Government Support for SMEs: Lessons from Japan's Experience

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Abstract

The purpose of this research is to examine the current state of policy support for SMEs in Mongolia, and to identify some implications for policy actions and recommendations for Mongolian government based on the Government of Japan's SME supporting measures from the historical perspective. Besides the fact that difference on functions of SMEs implemented in both countries, Japan has faced a lot of economic conditions which means Mongolia could learn lessons from Japan's past experience and enhance the contribution of the sector and industry. The research was done by both qualitative and quantitative approach, descriptive and spatial econometric method was adopted in this study.

In Japan, priority industries were supported heavily after the II World War, when Japan was trying to escape from war driven economic devastation. After a successful economic reconstruction process, priority industries have matured and able to operate on their own, the Government of Japan shifted its attention to SME supporting policies more aggressively. The framework for supporting the SME sector have already built during the reconstruction period with the huge domestic financing capacity. In addition, not only supporting financially Government of Japan have also implemented other measures for SMEs through management, fiscal, commerce, and regional supporting framework. Government of Japan had formulated SME supporting policy according to the national development policy, and its characteristics have been changed according to the development state of the economy. One of the reasons these policies have successfully achieved is the Fiscal Investment and Loan Program. Through this system Government of Japan supported weak sectors and regions, therefore successfully avoided from bottlenecks and achieved balanced development nationwide.

The solution to many of the problems of Mongolia could be lies in the establishment and promotion of the SMEs, especially by creating policy framework to build a balanced development structure in accordance with the "Regional development strategy" and improve their educational, financial capacity. Nurturing and growing this important segment could help Mongolia diversify its economy away from dependency on mining-based exports. Like many other countries, access to finance for SMEs remains a major issue. SMEs face a wide range of difficulties when accessing finance, including high interest rates, collateral requirements, size and maturity of loans, and complex

application procedures. In addition to the commercial bank loan, Government of Mongolia and other international organizations are implementing a loan program to support SMEs from large cities and rural areas under several projects. However, the share of the project loan amount to the total outstanding loans were 3.5% in 2018. Considering the commercial bank penetration rate in the local area is very low, we can assume that access to subsidized loans for local SMEs is quite limited. From the data used in this research paper, there were 122 soums (total 339 soums) where SMEs have bank loan data total 397.8 trillion MNT, of which bank loan of SMEs operating in Ulaanbaatar city accounts for 89.4% of the total. This means there is a significant concentration of SME financing activity in Ulaanbaatar city. In other words, SMEs operating in regional areas have extremely limited access to additional financial services.

The excessive concentration of economic activity and SMEs in the capital city Ulaanbaatar have examined and verified with the spatial econometric method in this research paper. The spatial econometric method has been used not only in applied but also in theoretical econometrics, become getting more attention from the researchers. With this method we can identify spatial interaction (spatial autocorrelation) and spatial structure (spatial heterogeneity) in regression models for cross-sectional and panel data. The results obtained from the spatial statistical analysis clearly verify the statistically significant SMEs concentration in capital city Ulaanbaatar and its neighboring areas. The neighboring area near Ulaanbaatar city hosts the highest economic performance. Following the theoretical concept of the key features of the spatial econometric approach, the coefficient of the spatial lag of output (sales revenue) identifies the magnitude of output spillover from the neighboring provinces. In this study, the result of Spatial Lag Model affirms that there exists a positive spatial externality of output with a magnitude of 0.24, and this outcome reveals that the output spillover is one of the key factors generating concentration in the area near the capital city Ulaanbaatar which induces firms to located closer to each other. In other words, firms operating in those areas can increase their output, in our case sales revenue. The result of Spatial Error Model, the coefficient of the spatial error model λ affirms that there exists an indirect influence through spatially linked error terms with a magnitude of 0.7. In other words, this outcome reveals that the firms operating in those areas can affected by other firms indirectly.

Considering the empirical results, the Government of Mongolia needs to address the concentration of the economic activity in central city and mining based provinces in order to achieve a balanced development of the country. The nationwide balanced development is vital for sustainable development of the country as we have seen from the Japan's development history.

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Introduction

The small and medium enterprises (SMEs) play a pivotal role in the global economy. The development of SMEs has played an important role in reducing poverty and income inequality, boosting employment for the growing population, revitalizing local economies and in supporting inclusive growth. Importance of its development remains a top policy priority not only for developing countries but also in developed countries such as Japan. The world economy is changing dramatically over the years, and characteristics of SME and factors that affect its development are totally different in each country such as in compliance with the development state. Developed countries face new challenges in revitalizing SMEs and improving productivity, whereas in developing countries access to finance is the major challenge in general. Therefore, it is necessary to formulate a country-specific strategy to create an enabling environment for SMEs and identify mechanisms that help to promote its development.

The solution to many of the problems of Mongolia could be lies in the establishment and promotion of the SMEs, especially by creating a policy framework to build a balanced development structure in accordance with the "Regional development strategy" and improve their educational, financial capacity. Nurturing and growing this important segment could help Mongolia diversify its economy away from dependency on mining-based exports. As the most value added across non-extractive sectors is created by SMEs, their development will be critical to achieve the government's top priorities, diversifying economic activity and reducing exposure to commodity price fluctuations.

Thus, the purpose of this research is to examine the current state of policy support for SMEs in Mongolia and to identify some implications for policy actions and recommendations for Mongolian government based on the Government of Japan's SME supporting measures from the historical perspective. However, the most difficult but essential part is choosing the appropriate actions. Each country has unique characteristics reflecting its society and history. For instance, Japan and Mongolia have their own different logic and mechanisms to support the SME sector. Also, the establishment of the policies has been reflected by many internal and foreign factors. For that reason, in this research carefully comparing conditions in Japan at the time of its modernization to those

that Mongolian current experience, then identifies what lessons are transferable to our home-country setting. Besides the fact that difference on functions of SMEs implemented in both countries, Japan has faced a lot of economic conditions which means Mongolia could learn lessons from Japan's past experience and enhance the contribution of the sector and industry.

The research was done by both qualitative and quantitative approach, descriptive and spatial econometric method was adopted in this study.

The rest of the paper is arranged as follows. The next chapter discusses the Characteristics of Government Support for SMEs in Japan. Chapter 2 explains the Characteristics and Development State of the SMEs in Mongolia. Chapter 3 explains the data and the empirical methodology and results. Chapter 4 concludes.

Chapter 1. Characteristics of Government Support for SME's in Japan

1.1 Definition of SMEs in Japan

SMEs definition varies across countries, different organizations and countries set their own guidelines for defining SMEs. There is no generally accepted definition of SMEs, however most countries define SMEs by its firm size such as number of employees, capital and annual turnover. In Japan, SMEs are defined in the Small and Medium-sized Enterprise Basic Act enacted in 1963.

SMEs are categorized into four types of industries:

1) Manufacturing, construction, transportation, other industries (excluding 2-4)

2) Wholesale (wholesale for textiles, food, building materials, and machinery, etc.)

3) Services (educational, medical, real state, etc.)

4) Retail (food, machinery, restaurants, and accommodation, etc.)

In addition, agricultural industry is excluded from SME, because they are not incorporated legally. More specifically, before 1999 SMEs and small enterprises may roughly be categorized as shown in Table 1.1.

Table 1.1 SMEs Basic act of Japan Before 1999

| Industry	Capital	Number of regular employees
1) Manufacturing and others	Up to ¥100 million	Up to 300
2) Wholesale	Up to ¥30 million	Up to 100
3) Services	Up to ¥10 million	Up to 50
4) Retail	Up to ¥10 million	Up to 50

Source: National Association of Small and Medium Enterprise Promotion Organizations, *White paper on Small and Medium enterprises in Japan*, 2018, (https://www.chusho.meti.go.jp/sme_english/index.html).

1.2 Importance of SME in Socio-Economic Development

SMEs occupy an important position in the Japanese economy. This sector makes up most of the business establishments over a long decade of time (Figure 1.1), SMEs account for over 99 percent of total establishments in Japan which stimulate economic growth and they contribute social wealth through generating employment opportunity and new businesses (Honjo & Harada, 2006). Small SMEs defined as enterprises with less than 20 employees, play the dominant role. The importance of this sector has several reasons. First, all companies start as an SME. Even large successful companies also started their business as small enterprises, such as Sony Corp., Kyocera Corp., etc with the help of appropriate Government policy, promoting competition, creation of enabling the environment and fostering innovative enterprises, at the right time. Second, by promoting competition quality of the products and services has increased among SMEs. Furthermore, as a result, there has been a positive effect which is diversification of industries. Third, because of the large share in economic activity, SMEs contributed to revitalizing the Japanese economy. In short, the SME supporting policy has been rather sophisticated in Japan in comparison to most other European countries. It used to play a function of guidance along the industrialization process before and especially after World War II. This role has gradually been shifted to the private sector and especially Japanese multinational corporations have become holding an important position.

Figure 1.1 illustrates the trend in numbers of business establishments by size. As shown in figure the number of small and medium establishments increased until 1991, between 1947 and 1991 the number of SME establishments in the non-primary sector increased by 2.6 times, from 2.6 million to 6.6 million. The increase was most notable in the 1960's, when the Japanese economy experienced rapid growth. As for working force, between 1963 and 1996 employment at SMEs increased by 2.0 times, from 23.6 million to 46.8 million employees (Figure 1.2).

Figure 1.1 Number of business establishments by size (except non-primary industry)
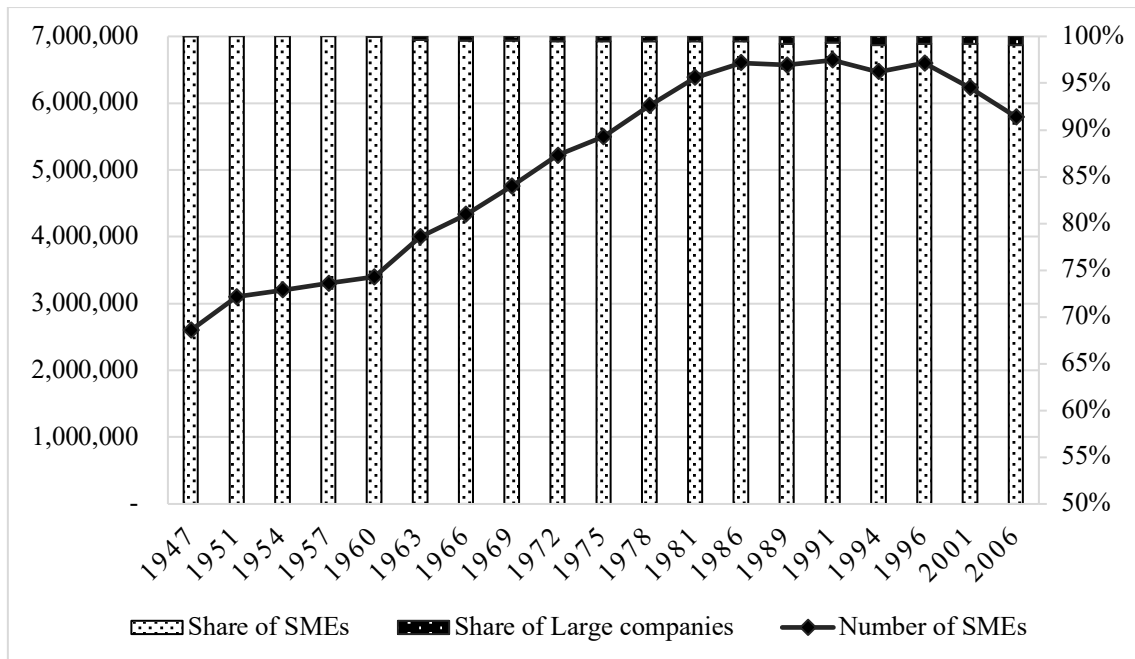
Source: Data for 1947-1994 from National Association of Small and Medium Enterprise Promotion Organizations, *White paper on Small and Medium enterprises in Japan*, 1998, and data for 1996-2006 from *White paper on Small and Medium enterprises in Japan*, 2011.

