC (2018) uses ten developed countries as benchmarks to estimate potential financing demand of the MSMEs.¹ The benchmark countries represent the counterfactual scenarios, where the MSMEs are borrowing under an improved financing environment with little imperfections. The potential financing demand of a country is measured by the amount of formal finance acquired by the MSMEs in a mature financial market with high credit availability. The IFC (2018) constructs the MSMEs finance gap as the difference between a country's potential demand and its existing supply, and divides the MSMEs finance gap by the country's GDP level to create an indicator for the level of MSMEs finance gap.

Furthermore, we modify the approaches of the IFC (2018) to construct an indicator for the MSMEs finance gap ($FGAP$). More specifically, we adopt the MSMEs finance gap as the numerator, but have changed the denominator from a country's GDP level to the amount of financing supplied. Since a country's economic growth does not necessarily leads to easier borrowing conditions for the MSMEs, by replacing GDP level with the total financing supply, we could better identify the level of MSMEs finance gap.

Our main regressor is the type of development strategy adopted by the country. Following the approaches of Lin and Wang (2019), we construct the Technology Choice Index (TCI) to measure the adoption of a CAD strategy, which is the ratio of the unit value created by each worker in the industry to GDP per capita. More specifically, the TCI indicator is presented as follows:

$$TCI_i = \frac{AVI_i/LI_i}{GDP_i/L_i} \quad (6)$$

Where GDP_i represents the level of GDP, L_i represents the total labor force, LI_i represents the labor force of the industrial sector, and AVI_i represents the value created by the industrial sector. Given the country's factor endowments, there exists a constant optimal level of TCI , namely

¹ The benchmark countries are Australia, Canada, Denmark, Germany, Ireland, Israel, New Zealand, Switzerland, the United Kingdom, and the United States.

*TCI**. The higher the value of *TCI*, the larger the deviation from its optimal level and the greater the extent a country adopts a CAD strategy.

To investigate the mechanism behind the impact of the adoption of a CAD strategy on the financing difficulties of the MSMEs, we construct indicators measuring the importance of SOEs (*SOE*), the extent of bank concentration (*bank*), the percentage of formal financing given to the SOEs (*SLOAN*) and the interest rate level (*IR*) in an economy in accordance with Proposition 1 to 4. First, we compute *SOE* as the share of SOEs in total fixed capital investment, which is proportional to the influence of SOEs in an economy and could be adopted as a reasonable proxy. Second, we measure the structure of banking sector using the indicator *bank*, which is constructed as the share of top 3 banks' assets in the economy. Third, we construct an indicator *SLOAN*, which shows the percentage of debt given to the public sector and SOEs, as a proxy for financing to SOEs. Finally, we use indicator *IR* to present the lending interest rate adjusted for inflation as measured by the GDP deflator.

4.2 Control variables

We provide a set of control variables spanning from economic development to social traditions. To control for economic development, we introduce variables for the real GDP per capita in log form (*GDP*) and the GDP growth rate (*growth*). The economic growth is also associated with the labor force, which could be measured by the log population (*POP*) and the population density (*density*). Other control variables related to a country's economic development include the share of fixed asset investment in GDP (*asset*), the share of government expenditure in GDP (*GOV*) and the share of merchandise and service exports in GDP (*openness*), which indicate the size of the economy, the practice of fiscal policy, and the extent of trade openness. To control for social traditions, we use dummy variables to represent the origin of legal system (*legal*) and the cultural background (*religion*). The dummy variable *legal* is constructed following the approach of LLSV (1998) and Allen et al. (2018) to capture the origin of a country's company and commercial law as French, German, Scandinavian, British, or Socialist. The construction of the dummy variable for cultural background, follows the method of Beck et al. (2003) and Djankov et al. (2007) and uses the religious belief adhered by the majority as a proxy to differentiate between the countries believing in Catholic, Muslim, Protestant and other religions.

4.3 Robustness test and endogeneity test

For robustness we adopt the proportion of formal finance (*PLOAN*) received by small firms as an alternative explained variable.² This ratio is calculated as the number of small firms taking credits or loans from formal financial institutions over the number of small firms in the economy. Since the indicator *FGAP* is computed using a subjective measure, namely the potential demand, we test the robustness of our results with an objective measure *PLOAN*, which does not involve any estimation in the computational process.