Figure 1.2 Trend in number of employees
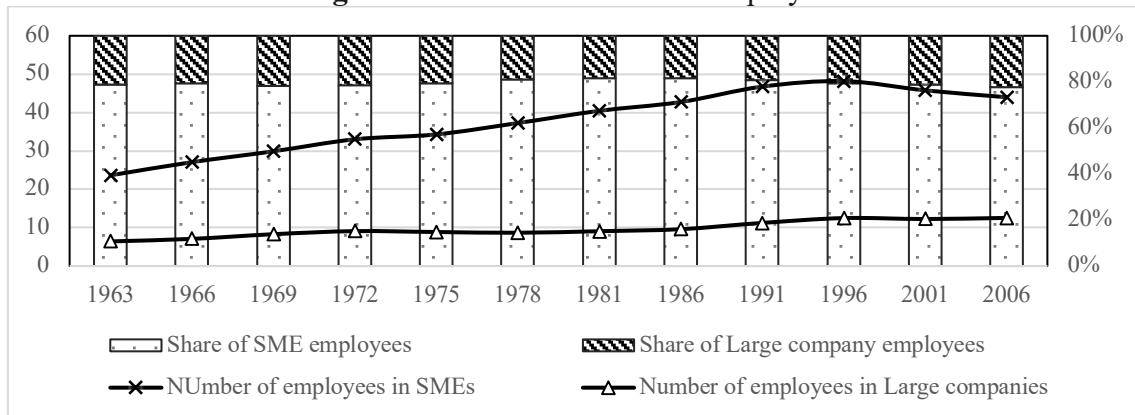
Source: National Association of Small and Medium Enterprise Promotion Organizations, *White paper on Small and Medium enterprises in Japan*, 2011.

There is substantial amount of literature demonstrating that the SME sector is important, for the sustainable economy and social development of both OECD and non OECD countries, with hardly any exception (Unleashing Entrepreneurship: Making Business Work for the Poor, 2004). This observation is also valid for Japan, both in terms of historical and anticipating future developments (Regnier, 2006). A considerable amount of literature trying to picture the SME public policy of Japan from various

different angles both qualitativily and quantitatively. On the one hand, major amount of studies and researchers have been trying to explain the SME policy system and its contents. Toru Imajoh (2012) compared the financial history of Small businesses and explained the Small Business Financing in Japan, from the Prewar to High-Growth Periods. He concluded that essential institutions and policies supporting small businesses during the time of high economic growth stemmed from the postwar reconstruction era. Seki Tomohiro (2008) explained the true picture of SME policies and measures of Japan during the period 1940-2000 in the most simple possible terms. Also he pointed out the policy difference between postwar and high growth period. On the other hand, other studies have been devoted to examining relationship between SME sector and economic growth and relationship between public intervention and SME sector development. Yuji Honjo and Nobuyuki Harada investigated the effects of public policy and financial structure on the growth of SMEs (2006). They examined whether or not the SME Creative Business Promotion Law (CBPL) and financial structure affect firm growth. It was found that SMEs approved by prefectural governors under this law tend to increase assets. Further, they provided evidence that the CBPL and cash flow have an impact on the growth of younger SMEs. Iichiro Uesugi and Hiroshi Uchida (植杉威一郎、内田浩史、水杉裕太, 2014) examined, for the first time, the determinants and effects of lending by government-affiliated financial institutions for SMEs in Japan, as well as the information production functions of the Japan Finance Corporation (JFC), in a quantitative and comprehensive manner. They concluded that there is no clear evidence that JFC lending will improve corporate performance. Later in 2016, they also analyzed the impact of the introduction of unguaranteed loans by the JFC's Small Business Division in fiscal 2004, one of the major government-affiliated financial institutions in Japan, on firms' funding and performance. It was found that ex-post performance of enterprises using unguaranteed loans was rather excellent after the introduction of the system, although it was inferior in terms of the probability of financial crisis and profit rate in fiscal 2005 (植杉威一郎、内田浩史、岩木宏道, 無保証人貸出の導入と企業の資金調達・パフォーマンス, 2016). However, their result was in contrast to the case of unsecured loan, which was introduced by the JFC's Small Business Division in August 2008. Unsecured lending eased firms' funding constraints while deteriorating their ex-post performance (植

杉威一郎、内田浩史、岩木宏道, 無担保貸出と企業の資金調達・パフォーマンス, 2015).

1.3 Japanese Government Policy on SME's from Postwar Period Through High-Growth Period

In Japan, priority industries were supported heavily after the II World War, when Japan was trying to escape from war driven economic devastation. After a successful economic reconstruction process, priority industries have matured and able to operate on their own, the Government of Japan shifted its attention to SME supporting policies more aggressively. The framework for supporting the SME sector have already built during the reconstruction period with the huge domestic financing capacity. In addition, not only supporting financially Government of Japan have also implemented other measures for SMEs through management, fiscal, commerce, and regional supporting framework. Government of Japan had formulated SME supporting policy according to the national development policy, and its characteristics have been changed according to the development state of the economy. One of the reasons these policies have successfully achieved is the Fiscal Investment and Loan Program. Through this system Government of Japan supported weak sectors and regions, therefore successfully avoided from bottlenecks and achieved balanced development nationwide. Table 1.2 illustrates the main principles of Policy actions from prewar period until now.

Table 1.2 Japan's SME Policies in Relation to the Country's Economic Development

Time period	Stance of the Government
Before 1937	• Improve product competitiveness and creditworthiness through organization
Prewar Period 1937-1945	• Change business to munitions industry or close down
Reconstruction Period 1945-1954	• Improvement of Basic Tools for SMEs Policies (Finance / Organizational Upgrading / Management Diagnosis & Guidance) • 1948 Establishment of the Small and Medium Enterprise Agency

High Growth Period (1st Stage)
 	
1955-1962
	• Rectification of Dual Structure (Gaps between SMEs and Large Enterprises)
	  o Systematization of SMEs policy (Finance / Organizational Upgrading / Management Diagnosis & Guidance)
	  o Response for the Structure of Division of Labor among Subcontracting Enterprises

High Growth Period (2nd Stage)
 	
1963-1972
	• Modernization of SME
	  o 1963 Establishment of "Small and Medium Enterprise Basic Law"
	    . Intensification of Policies for Rectifying Disadvantages
	    . Measures for Small-scale Enterprises
	    . Measures for Enriching Equity Capital
	    (Small and Medium Business Investment and Consultation Co., Ltd.)
	    . SME Modernization Promotion Law

Stable Growth Period
 	
1973-1984
	• Knowledge Intensification
	• Enriching Intangible Managerial Resources
	  o Institute for Small Business Management and Technology
	  o Small Business Information Center
	  o SME Regional Information Center in Districts

Transition Period (1st Stage) 1985-1999	• Structural Change and Industrial Agglomeration • Measures for Supporting Start-up and New Businesses o Temporary Law concerning Measures for the Promotion of the Creative Business Activities of Small and Medium Enterprises

Transition Period (2nd Stage)
 	
2000~
	• 1999 Amendment of "Small and Medium Enterprise Basic Law"
	  o Promoting Diverse and Vigorous Growth and Development of Independent SMEs
	    . Promoting Business Innovation and New Business Start-ups
	    . Strengthening Management Base of SMEs
	    . Facilitating Adaptation to Economic and Social Changes

Source: Small and Medium Enterprise Agency.
(https://www.chusho.meti.go.jp/sme_english/outline/01/01.html)

In prewar period (before 1937) government stance towards SMEs was to improve product competitiveness and creditworthiness by duly organizing them. Nevertheless, these measures were not fully implemented due to World War I. In addition, the connection between policies and finance was weak, government assistance in utilizing credit cooperatives had a limited effect. In the 1930s, Japan turned decisively to militarism and wartime economic planning was adopted. As a result, the government enforces business establishments into munitions or face closure. To facilitate changes or closures in small businesses, a governmental financial institution was established. Government was subsidizing the SMEs that changed their business into munitions and export industries or to help businesses unable to make such conversion close down and relocate unemployed workers to defense industries.

During the postwar reconstruction period, the government established a special government institution for small business policy and then carried out organizational and financial measures, far more than from the prewar period. The Government's recognition of the importance of SMEs in the Japanese economy, as well as their relatively disadvantageous position versus large firms, led to active SME promotion policies in the post-World War II period. In the early postwar period, heavy and chemical industries were heavily promoted, and the basic principle behind SME policies was to protect SMEs from the large firms. General issues of SMEs at that time were low management level, especially in financial accounting; lack of technology, and funding capacity; aimless investment and production, etc. Thus, new industrial policy was created which includes foreign exchange budget, capital control including control of technology imports, preferential tax treatment for specific industries, creation of the policy banks and a number of laws for promoting SMEs rationalization (Ohno, 2006). The basic tools for SME measures were prepared in line with those issues, including financial resources, cooperatives and management consulting and guidance.

By the mid-1950s this principle had changed from protection to promotion and modernization (Itoh & Urata, 1994). Behind the change in emphasis was the productivity disparity between Japan's large firms and SMEs, Japanese industries had to strive for efficiency and competitiveness. The days of economic planning and physical expansion were over, thus the government wanted to eradicate productivity disparity in order to achieve further economic expansion. During 1960s, government stance was to open the

market for trading and to stimulate foreign investors. In order to achieve a balanced development of the national economy, SMEs was promoted by upgrading the industrial structure and strengthening international competitiveness. With this aim, the Small and Medium Enterprise Basic Law (the SME Basic Law) was enacted in 1963.

With the first oil crisis in 1973, the Japanese economy turned from a high-growth period into a stable growth period. With this change, measures for SMEs also changed direction from those aiming at modernization of equipment for upgrading productivity and expansion of management scale to those for moving the industrial structure toward intellectual industrialization. Thus, the needs for "soft" management resources came to be discussed, which required technical skills, manpower, and information.

1.4 Fiscal Investment and Loan Program

The government absorbed large quantities of funds through the publicly administered postal savings and other types of insurance and pension system and channels them into public financial intermediaries. These funds then became the principal resource for the government's Fiscal Investment and Loan Program (FILP) activities, such as capitalization, lending, and underwriting of bonds of private sector industries (Suzuki, 1989). FILP is a system unique to Japan and major component of the Japanese economy measured by its size relative to both the economy and the financial system and close coordination with the general budget in planning procedure and complementarity. The FILP began to evolve in the mid-1880s in response to banking problems associated with the failure of the national banking system to provide a stable financial and monetary framework to support industrialization which managed by The Deposit Bureau of the Ministry of Finance (Trust Fund Bureau established in 1885).

**Table 1.3** Chronological table of Fiscal Investment and Loan program

Early Meiji Era	Reserve Funds Handling Bylaws	Miscellaneous incomes other than tax incomes accumulated as "savings" and later as "reserves."
1876		Deposits of funds to the Government Bond Bureau of the Ministry of Finance, which was also responsible for their management.
1878		Postal Savings deposited with the Government Bond Bureau for management.
1885	Deposit regulation	Depositing funds to Ministry of Finance was legalized and the Deposits Section was set up. Initially, the Ministry focused on custody business rather than investments.
Mid-late Meiji Era to Taisho Era		Investments by the Deposits Section shifted from Government Bonds to bonds issued by industrial banks and special-purpose banks. In the early Taisho Era, some loans became irrecoverable, like the Nishihara Loan. Improvement of the Deposits Section system became necessary in order to ensure proper custody and management of funds.
1925	Deposits Section Deposit Act	Basic principles of "management in secure and efficient ways" and "for the benefit of the state and public" were clarified. "Deposits Section Fund Management Committee" was established.
Around WWII		With the country placed on a war footing, investment of funds gradually shifted to state-backed entities and war industries and focused on China. As a result, the investments resulted in a huge loss.
1946	Laws concerning Special Treatment of Losses incurred by Deposits Section of the Ministry of Finance, etc.	Liquidation of assets and liabilities of the Deposits Section.
Under U.S. occupation		GHQ ordered that recipient of the Deposits Section funds should basically be limited to the state and local governments.
1951	Trust Fund Bureau Fund Act	For post-war restoration, demand for long-term funds arose from industrial circles. • Unified management of state funds • Contribution to the promotion of public interest • Investment of funds in secure and efficient ways
1973		The Act on Special Measures on the long-term management of the Trust Fund Bureau Fund and Postal Life Insurance Reserve was enforced.
1987	Revision of Trust Fund Bureau Fund Act	Development of interest deregulation and other changes in the economic and financial environment • The legal system for interest rates on deposits was amended and entrusted to government decree • Foreign government bonds were added as targets for asset management of Trust Fund Bureau Fund
2001	Fiscal Loan Fund Act	Reflecting changes in environment, the focus of policies shifted from industry to living environment. • Elimination of the requirement that all Postal Savings and Pension Reserves be deposited with the Trust Fund Bureau (the FILP Reform) • Introduction of policy cost analysis • Enhanced information disclosure • Market-based fund-raising

Source: Ministry of Finance, *Fiscal Investment and Loan Program Report,* p-11, 2018.

Resource

The major source of the FILP was the Postal Savings System which is the part of Japan's postal system that offers deposit services at 24,700 post offices throughout Japan, with over 400 offices in Tokyo alone. The post offices also sold life insurance. The collected funds (postal deposits and insurance premiums) were transferred to the FILP. The FILP combined the funds received with funds from other sources (Figure 1.3) and distributes the funds to government financial institutions, quasi-government corporations, special accounts, local governments, and special firms.

Figure 1.3 Trend in Total FILP resource and share of financial resources in trillion yen
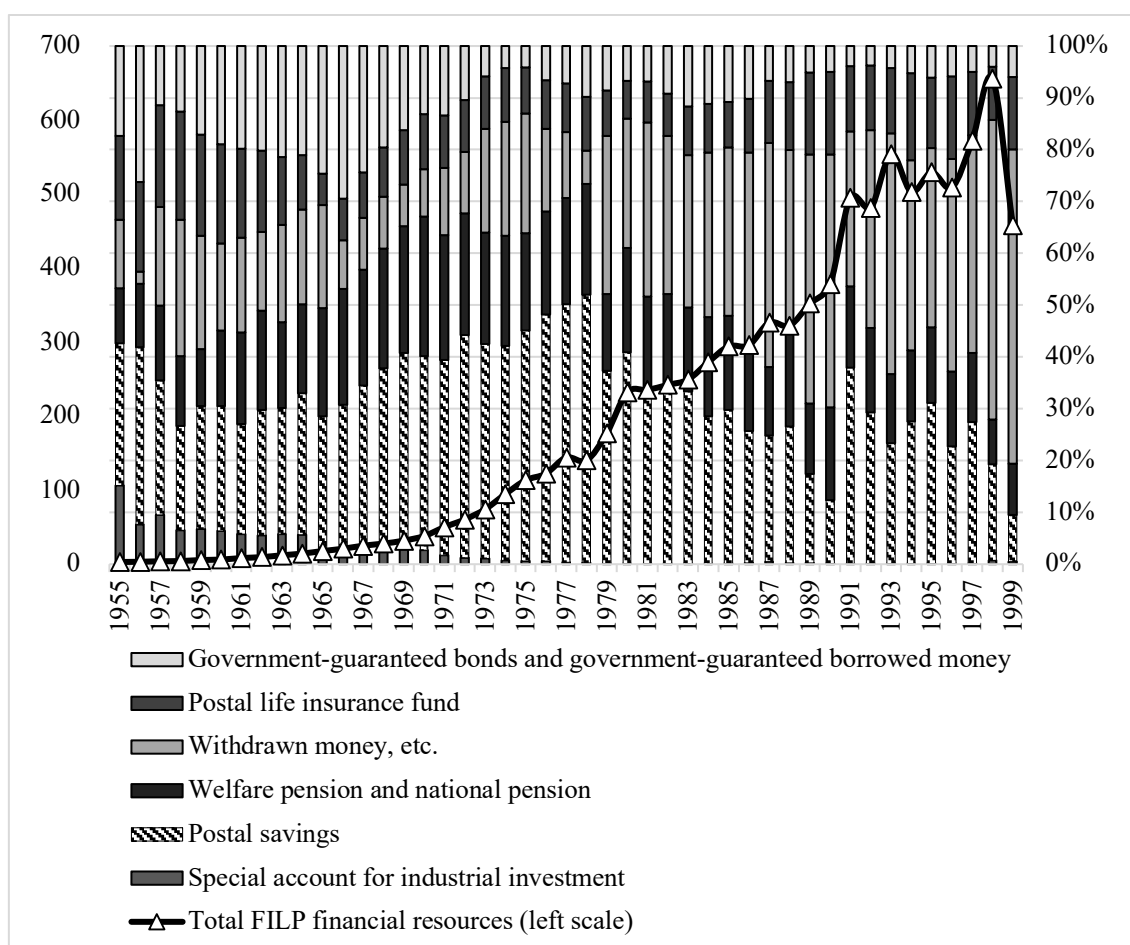
Source: Budget Bureau, Financial Bureau and Information Systems Department, Policy Research Institute, Ministry of Finance.

In addition to the private sector financial institutions, government financial institutions have played a major role in Japanese finance during the postwar period (Ogura and Yoshino, 1988; Yoshino, 1993), especially in the early 1950s as Japan was reindustrializing and rebuilding from the devastation of the war. Of these entities, the

government banks have been the most controversial since they are the most dependent on funds provided by the Postal Savings System (PSS), account for the largest component of funds provided by the FILP system, compete directly with private banks, and are alleged to interfere with monetary policy (Cargill & Yoshino, 2003). Previously there were eleven government banks, but as a result of several consolidations in 1999 and 2008, the number of government banks has been reduced.

Table 1.4 Government financial institutions, 2001

1. Government Housing Loan Corporation (1950): Under the "Plan for reorganization and unification of Special Public Corporations", GHLC is abolished within five years (in 2006) and Japan Housing Finance Agency established in 2007.

2. National Life Finance Corporation (2000): Government bank created by merging the People's Finance Corporation (1949) and Environmental Sanitation Business Finance Corporation (1967).

3. Japan Finance Corporation for Small Businesses (1953)

4. Agriculture, Forestry, and Fishery Finance Corporation (1953)

5. Japan Finance Corporation for Municipal Enterprises (1957)

6. Development Bank of Japan (2000): Government bank created by merging the Japan Development bank (1951) and the Hokkaido-Tohoku Development Finance Public Corporation (1956)

7. Okinawa Development Finance Corporation (1972).

8. Japan Bank for International Cooperation (2000): Formally the Export-Import Bank (1950).

Source: Cargill, Thomas F. and Yoshino, Naoyuki (2003). *Postal Savings and Fiscal Investment in Japan: The PSS and the FILP*. New York, United States: Oxford University Press

Allocation of the fund

Funds obtained through the FILP are subsidized a benefit to many borrowers who are unable to obtain enough funding from the private-banking system, thereby promoting smooth fund flow to solve social and economic problems and creating demand and employment. The program provides long-term, fixed and low-interest loans and long-term risk money for projects. These funds are invested in capitalization, lending, and underwriting of securities to various bodies that act in the public interest, such as special accounts of the Government, public corporations, public banks, public finance

corporations, public bodies, local government and public bodies, and special public companies for such purposes as cash flow support for SMEs and micro-enterprises, scholarship provision, and stable resources and energy security, that contributes to people's life and economic growth in Japan.

The allocation of funding across industries reflected two specific objectives of the FILP system: to encourage industries that had the potential to contribute to national development and to compensate industries adversely impacted by national development. Funding was directed to encourage industries that the government believed would contribute to national development, had the capacity to compete internationally, or were deemed an important foundation for domestic investment and export-oriented growth. In this regard, petroleum, metals, machinery, transportation, communication, and electricity supply depended heavily on government-subsidized bank credit. The FILP system was also used to compensate industries that could not compete and thus contributed to the general objective of mutual support pervasive throughout Japan's economic institutions during much of the postwar period. During this period government financial institutions were established in terms of sector base and in line with the government development strategy as shown in Table 1.5 and Table 1.6.

Table 1.5 FILP target cases during postwar reconstruction through high economic growth

Major areas	FILP agencies	FILP utilization cases
Housing	Japan Public Housing Corporation	Tama New Town and Takashimadaira Housing Complex development.
SME support	Small Business Finance Corporation	Lending to Sony Corp., Kyocera Corp. and other companies in their startup and development phases
Social capital development	Japan Highway Public Corporation, Japanese National Railways, New Tokyo International Airport Authority	Construction of Tomei, Meishin and other expressways, Tokaido and Sanyo Shinkansen bullet train lines, and Narita International Airport
Industry	Electric Power Development Co. Japan Development Bank	Construction of dams for electricity supply (Miboro Dam), provision of long-term loans for basic industries (coal, steel, shipping, electricity.)

Source: Ministry of Finance, *Fiscal Investment and Loan Program Report,* p-5, 2018.