To test for endogeneity, we take reverse causality between the adoption of a CAD strategy and the MSMEs finance gap into consideration, as structural characteristics, such as large public sector and concentrated banking sector, might tempt the government to adopt a CAD strategy. To address this endogeneity problem, we use a country's colonial background (*colony*), the endowment of natural resources (*resources*) and the effectiveness of its law (*law*) as instruments for the choice of development strategies. These instrumental variables are highly correlated with *TCI* as they represent the ability and willingness for a country to adopt a CAD strategy, which satisfy the relevance condition. And yet they have no direct connection with

² Small firms are the firms with 5 to 19 employees. The data for the percentage of small firms in the economy comes from the Enterprise Surveys of the World Bank.

the size of public sector nor with banking sector concentration, which satisfy the exogeneity condition.

First, we follow the approach of Merryman (1996) to construct the indicator measuring a country's colonial background. This variable is constructed as the percentage of years since 1776 which the country has been independent. In general, the longer the time a country stayed under colonial rule, the less the economic development it has. Moreover, having the memory of the suppression from colonial rule, countries that were once colonies have higher motivations to push for industrialization by adopting a CAD strategy.

Second, we use a country's endowment of natural resources as an instrumental variable. The corresponding indicator is computed as the weight of commodities in total merchandise exports. The selected commodities include fuel, minerals, metals and agricultural raw materials. In order to implement a CAD strategy, the government supports the development of the targeted industries through subsidization and price distortion. Thus, the countries rich in natural resources are more likely to adopt a CAD strategy at the expense of effective resource allocation.

Third, we use the Worldwide Governance Indicators (WGI) reported by the World Bank to assess the enforcement of law in the country. This indicator represents the quality of contract enforcement, property rights, and the police and judiciary power at an aggregate level. The scale of this instrumental variable ranges from -2.5 to 2.5, with lower scores for countries with weak enforcement of law. To implement a CAD strategy, the government has to take over the process of resource allocation and distort the economic activities, which begets corruption and social problems. Thus, the countries with weak law enforcement are more accessible to a CAD strategy.

Besides high correlation with the explanatory variable *TCI*, these instrumental variables also exhibit exogeneity and fulfill the exclusion restriction. On the one hand, the colonial background of a country depends on historical circumstances and the endowment of natural resources depends on geographical conditions, both of which are exogenous to the level of the MSMEs finance gap. On the other hand, both instruments affect the level of the MSMEs finance gap indirectly through the choice of the development strategy, which satisfy the exclusion restriction.

4.4 Data description

Several studies have already built database for the MSMEs finance gap. The study of the EIF (2014) provides publicly available data and surveys to measure the finance gap of the small and mid-sized enterprises. The OECD (2016) develops a list of indicators, such as SME rejection rate and the SME loans used over the SME loans authorized, to measure the extent to which the financing needs of the MSMEs are met.³ The IFC (2018) uses a novel measure of finance gap in terms of the difference between the financing demand and supply of the MSMEs over the level of GDP. We employ the data provided by the IFC (2018) to examine the level of the MSMEs finance gap, which is a cross-sectional data of 115 countries in 2017.

The data for other variables are imbalanced panel data from 2012 to 2017. The data for variable *bank* and *PLOAN* in robustness check come from the Global Financial Development Database, the variables *legal*, *religion* and *colony* are constructed according to existing literatures, and the data for other variables are retrieved from the World Development Index from World Bank. Since the data of the MSMEs finance gap is cross-sectional, we compute the average value for the explanatory variables over the period of time to examine the impact on the finance gap.

³ The "SME rejection rate" measures the proportions of the SME loans that have been turned down. The "SME loans used over the SME loans authorized" measures the willingness of banks to provide loans.

Table 1
Descriptive Statistics

	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent	<i>FGAP</i>	104	4.86	5.22	0.26	27.14
	<i>SOE</i>	2013	0.30	0.27	0	8.19
	<i>bank</i>	2979	0.69	0.20	0.17	1
	<i>SLOAN</i>	3828	0.22	0.17	0.00	0.98
	<i>IR</i>	2809	0.07	0.14	-0.92	2.52
Independent	<i>TCI</i>	4401	1.65	1.12	0.58	6.60
Control	<i>GDP</i>	4371	8.38	1.49	5.10	11.63
	<i>growth</i>	4388	0.04	0.05	-0.64	0.89
	<i>POP</i>	4401	15.90	1.78	11.47	21.05
	<i>density</i>	4362	192.64	762.53	1.43	17645.17
	<i>asset</i>	4013	22.52	7.37	0.29	69.67
	<i>GOV</i>	4051	16.04	7.81	0.91	147.73
	<i>openness</i>	4192	39.29	27.23	0.01	228.99
Robustness	<i>PLOAN</i>	89	0.26	0.16	0.02	0.70
Instrument	<i>colony</i>	105	0.38	0.38	0	1
	<i>resources</i>	156	30.77	28.06	0.06	99.78
	<i>law</i>	107	0.10	1.04	-1.94	2.01