Table 1.6 FILP target cases during stable growth through economic bubble/post-bubble

Major areas	FILP agencies	FILP utilization cases
Housing	Housing Loan Corporation Residential Land Development Corporation	Loans for housing construction Chiba New Town development, etc.
Life environment development, local development	Housing and Urban Development Corporation	Urban redevelopment (Minato Mirai 21), Academic new town (Tsukuba) development, etc.
	Japan Regional Development Corporation	Iwaki New Town and Nagaoka New Town development, rural city redevelopment
	Water Resources Development Public Corporation	Construction of Naramata, Sameura and other dams for developing and utilizing water resources
SME support	Small Business Finance Corporation, People's Finance Corporation	Lending to SME and other firms that have difficulties in receiving loans from private financial institutions
Social capital development	Japan Railway Construction Public Corporation, Airport Development Special Account, etc.	Construction of Nagano and other Shinkansen bullet train lines Offshore expansion and re- expansion of Tokyo International Airport (Haneda Airport)

Source: Ministry of Finance, *Fiscal Investment and Loan Program Report,* p-5, 2018.

Target fields

The FILP system is wide ranging in terms of projects and activities funded. The target fields can be grouped into six broad functional categories of FILP lending: 1) Strengthening key industries (Industry and Innovation), 2) Trade/economic cooperation (Overseas Investment and Loans), 3) Regional development (Agriculture, forestry, and fisheries, National land development, Local governments), 4) Infrastructure (Social capital, Road construction, Transportation/communications, 5) Modernization of low-productivity sectors (SMEs and Micro enterprises), 6) Improvement in living standards (Housing, Living environment, Welfare/Health, Education (Cargill & Yoshino, 2003 and FILP report, 2018).

As illustrated in Figure 1.4 supporting SME or the modernization of low productivity sectors has been a continuing goal of the FILP system. Allocation of FILP lending to SME has gradually increased over time, accounts for 8 to 19 percent. It reaches the highest point in 1981 amounts for 19.6% and then gradually decrease until 1999, 12.0%.

Figure 1.4 Trend in distribution of FILP fund by target fields.
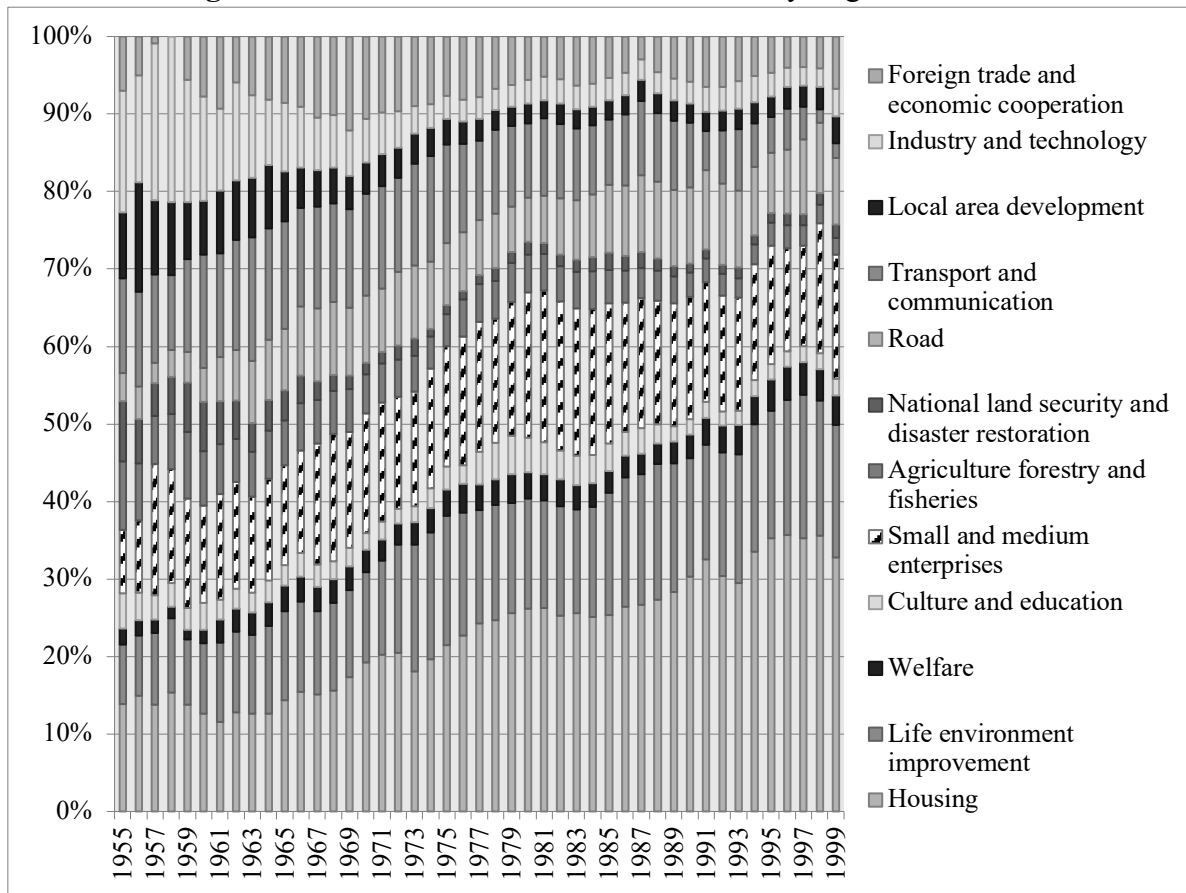
Source: Budget Bureau, Financial Bureau and Information Systems Department, Policy Research Institute, Ministry of Finance.

In the postwar reconstruction period, FILP gave priority to nurturing important industries (coal, steel, shipping, electricity, etc.). When the economy recovered and started to grow rapidly, the focus gradually shifted to housing purchases and projects to improve living standards and infrastructure development where Japan was still lagging behind Western countries. Furthermore, FILP covered support for SMEs and public works and it became an important goal. The number of FILP agencies increased to cover these areas. Industrial development became matured, thus financing this sector did not constitute a large area for the FILP allocation, less than 6% of funds were used for this purpose after 1970. In other words, after the recovery, priority industries had already grown into strong industries which could develop by themselves, thus the FILP funds were allocated primarily to "weak" sectors and regions for realizing the "balanced" development.

From the late 1970s through the early 1980s, the FILP finance for housing and SMEs expanded. Housing and SME finance, and life environment development (urban development) accounted for 60% of the FILP. The FILP was used for a large-scale new town and academic new town development in major urban regions, local industrial base construction and other areas where profitability was not necessarily high. In the 1990s after the burst of the economic bubble, FILP finance for housing expanded to account for one-third of FILP as public works were promoted to stimulate the economy.

As the economy was maturing with market mechanism development making progress, the government implemented a thorough reform of the FILP system in 2001. In addition to that, there were other issues regarding FILP fund disbursement such as financial resources collected irrespectively despite the actual need of policy-requirements, and the lack of efficient management was pointed out. Then, the government reformed FILP projects from the viewpoint of complementing private sector projects, political needs and financial soundness from 2004 to 2005. Furthermore, funds required for FILP were shifted to raise from the market through the issuance of FILP bonds, enabling efficient fundraising to meet demand. As a result, the initial FILP size for the fiscal year 2008 shrank to about one-third of the peak on a flow basis. Also, the policy cost analysis was introduced.

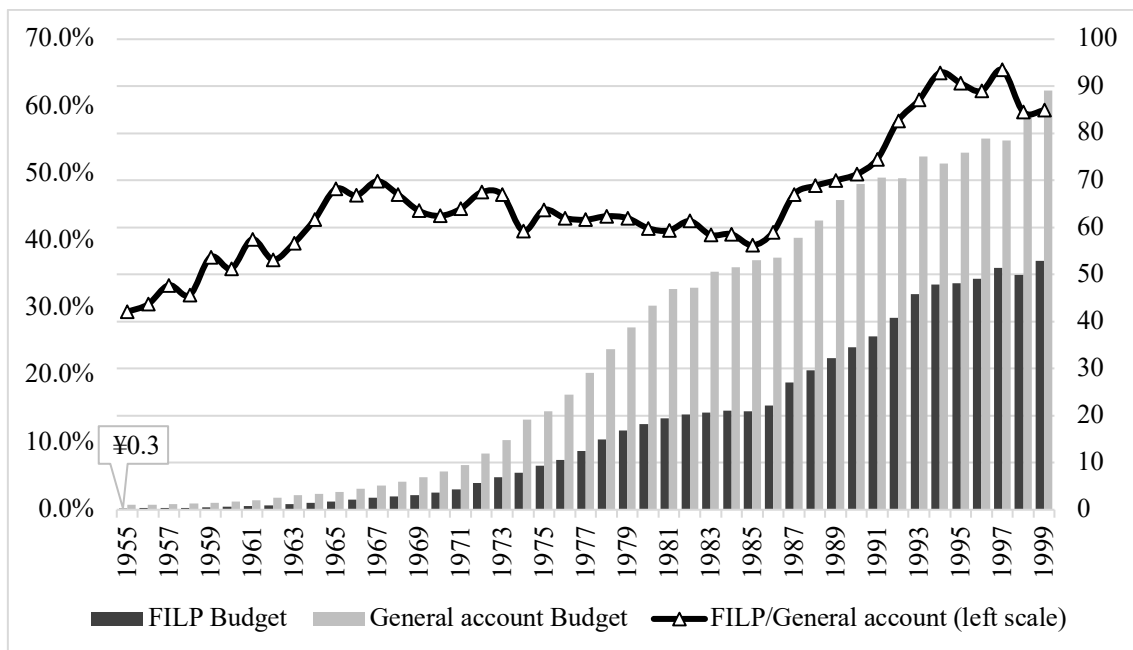**Figure 1.5** FILP budget and its share in General account Expenditure in trillion yen

Source: Budget Bureau, Financial Bureau and Information Systems Department, Policy Research Institute, Ministry of Finance.

Figure 1.6 Structure of the FILP system before reform (until 2001)
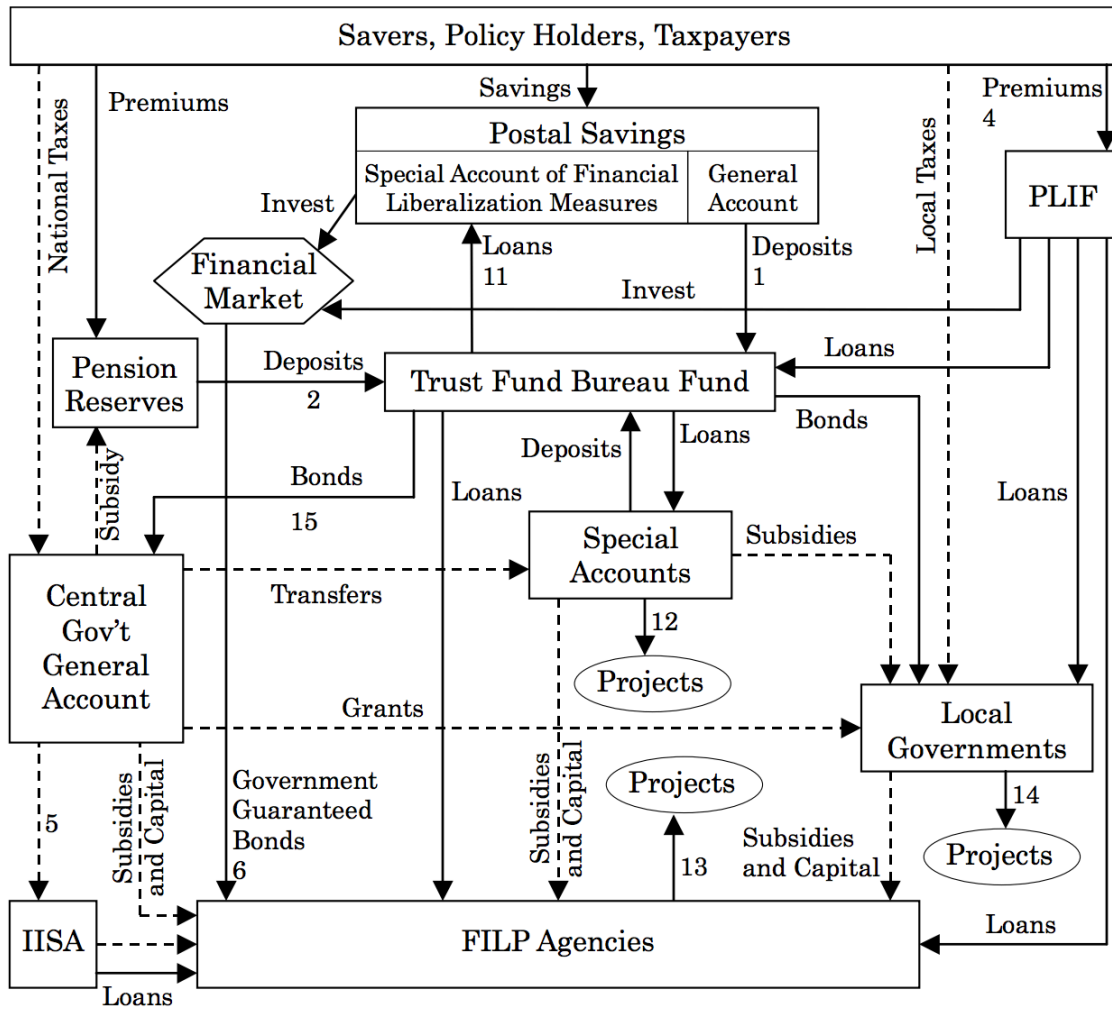
Notes: IISA - Industrial Investment Special Account, PLIF - Postal Life Insurance Fund.
Source: Takero Doi, & Takeo Hoshi (2002). *Paying for the FILP.* Massachusetts Avenue Cambridge, National Bureau of Economic Research.

FILP and National Budget

The FILP is determined together with the National budget each fiscal year. The government offices with jurisdiction over FILP agencies compile budget requests to the General Account, etc. and requests of FILP agencies and submit them to the Ministry of Finance as illustrated in Figure 1.7. Later, the FILP Plan is formulated along with the budget. The Financial Bureau of the Ministry of Finance screens the requests of FILP agencies while hearing opinions from the Fiscal System Council. In screening the request, the bureau 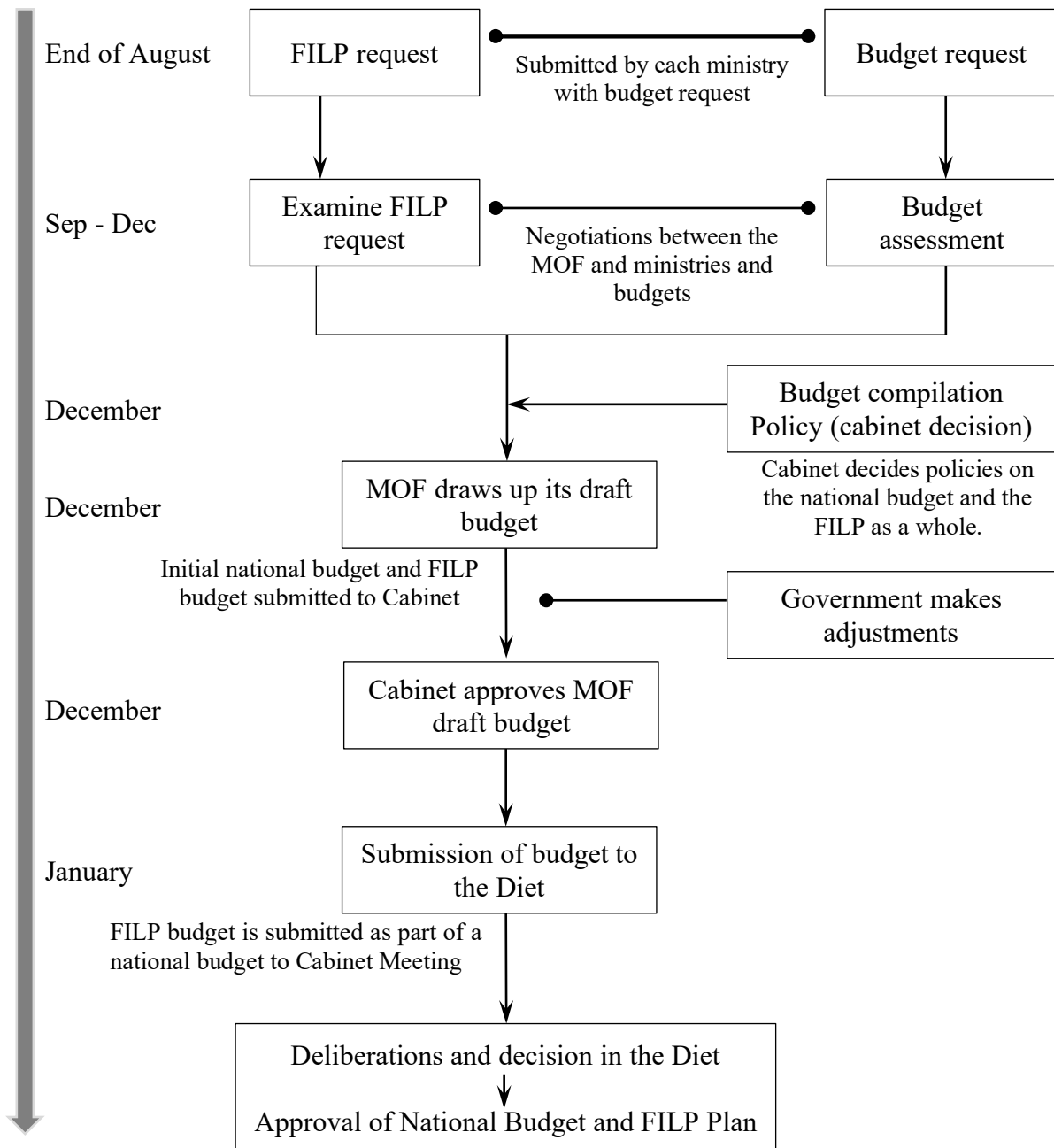utilizes the policy evaluations, and other approaches such as examining the necessity of the policy, whether complementing the private sector, and whether provided funds will be securely repaid.

Until fiscal 1972, Diet approval was necessary for only a portion of FILP, such as the portion that was accounted for under the General Account of the budget and special accounts within the budget including lending and investment by Industrial Investment Special Account and the special accounts concerning Government-guaranteed bonds and loans. The largest portion of the funds, which came from Trust Fund Bureau Funds and Postal Insurance Annuity Assets, did not require approval from Diet. After 1972, however, the scale of the FILP expanded, and its influence on the national economy became very great. From fiscal 1973, a new law was established in this regard, the Law Concerning Special Measures for Long-Term Investment of the Trust Fund Bureau Funds and Funds Accumulated from Postal Annuities and Postal Life Insurance Annuity (enacted in March 1973). Under the new law, the investment of the Trust Fund Bureau Funds and Postal Insurance Annuity Assets for periods of over five years required that the government obtain approval of the Diet for the amounts intended for each type of use under the general provisions of the budget for special account expenditures. As a result of this requirement, each element within FILP is listed in the budget at some point and is part of the budget plan that must be approved by the Diet (Suzuki, 1989).

Figure 1.7 Flowchart of formulating FILP plan

End of August	FILP request ●——Submitted by each ministry with budget request——● Budget request	
Sep - Dec	Examine FILP request ●——Negotiations between the MOF and ministries and budgets——● Budget assessment	
December	Budget compilation Policy (cabinet decision)	
December	MOF draws up its draft budget	Cabinet decides policies on the national budget and the FILP as a whole.
	Initial national budget and FILP budget submitted to Cabinet ●—— Government makes adjustments	
December	Cabinet approves MOF draft budget	
January	Submission of budget to the Diet	
	FILP budget is submitted as part of a national budget to Cabinet Meeting	
	Deliberations and decision in the Diet / Approval of National Budget and FILP Plan	

Source: Cargill, Thomas F. and Yoshino, Naoyuki (2003). *Postal Savings and Fiscal Investment in Japan: The PSS and the FILP.* New York, United States: Oxford University Press and Ministry of Finance, *Fiscal Investment and Loan Program Report,* p-15, 2018.

In conclusion, the "most important" feature of the FILP system was through this system Government of Japan supported "weak" sectors and regions, therefore successfully avoided from bottlenecks and led to the "balanced" development. In addition to that, there are some important features regarding the FILP system as follows.

First, the FILP budget is large by any reasonable standard and regarded as a "second budget". As illustrated in Figure 1.5, FILP budget proportion to General Account gradually increased over time from 29.4% in 1955 to 59.4% in 1999.

The second important feature is that the FILP system reduces the tax burden. FILP uses the fund raised from public funds. The largest portion of its funding depends on funds on which interest and principal must be repaid, such as postal savings, welfare pensions, and national pensions. For that reason, the investment cannot ignore the aspect of profitability and must be in undertakings that promise a reasonable profit and that have certainty of return and redemption. In addition, their investment must be carried out in conformity with public goals such as the improvement of national welfare and the progress or development of society and economy (Suzuki, 1989).

Third, the FILP system covers almost every economic sector that makes it carry out a resource allocative function by traveling through two particular routes. The first route is the supply of FILP funds to industrial undertakings such as the Japanese National Railways or the Public Housing Corporations and thereafter supply by these institutions of the goods and services they produce to the population. The second route is supply of the FILP funds to financing institutions such as the Japan Development Bank or the People's Finance Corporation and the subsequent on-lending of such funds to private sector enterprises that, although socially beneficial, are not able to respond to needs with only private sector financing for reasons such as a long period before funds can be recovered, high risk, or low profitability (Suzuki, 1989).

Fourth, in addition to resource allocative function FILP system also functioned as a policy tool to weaken the effect of long-term financial market failures. In other words, because of the flexible system of additions or carry-overs in the FILP budget, it is possible to either speed or slow the implementation of the projects. Compared to the budget of the General Account, therefore, FILP funds come in a form that is easy to use for counter-cyclical policy because of their mobility and flexibility.

At last but not least, the FILP budget is determined in relation with the national budget; consequently, the FILP system plays an important role in Japan's political institutions, since the distribution of the funds plays a key role in maintaining and enhancing political power (Cargill & Yoshino, 2003).

On the one hand, the reason why this program has been successful could be lies in the people's trust in their government. With public trust, the Government of Japan able to raise this massive fund from the public. On the other hand, the government has been using those funds wisely and successfully implemented in accordance with the objectives of the National development policies at the right time compared to any other developing country.