5. Empirical results

5.1 Results for testable implications of Propositions 1 to 5

Propositions 1 to 4 outline the mechanism through which the adoption of a CAD strategy affects the level of MSMEs finance gap. The testable implications of propositions 1 to 4 could be examined through panel regression after controlling for country and time specific fixed effects. Table 2 presents the results with Panel A to D showing the estimates for the four propositions respectively. Panel A reports the impact of the adoption of a CAD strategy on the number of SOEs in the economy, which are the estimates for the testable implication of Proposition 1. The coefficient for *TCI* is significant and positive with and without various set of control variables, indicating that a unit deviation of a country's development strategy towards a CAD strategy leads to approximately 0.05 units increase in the number of SOEs. Panel B reports the impact of the adoption of a CAD strategy on bank concentration, which are the estimates for the testable implication of Proposition 2. The estimates are consistent under different set of control variables and a unit deviation of a country's development strategy towards a CAD strategy leads to 0.02 units increase in the share of top 3 banks in the economy. Panel C reports the relationship between the extent of bank concentration and the amount of loans to SOEs. Higher bank concentration, i.e. larger share of the top 3 banks in the banking sector, would significantly increase the amount of loans lent to SOEs. Panel D shows the impact of the adoption of a CAD strategy on the level of interest rate and the results indicate that a unit deviation towards a CAD strategy leads to 0.02 units decline in interest rate level. Thus, the adoption of a CAD strategy is correlated with more SOEs in the market, higher share of large banks, more loans lent to SOEs and lower real interest rate. This provides evidence for the existence of a transmission mechanism through which a country's choice of development strategy affects the financing conditions of the MSMEs.

Table 2

Estimates for testable implications of Propositions 1 to 4

Panel A. Impact of development strategy on the importance of SOEs

SOE

	(1)	(2)	(3)	(4)
<i>TCI</i>	0.06*** (0.01)	0.06*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Cons.	-0.01 (0.11)	-0.04 (0.33)	4.02** (1.16)	2.67 (1.57)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.333	0.338	0.247	0.260
Obs.	2013	1983	1647	1624

Panel B. Impact of development strategy on bank concentration

	<i>bank</i>			
	(1)	(2)	(3)	(4)
<i>TCI</i>	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.02*** (0.01)
Cons.	0.72*** (0.03)	1.65*** (0.11)	0.91* (0.51)	3.32*** (0.65)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.716	0.727	0.672	0.686
Obs.	2979	2804	2496	2386

Panel C. Relationship between bank concentration and loans to SOEs

	<i>SLOAN</i>			
	(1)	(2)	(3)	(4)
<i>bank</i>	0.12*** (0.02)	0.08*** (0.02)	0.13*** (0.02)	0.1*** (0.02)
Cons.	0.33*** (0.03)	1.59*** (0.11)	-2.9*** (0.38)	-2.96*** (0.49)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.724	0.749	0.736	0.753
Obs.	2947	2723	2494	2369

Panel D. Impact of development strategy on real interest rate

	<i>IR</i>			
	(1)	(2)	(3)	(4)
<i>TCI</i>	-0.02*** (0.01)	-0.02*** (0.01)	-0.02*** (0.01)	-0.02*** (0.01)
Cons.	0.09** (0.04)	0.13 (0.11)	0.17 (0.65)	0.77 (0.79)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.309	0.329	0.330	0.351
Obs.	2809	2481	2106	1961

Notes: ***, **, and * represent significance at 1%, 5%, and 10% level respectively. Robust standard errors are reported in parentheses. Controls 1 includes *growth*, *asset*, *GOV* and *openness*. Controls 2 includes *POP*, *density*, *legal* and *religion*.