Chapter 2. Characteristics and Development State of the SMEs in Mongolia

2.1 Definition of SMEs

In Mongolia, SMEs are measured by its number of employees and annual sales and revenue according to SME basic act "Law on Small and Medium Enterprises" which is adopted in 27 June 2007.

Table 2.1 SME classification in Mongolia

Classification	Industry type	Employees	Annual sales revenues
Small	Service industry	9 or fewer	Up to MNT 250 million
	Manufacturing	19 or fewer	Up to MNT 250 million
Medium	Service industry	49 or fewer	Up to MNT 1.0 billion
	Wholesale	149 or fewer	Up to MNT 1.5 billion
	Manufacturing	199 or fewer	Up to MNT 1.5 billion
	Retail business	199 or fewer	Up to MNT 1.5 billion

Table 2.1 illustrates the criteria of SMEs in accordance with industry type, employee number and its annual revenue amount in SME basic act of Mongolia. The "Law on Small and Medium Enterprises" of Mongolia specified a medium enterprise and individuals as an entity with no more than 199 employees having 1.5 MNT billion income from production, trading business, and no more than 149 employees having 1.5 MNT billion income from service industry; a small business entities and individuals are defined as entities with no more than 19 employees and generating MNT 250 million income from production, trade and service.

2.2 Outline of the SME sector in Mongolia

In Mongolia, SMEs are accounting for 86.0% of all companies, 53.9% of all employees[1], and more than 17% of value added and 31.2% of GDP in Mongolia[2]. Nurturing and growing this important segment could help our country to diversify its economy away from dependency on mining-based exports. As the most value added across non-extractive sectors is created by SMEs, their development will be critical to achieve the government's top priorities, diversifying economic activity and reducing exposure to commodity price fluctuations. Without this vital sector, Mongolia would be constantly limited by the commodity cycle and left with the only hope that is raise of commodity prices. In addition, this sector also considered as a major base for employment creation and income generation. By supporting this sector government could also achieve its other development goals such as sustainable development goals; 1) reduce income inequality and have 80 percent of the population in the middle and upper-middle income classes, 2) be ranked among first 40 countries by the Doing Business Index and among first 70 countries by the Global Competitiveness Index in the world.

Policies to build their educational and financial capacity could, therefore, be the key to diversifying the economy. However, it is the major challenge for executing bodies to build a policy that encourages the competitiveness of the SMEs, boosting their investment and financing opportunities, and capacity of the human resources. We will cover more about this later.

Table 2.2 Active entities by number of employees

Number of employees	2013-IV	2014-IV	2015-IV	2016-IV	2017-IV	2018-IV
1-9	45,684	50,282	52,402	59,794	65,983	73,929
10-19	4,452	4,603	5,680	5,952	6,094	5,164
20-49	2,990	3,134	3,827	3,979	4,050	4,171
50+	1,803	1,824	2,392	2,457	2,458	2,485
Total	**54,929**	**59,843**	**64,301**	**72,182**	**78,585**	**85,749**

Table 2.2 illustrates the number of active entities that classified according to the number of employees from 2013 to 2018 as registered in a Business register by the

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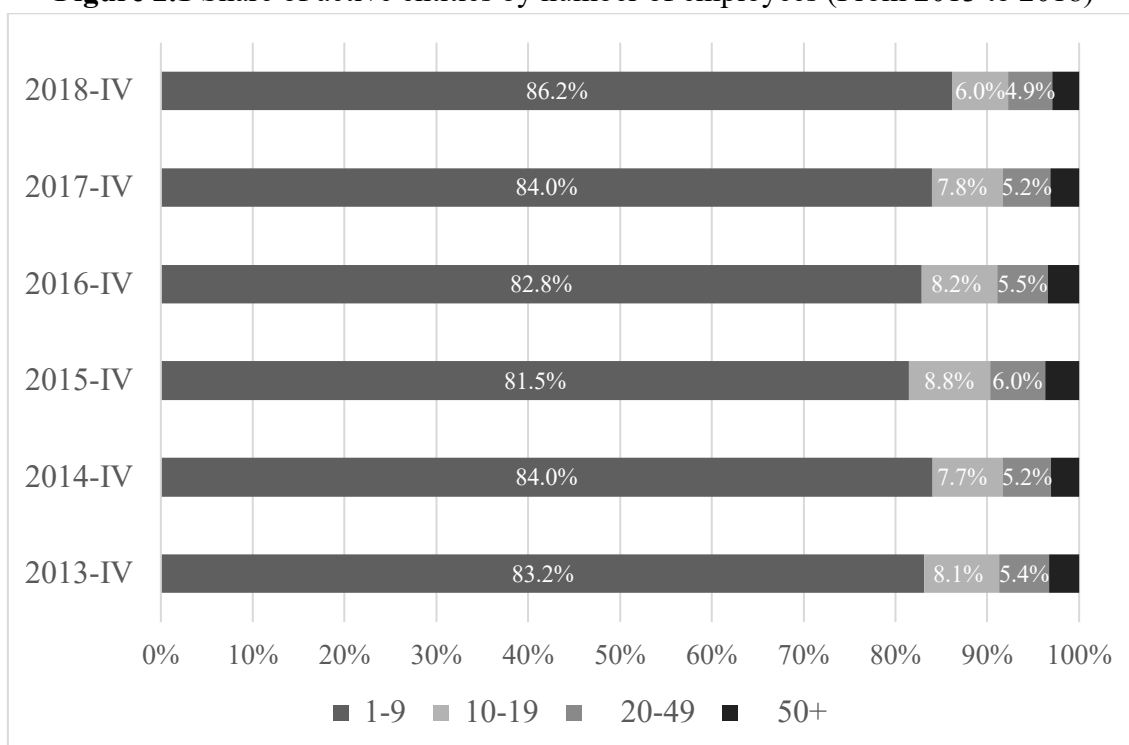[1] National Statistics Office of Mongolia web page: www.1212.mn

[2] Annual Report of SME Development Fund, 2017

National Statistics Office of Mongolia. The annual increase in the number of entities that have 1-9 employees is much smoother than others about 10.2% percent a year; for the number entities that have 10-19 employees shows more ups and downs over time; for the number of entities that have 20-49 employees annual average increase is 3.7.% except for the sudden increase 22.1% in 2015; for the number entities that have 50+ employees is increased average 1.3% a year except for the sudden increase 31.1% in 2015.

As of 2017, the number of active entities was 78,585, of which 57,276 or 72.9 percent are classified as SMEs.

In this sector, around 800.0 thousand people are employed and if we classify active entities by its number of employees, 97% of all entities have employees fewer than 50 which means the majority of the entities are operating in small scale production. SMEs up to 9 employees account for 86.2 percent, 10-19 employees account for 6.0 percent, 20-49 accounts for 4.9 percent, and more than 50 employees account for 2.9 percent in 2018.[3]

**Figure 2.1** Share of active entities by number of employees (From 2013 to 2018)

Source: Business register database, National Statistics Office of Mongolia.

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[3] There is not enough data on employment in SME sector. Thus, we use National Statistics Office's Business register database in this research paper.

Most of the large companies operating in Mongolia are concentrated in the mining sector less than 1.0 percent of the SMEs were classified as mining and quarrying. However, SMEs are the main players in all other economic sectors, especially agriculture, manufacturing, construction and wholesale and retail trade as shown in Figure 2.2. As of 2018 wholesale and retail trade accounts for 39.2%, construction 7.6%, manufacturing accounts for 7.2%, and agriculture accounts for 4.5% respectively.

Figure 2.2 Active entities with 1-49 employees by economic activities
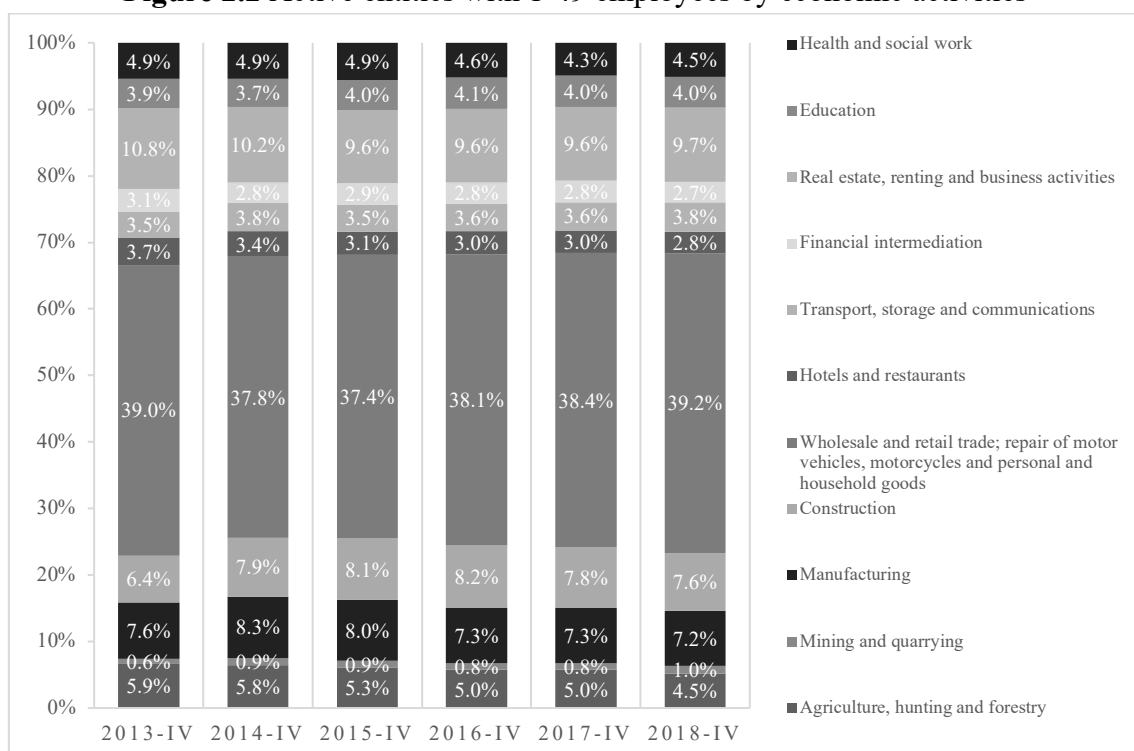
Source: Business register database, National Statistics Office of Mongolia.

2.3 Overview of Government Policy for SME's in Mongolia

After the transition to the market mechanism, from the early 1990s, Government of Mongolia and International organizations has started implementing projects and programs to improve the SMEs sector and its development. During that time the scope and amount of the project were quite limited. Under the Agreement on "Agriculture from the United States to Mongolia on Agriculture Products" between 1992-1993 between Government of Mongolia and the United States, in 1993, the Ministry of Trade and Industry (formerly known as the "Small and Medium Enterprises agency") was

established to support SMEs from the sale of ghee and butter.[4] This was the first ever known Government support for SMEs.

Government of Mongolia have been implementing policies more progressively from the early 2000s. Table 2.3 illustrates the policy actions and measures that the Mongolian Government has been implementing since 1994.

Table 2.3 Policy actions of Government of Mongolia for SME development

Year	Activities
1994	Government of Mongolia started implementing "Poverty reduction project" in collaboration with the World Bank.
1996	Savings and Credit association established.
1997	UNDP started implementing "Micro-start Project" through 6 NGOs of Mongolia.
1999	First Non-bank Financial Institution established.
2002	"Law on Non-bank Financial Institution" was enacted.
2005	Government of Mongolia announced 2005 as a year of "Microfinance" and commenced "SMEs Development Program".
2006	Financial Regulatory Commission of Mongolia was established with the function of regulating the non-banking sector.
2007	"Law on Small and Medium Enterprises" was passed.
2008	Government has established SMEs agency, in charge of implementation to SMEs policies.
2009	Government has established a Fund for SMEs development. To promote SMEs development and improve business climate, the Government announced 2009 as a year of supporting industrial production and commenced "Guidelines for developing industrial production in local area".
2010	Government of Japan started financing 75 billion MNT for developing SMEs in Mongolia, USAID approved $25 million credit for SMEs, European commission granted €4 million to increase competitiveness in the SME sector. The Government announced 2010 as a year of improving business environment.
2011	The Soum (Local administration unit) Development Fund was established to promote local SMEs development. The Government announced 2011 as a year of supporting employment.

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[4] Annual Report of SME Development Fund, 2017

2012	"Law on Credit guarantee fund" was passed in 2012 for the purpose of providing a 60% credit guarantee for small and medium-sized enterprises that do not have sufficient collateral. The Government announced 2012 as a year of supporting households' development.
2014	The SMEs Development Program (2014-2016) was commenced by the Government. In accordance with implementation of the program policy actions have been taken to enhance SMEs competitiveness and create employment.
2015	"Law on Supporting Manufacturing industry" was passed. In addition, State Policy on Industrialization was commenced. The purpose of the Policy is to create the industrialization and service with advanced techniques, high technology and competitiveness and to develop the industrial sector as the priority sector that provides of the sustainable development of Mongolia.
2016	Supporting Domestic production by customs and tax policies according to the Government of Mongolia's Action Plan for 2016-2020. The Government announced 2016 as a year of "Promoting domestic production, and sales".
2017	The issue of amending SME basic law passed to the State Great Khural (Parliament of Mongolia).
2019	The SMEs Development Program (2019-2022) was commenced by the Government. Almost all objectives are same as the previous program however following two measures were added which are to enhance regional SMEs competitiveness through organizing "One village-One Product" campaign, and the development of the consulting service.

As illustrated in Table 2.3 there is two kinds of support for SMEs: domestic and international support. As we can see the Government has been providing support for SME by establishing a regulatory framework, establishing policy implementation main body SME Agency (now SME agency is working under the Ministry of food, agriculture, and light industry), and implementing training and financial assistance programs. In addition, the Government of Mongolia is providing tax and VAT incentives to SMEs.

However, the concept of industrial policy has not been established until recently, around 2014. Before 2014, the government have been focused only on priority projects and regarded them as an important sector which is as follows.

- Heavy industrial sector such as metal, coking coal to utilize the mining resources.

- Agricultural sector: Government subsidies to crop, livestock, and agro-processing products such as meat, dairy, textiles including wool, cashmere have been the main focus.

- Infrastructure projects including power plants, road, water supply, and construction.

- New projects except for the mining sector such as information technology, tourism, and environmental protection.

The government has formulated around 400 development policies and plans since 1990, more than 100 policies and plans in total have been still effective (Data collection survey on business environment and investment promotion in Mongolia, 2017). However, current development policies and plans are not consistent with each other, the goal and measurement of the policies and plans are established in general aspects and not clear and the insufficient financial resources makes it more difficult to achieve the goals. As we mentioned before, there are plenty of non-mining related projects are established however about 80% of total amounts of foreign direct investment between 1993 and 2012 were development projects related to mining and only 1% was manufacturing projects.

Thus, establishing industrial policy and to strengthen the manufacturing industry and other non-mining sectors was the urgent issue that the government must take action.

State Industrial policy

The industrial sector accounts for the major part of the economy that based on the relationship between the state, science and private sector, thus the purpose of the policy is to develop export-oriented, high-technology and competitive industrialization and service. The goal of the State Industrial Policy of Mongolia is to establish integrated activities to create the knowledge and skill driven manufacturing of high value-added products and services from agricultural raw materials and mining industry.

The government has listed a total of 231 projects which 58 of them are a top priority, with the total budgeted cost of 44.9 billion dollars. However, again as illustrated in Table 2.4, only 0.1% of the total budget is allocated to SME sector.

Table 2.4 State Industrial Policy Projects

Projects	Heavy Industry	Light Industry	Small and Medium Industry
Budget (ml $)	44,628.38 (99.5%)	164.2 (0.4%)	65.1 (0.1%)
Total number of projects	107	41	83
Top priority	16	19	23
To approve	13	4	-
To consider	7	13	17
Low priority	71	5	43
Production type	- Oil production - Coke and Coal chemical - Copper smelting - Steel production - Cement industry	- Leather and hide production - Cashmere production - Wool - Wood	- Dairy production - Construction material production - Food production - Bio preparations - Information technology

Source: Ministry of Food, Agriculture and Light Industry, 2015.

Taxation

The Government of Mongolia's Action Plan for 2016-2020 has stated that "Supporting Domestic production by customs and tax policies" and three main tax changes have been made within this framework. These include:

- Regional discount tax: In remote aimag[5] and soum[6] far more than 550km from the capital city of Ulaanbaatar have a tax exemption of 50 percent, far more than 1000km from the capital city of Ulaanbaatar have an income tax exemption of 90 percent starting from 1 January 2017.

- Imposing 1 percent income tax for small and medium-sized enterprises with annual income of up to 1.5 billion MNT, including four sectors: Food production, Manufacturing of textile and apparel, Manufacturing of construction materials, Crop and livestock production.

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[5], [9] Administration unit of Mongolia. Officially, Mongolia is divided into 3 administrative tiers, with different types of administrative unit on each tier. 1st tier divided into 21 provinces and capital city, 2nd tier divided into 332 *soums* and 9 districts as of 2018. 2nd tier further subdivided into *bags* and subdistricts.

- Exemption from customs tax on small and medium-sized equipment and spare parts: According to the Government Resolution No. 168 of 2017, equipment and spare parts for small and medium-sized production are exempted from Customs duty until 2019.

International Support

As for the international support a wide range of international institutions have stepped into the breach to build an SME and microcredit sector. These organizations not only provide financial support but also technical assistance on strengthening management capacity and technology to produce more value-added product etc.

In 1998, the UN began to support microcredit in the country through its MicroStart program. Indeed, XacBank emerged from this program. Since then, a number of nations have offered credit guarantee schemes, such as the Netherlands, Japan, Germany and the US. The EU has also provided funding. These programs allow banks to make loans at competitive rates and over longer tenors to borrowers who lack security.

Along with financial assistance, they also provide a wide range of assistance to SMEs: help to relevant organizations and institutions in developing capabilities important to SMEs (such as the Chamber of Commerce, banks, the Mongolian Management Consulting Institute and the Institute of Finance and Economics), research and training, consulting and direct advice to women and young entrepreneurs. Currently there are 12 international projects are being implemented.

In January 2012, the European Bank for Reconstruction and Development (EBRD) along with the EU began proving a wide range of assistance to SMEs in a five-year, €3.8m program. Among the support being provided is: assistance in improving procurement procedures so that small enterprises have a better shot at government contracts; help to relevant organizations and institutions in developing capabilities important to SMEs (such as the Chamber of Commerce, banks, the Mongolian Management Consulting Institute and the Institute of Finance and Economics); and direct advice to entrepreneurs. One product of the initiative is an online course offered by the Mongolian Banking and Finance Academy that taught bank loan officers international best practices of lending to SMEs. The training series went live in late October 2013.

The EBRD is also working – in cooperation with the International Finance Corporation (IFC), the Swiss State Secretariat for Economic Affairs and the Mongolian

Bankers Association (MBA) – to encourage secured transactions reform, which will help the country develop the legal infrastructure to allow loans to be made backed by movable collateral. The hope is that a registry can be created for collateral of this type (such as farm equipment) so that current information on an asset can be accessed to prevent competing claims from being made against the same asset. Potential borrowers tend to be relatively poor, predominantly agricultural and sometimes nomadic, so very often all they have to pledge are movable assets. It is also important to note that land itself has not historically been easy to use to secure a loan because the market for land is so new; rights to property are not well established and clear title is not always easy to prove.

2.4 Current basic challenges for SMEs

Over the years, the presence of an SME financing system has emerged, combining various public and private programs. However, from the demand side, Small firms and entrepreneurs still struggle to access to financial services and facing numerous challenges.

Considerable amount of literature and surveys conducted by several international organizations reveals the current challenges that Mongolian SMEs are facing. Challenging factors can be categorized either into supply-side or demand-side problems. The main supply-side issues include unattractive and costly loans, the high and universal requirement for immovable assets to be used as collateral, and the overly complicated administrative procedures. On the other side low financial literacy, low-level of profitability and lack of collateral are the main demand-side problem. Moreover, the lack of coherent and accessible data on SMEs and on their financing is an additional general issue for policymakers (EBRD & World Bank, 2015).

According to survey results "Small and medium enterprises' development and financial access" conducted by the Central Bank of Mongolia (BOM)[7] revealed that social and political condition (-0.59), macroeconomy (-0.40), financing (-0.52), legal and institutional condition (-0.35) are the most challenging factors in the business environment (BOM, 2018). The latest Business Environment and Enterprise Performance Survey (BEEPS V) a joint survey by the European Bank for Reconstruction and

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[7] The Central Bank of Mongolia have been annually conducted a nationwide survey on small and medium enterprises' development and financial access from 2011, in order to have a better understanding of the current development, business characteristics, challenges and financial access and to develop policy recommendations for Government of Mongolia. In 2018, survey covered 1,922 SMEs operating in Mongolia.

Development (EBRD) and World Bank also found that access to finance was the barrier most frequently cited by SMEs (31% of respondents), followed by tax rates (12%) and inadequate education of the workforce (9%). In addition, 56% of Mongolian SMEs do not apply for loans because they are discouraged by credit conditions. In OECD peer review note "Enhancing access to finance for micro, small and medium-sized enterprises in Mongolia" outlines five main challenges faced by MSMEs in accessing loans. These include: 1) lack of data for sound policymaking in favor of SMEs, 2) loans which are not adapted to SMEs' needs, 3) pervasive and restrictive collateral requirements, 4) cumbersome application processes, 5) poor financial literacy of SMEs. The following section will give a closer examination of some challenges that SMEs are faced.

Access to Finance as a general issue for SMEs

In general, access to financial services in Mongolia appears to be high when measured by composite indicators of financial inclusion, 93.0 percent of the population in the country over 15 years old have a bank account, along with the high usage of mobile banking (21.9%), and number of bank branches per 100,000 adults is 70.3 (ranking 3rd place among 264 country data) demonstrating financial inclusion in Mongolia is on par with developed countries in these categories. However, the drawbacks are lower amount of savings, high-cost financial resource and lack of knowledge in savings and insurance among individuals according to the Global Findex Database.

Like many other countries, access to finance for SMEs remains a major issue. SMEs face a wide range of difficulties when accessing finance, including high-interest rates, collateral requirements, size and maturity of loans, and complex application procedures (EBRD and World Bank, 2015). High interest rate in Mongolia is major financing obstacle to doing business in Mongolia, even though they have come down substantially since late 1990s from 48.1% to 20% in 2017.