Table 3 presents the results for Proposition 5. The estimates indicate that a unit deviation towards a CAD strategy leads to approximately 1.16 units increase in the level of the MSMEs finance gap. Although the impact of *TCI* on *FGAP* has reduced after controlling for economic development, the coefficient for *TCI* still remains positive and significant at 10% level. Thus,

together with the results in Table 2, we find empirical evidence suggesting that the adoption of a CAD strategy is the major fundamental cause of large MSMEs finance gap.

Table 3
Impact of development strategy on the level of MSMEs finance gap

	<i>FGAP</i>			
	(1)	(2)	(3)	(4)
<i>TCI</i>	1.86*** (0.50)	1.45*** (0.54)	1.78*** (0.65)	1.16* (0.66)
Cons.	1.85* (0.94)	9.5* (5.11)	-7.18 (10.33)	15.38 (12.59)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.112	0.163	0.091	0.137
Obs.	104	97	83	82

Notes: ***, **, and * represent significance at 1%, 5%, and 10% level respectively. Robust standard errors are reported in parentheses. Controls 1 includes *growth*, *asset*, *GOV* and *openness*. Controls 2 includes *POP*, *density*, *legal* and *religion*.

5.2 Robustness check

We investigate the robustness of the results for Proposition 5 by replacing the explained variable *FGAP* with *PLOAN*, which is the proportion of formal finance received by small firms. The data for *PLOAN* is obtained from the World Bank's Enterprise Surveys, which provides discontinuous panel data from 2012 to 2017 for 124 countries. Since the data for *PLOAN* contains missing time periods and has little variation over time, we compute *PLOAN* as cross-sectional data using its average value from 2012 to 2017.

Table 4 presents the results using the alternative explained variable *PLOAN*. Overall, the results are consistent with our propositions, in the sense that the adoption of a CAD strategy would reduce the amount of loans lent to the MSMEs. More specifically, a unit deviation towards to a CAD strategy leads to 0.06 units reduction in the proportion of loans lent to small businesses. Since a declining share of loans to the MSMEs implies a large MSMEs finance gap, our main results are robust and consistent.

Table 4
Robustness check: Impact of development strategy on the proportion of loans received by MSMEs

	<i>PLOAN</i>			
	(1)	(2)	(3)	(4)
<i>TCI</i>	-0.07*** (0.02)	-0.04** (0.02)	-0.05** (0.02)	-0.06** (0.02)
Cons.	0.38*** (0.03)	-0.19 (0.19)	0.95*** (0.27)	0.6 (0.40)
Controls 1	NO	YES	NO	YES
Controls 2	NO	NO	YES	YES
Adj. R-squared	0.142	0.243	0.371	0.388
Obs.	75	73	66	65

Notes: ***, **, and * represent significance at 1%, 5%, and 10% level respectively. Robust standard errors are reported in parentheses. Controls 1 includes *growth*, *asset*, *GOV* and *openness*. Controls 2 includes *POP*, *density*, *legal* and *religion*.

5.3 Endogeneity problem

The choice of development strategy is likely to be endogenous to the financing conditions of the MSMEs. The government face less barriers to adopt a CAD strategy if the MSMEs

barely have any bargaining power. To tackle this endogeneity problem, we choose several instruments and follow the approach of Acemoglu and Johnson (2005) to use the methodology of two-stage least squares (2SLS). As reported in section 3, we use *colony*, *resources* and *law* as our instrumental variables. Table 5 presents the results.

In column (1) and (2), we report the first stage of the 2SLS, which shows the impact of the instruments on the choice of development strategy. Overall, the results are consistent with our main argument. The coefficient for *colony* is significantly negative, suggesting that the time a country stayed under the colonial rule is negatively correlated the extent of the country to follow a strategy in accordance with its comparative advantage. The coefficient for *resources* is significantly positive, indicating that the countries with abundant natural resources have greater capacity to adopt a CAD strategy. More specifically, a country rich in natural resources leads to a deviation towards a CAD strategy by 2% as opposed to the country short of natural resources at the 1% significance level. The coefficient for *law* is significant and negative, implying that the government in a country with incomplete legal system faces less barriers when implementing a CAD strategy.

In column (3) and (4), we present the second stage of the 2SLS. We regress the level of the MSMEs finance gap on the fitted value of the choice of development strategy. The coefficient for *TCI* is significantly positive, indicating that the adoption of a CAD strategy is associated with larger MSMEs finance gap, which is consistent with the results for our propositions. Furthermore, our model has passed the weak identification test and the over identification test. This suggests that the instruments are exogenous and relevant, and the model is identified. Therefore, the results from the 2SLS model shows that, there is a causal relationship between the choice of development strategy and the level of the MSMEs finance gap. The adoption of a CAD strategy exacerbates the problem of the MSMEs finance gap.

Table 5
2SLS: endogeneity problem

	<i>TCI</i>		<i>FGAP</i>	
	(1)	(2)	(3)	(4)
<i>colony</i>	-0.5** (0.25)	-0.61** (0.28)		
<i>resources</i>	0.02*** (0.01)	0.02*** (0.01)		
<i>law</i>	-0.55*** (0.16)	-0.55** (0.20)		
IVs for <i>TCI</i> (<i>colony</i> , <i>resources</i> , <i>law</i>)			1.93*** (0.62)	1.57** (0.74)
Controls	NO	YES	NO	YES
Cons.	1.15*** (0.19)	0.72 (0.62)	2.07 (1.32)	10.45** (4.15)
R-squared	0.383	0.399	0.067	0.214
Obs.	63	58	63	58
Weak identification test (First-stage regression F statistic)			6.06	6.31
Overidentification test of all instruments (p value)			0.11	0.19

Notes: ***, **, and * represent significance at 1%, 5%, and 10% level respectively. Robust standard errors are reported in parentheses. Control variables include *growth*, *asset*, *gov* and *openness*. In column (3) and (4), we use the set of IVs to represent the choice of development strategy *TCI*.

6. Conclusion

In this paper, we provide a new perspective for tackling the financing difficulties of the MSMEs. The stylized facts suggest that the levels of MSMEs finance gap not only differ across countries with various economic growth, but also across countries within the same development stage. We investigate the impact of the choice of development strategy on the MSMEs finance gap with five propositions, and find that the adoption of a CAD strategy is the root cause generating large MSMEs finance gap.

We contribute to the existing literatures on the root cause affecting the level of MSMEs finance gap. Conventional theories suggest that banking sector deepness and distortion of credit rationing are the major causes influencing the level of the MSMEs finance gap, which implies development of the banking sector is the cure for large MSMEs finance gap. Our findings show that a large-bank dominated banking structure is only the proximate cause for the existence of large MSMEs finance gap. The root cause for the difficulties of MSMEs is the CAD strategy, which resulted in the distorted large-bank dominated banking structure. The adoption of a CAD strategy accelerates the development of SOEs and increases bank concentration. Moreover, the adoption of a CAD strategy is associated with lower interest rate level to subsidize the SOEs alongside with greater amount of loans. Thus, the countries employing a CAD strategy exacerbates the financing difficulties of the MSMEs. Furthermore, to tackle the issue of reverse causality, we introduce the country's colonial background, the endowment of natural resources and the effectiveness of its law as instruments for the choice of development strategy, and use the methodology of 2SLS to obtain the fitted value. The result also shows that the adoption of a CAD strategy would enlarge the MSMEs finance gap, which is consistent with the benchmark model.

The main policy implications of this study are that a country should adopt a development strategy following its comparative advantage in order to reduce the MSMEs finance gap. The existing literatures take financial repression as exogenous factor, which have overlooked the root cause behind such repression. We find that financial repression is an endogenous factor generated by the adoption of a CAD strategy. Without the adjustment of development strategy, a country's reckless approaches on counteracting financial repression would not only fail to improve the financing conditions of MSMEs, but also trigger banking crisis. Under the adoption of a CAD strategy, government plays a major role in resource allocation and promotes the development of targeted industries through credit allocation. This indicates that financial repression is endogenous to the need of providing implicit subsidies to the nonviable firms in the targeted industries of the government's CAD strategy. If the government eliminates financial repression for the purpose of increasing credits to MSMEs, the nonviable firms in the targeted industries are prone to bankruptcy, causing financial crisis and economic recession. Thus, we propose that the adoption of a development strategy befitted the country's comparative-advantage and development phase is the key to reduce the MSME's finance gap. Firms in the comparative-advantage-following industries will be viable in open, competitive market with the need of government's protection and subsidies. With an appropriate development strategy, the government could then deepen the financial structure to align the financial needs of MSMEs.

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