Currently, there are 13 commercial banks operating in Mongolia, of which one public and twelve privately owned. The largest five banks Khaan Bank, Trade and Development Bank, Golomt Bank, XacBank, and State Bank make up around 90% of the total deposits and 85% of the total loans in the banking system. Nationwide 1,512 bank branches and units are operating, of which one-third of the branches are located in Ulaanbaatar city. Only Khaan bank and State Bank have branches throughout the country

however Golomt bank, XacBank, and Trade and Development Bank operating in the central area of the provinces (Table 2.5 and 2.6).

Table 2.5 Number of branches and units of Commercial Banks

	Bank name	Branch	Settlement center	Currency exchange center	Other units	Total number of branches
1	Arig Bank	1	13	1	1	16
2	Bogd Bank	4	0	3	0	7
3	Golomt Bank	33	45	25	23	126
4	Capital Bank*	23	18	3	0	44
5	Capitron Bank	20	10	9	0	39
6	Credit Bank	0	0	0	0	0
7	National Investment Bank	9	0	4	0	13
8	XacBank	35	44	8	0	87
9	Khaan Bank	32	502	3	1	538
10	Trade and Development Bank	52	3	1	44	100
11	Chingis Khaan Bank	2	0	3	0	5
12	State Bank	35	446	11	1	493
13	Transbank	1	1	0	0	2
14	Ulaanbaatar City Bank	9	7	25	1	42
	Total	**256**	**1,089**	**96**	**71**	**1,512**

Note: *Capital bank dissolved in 8th of April 2019.
Source: Central Bank of Mongolia, as of 2018.12.31.

Table 2.6 Number of branches and units of Commercial Banks by Province

	Province	Branch	Settlement center	Currency exchange center	Other units	Total number of branches
1	Ulaanbaatar	141	241	67	66	515
2	Arkhangai	4	40	0	0	44
3	Bayan-Ulgii	6	33	0	1	40
4	Bayankhongor	5	47	2	0	54
5	Bulgan	4	34	0	0	38
6	Govi-Altai	4	42	0	0	46
7	Govisumber	3	6	0	0	9
8	Darkhan-Uul	10	35	1	1	47
9	Dornogovi	10	42	8	0	60
10	Dornod	6	35	2	0	43
11	Dundgovi	3	31	0	0	34
12	Zavkhan	4	54	0	0	58
13	Orkhon	7	28	1	0	36
14	Uvurkhangai	5	48	1	0	54
15	Umnugovi	8	49	5	0	62
16	Sukhbaatar	4	31	0	0	35
17	Selenge	9	55	5	0	69
18	Tuv	4	55	0	0	59
19	Uvs	5	44	0	0	49
20	Khovd	5	41	3	0	49
21	Khuvsgul	5	53	0	0	58
22	Khentii	4	45	1	0	50
23	Foreign country	0	0	0	3	3
	Total	**256**	**1,089**	**96**	**71**	**1,512**

Source: Central Bank of Mongolia, as of 2018.12.31.

As shown in Table 2.7, the number of SMEs that are registered as borrowers were 6,776 or 12.9% out of total 52,276 SMEs and accounting for 19.9% (including 44,481 individual's micro business loan) of total outstanding loan as of 2018.

Table 2.7 Access to Finance Statistics 2018

Total outstanding loans (trillion MNT)	17,082.4
Average lending rate for loans in MNT	16.9%
Central Bank policy rate	11%
Deposit rate	12.0%
Outstanding loans to SMEs (% of total loans)	19.9%
- Establishments	12.9%
- Individuals*	7.0%
Number of SME borrowers: - Establishments	6,776
- Individuals*	44,481

Source: Central Bank of Mongolia.

In addition to the commercial bank loan, Government of Mongolia and other international organizations are implementing a loan program to support SMEs from large cities and rural areas under several projects. These subsidized concessional loans are extended through the commercial banks and the interest rate is lower than the market rate ranging from 3.0% and 10.0% with longer loan period, furthermore, some projects do not require collateral, and some projects provide loan guarantees for businesses that lack the necessary collateral. However, the share of the project loan amount to total outstanding loans for SMEs were 25.8%, constituting 32.4% of the total borrowers as illustrated in Table 2.8 (row number 2, except Small business loan for individuals). Also, the share of project loan for SMEs to the total outstanding loan was 3.5% in 2018. Considering the commercial bank penetration rate in the local area is very low, we can assume that access to subsidized loans for local SMEs is quite limited. Moreover, recently there have been incidents that enormous amount of project loans, especially from SME Development Fund, and Soum Development Fund were extended illegally to acquaintances of the politicians which means there is an urgent need to improve the transparency and monitoring of the fund allocation process.

Table 2.8 Outstanding loan for SMEs and individuals, 2018 (in million MNT)

	Classification	Outstan-ding loan	Of which: Project loan	Number of borrowers	Of which: Project loan borrowers	WA loan period (month)	WA Lending Rate (annual)	
							MNT	Foreign currency
1	*Loan for SMEs*	2,207,312	568,561	6,776	2,193	37	16.9	9.2
1.1	Agriculture, hunting and forestry	129,767	71,068	416	207	42	18.6	0.0
1.2	Manufacturing	513,731	269,823	1,252	661	35	16.6	12.5
1.3	Construction	341,767	30,148	635	92	41	17.7	10.1
1.4	Wholesale and retail trade, and motor vehicle, motorcycle maintenance service	534,531	85,388	1,772	509	38	17.0	9.4
1.5	Service	179,818	32,010	889	278	42	19.6	7.6
1.6	Others	507,698	80,124	1,812	446	27	15.1	7.6
2	Small business loan for individuals	1,195,502	79,205	44,481	2,813	24	18.6	10.9
2.1	Agriculture, hunting and forestry	36,125	3,766	2,849	234	30	18.5	0.0
2.2	Manufacturing	52,452	9,106	2,861	433	31	19.6	0.0
2.3	Construction	70,071	4,804	477	38	33	20.0	0.0
2.4	Wholesale and retail trade, and motor vehicle, motorcycle maintenance service	501,489	33,393	17,170	766	30	18.3	12.0
2.5	Service	111,894	4,485	4,289	493	48	20.3	0.0
2.6	Others	423,470	23,651	16,835	849	16	18.6	10.0

Source: Central Bank of Mongolia. WA-Weighted average.

From the data used in this research paper, there were 122 soums (total 339 soums) where SMEs have bank loan data total 397.8 trillion MNT, of which bank loan of SMEs operating in Ulaanbaatar city accounts for 89.4% of the total (Table 2.9). This means there is a significant concentration of SME financing activity in Ulaanbaatar city. In other words, SMEs operating in regional areas have extremely limited access to additional financial services. Moreover, the interest rate is higher than the Ulaanbaatar city. In Chapter 3 we will examine the concentration of the economic activity of SMEs with the spatial econometric method.

Table 2.9 Summary of National establishments census (in trillion MNT)

	Number of SMEs	Sales revenue	Capital	Investment	Budget investment	Bank loan	FDI	Securities
Country total	**43,753**	**25,731.5**	**21,416.7**	**2,744.9**	**242.0**	**397.8**	**78.8**	**17.9**
Western region	3,978	345.0	436.3	38.6	17.9	4.1	0.1	0.0
Khangai region	4,595	862.3	728.2	104.5	32.4	22.4	0.2	0.0
Central region	5,055	1,159.1	1,787.1	145.6	12.4	13.3	20.0	-
Eastern region	1,794	364.9	282.1	40.6	8.2	2.6	0.1	-
Ulaanbaatar city	28,331	23,000.3	18,183.1	2,415.6	171.0	355.4	58.4	17.9

Source: National establishments' census 2016, National Statistics Office of Mongolia.

Table 2.9 illustrates the summary of the data used in this study. Budget investment constituted 8.8% of total investment amount and, of which over half of it was allocated to electricity, gas, steam and ventilation sector. Also, budget investment in Ulaanbaatar city accounts for 70.7% of the total budget investment.

Instability in government actions and bureaucracy

Government of Mongolia has established the SME Agency in 2008, furthermore established SME Development Fund to support financing for SMEs in 2009. Its role includes providing long-term concessional loans for SME operations, helping SMEs to access production equipment through financial leasing, promoting the activities of subsidized SMEs, organizing workshops and training, and offering double guarantees for credit. However, following every election, the new government changes the status, location, and responsibilities of the SME Development Fund which leads to instability in its function and structure. Until 2012, it was an agency within the Ministry of Agriculture and Light Industry, however from 2014 it was a department within the Ministry of Industry. Today it operates under the Ministry of Food, Agriculture and Light Industry. The structural uncertainty and frequent changes have led to weakening the policy implementation and monitoring, even in some cases important operations are left behind or no progress and achievements. In addition, there is less development on monitoring and evaluation of public financing and subsidized loans for SMEs.

These issues prove that SMEs are kind of left behind because the economy is highly depended on the mining sector. The government needs to increase its attention to developing the SME sector. In addition to supporting SMEs through the tax policy, the development of a comprehensive legal framework for SMEs and a comprehensive government policy aimed at improving their educational and financial capacity by creating favorable financial, loan and investment conditions will be a step towards a greater result. Moreover, the Government of Mongolia needs to address the concentration of the economic activity in central city and mining based provinces in order to achieve a balanced development of the country. Even though Government have been formulated a handful of policies and plans to develop local SMEs according to "Regional development strategy" since 2009, however, there is no progress has been seen.

In the next chapter, we will examine and prove that the economic activity of SMEs has been concentrated in Central city and mining based Provinces with the spatial econometric method.

Chapter 3. Identifying SME Density and Performance Distribution in Mongolia Using Spatial Data Analysis

3.1 Methodology

In this paper, we apply nighttime light data for estimating the spatial distribution of Sales revenue (output) and SMEs density in Mongolia in order to estimate the economic activity difference between central cities and remote areas. The NTL data has been proven to be capable of providing strong estimation of population, GDP and electricity consumption based on the strong correlation between lights and human activities.

Spatial econometrics is a subfield of econometrics that deals with spatial interaction (spatial autocorrelation) and spatial structure (spatial heterogeneity) in regression models for cross-sectional and panel data (Anselin, 1988). The spatial econometric method has been used not only in applied but also in theoretical econometrics, become getting more attention from the researchers. The observations could represent performance level, income, employment, population levels, tax rates, infrastructure, construction, flood and vegetation levels, etc. of the specific regions. Conventional regression models commonly used to analyze cross-sectional and panel data assume that observations are independent of one another. However, it is commonly observed that sample data collected for regions or points in space are not independent, but rather spatially dependent, which means that observations from one location tend to exhibit values similar to those from nearby locations (Lesage, 2008).

The next section explains the methods for estimating models and spatial connectivity structures.

3.2 Theoretical background

In this paper, to estimate the spatial distribution of output across firms, trans-log form of the modified Cobb-Douglas production function was used which have been widely used in the economic growth literature to measure the rate of technological progress (e.g., Solow, 1957). Equation (1) is the mathematical form which represents the relationship between a firm's output and input.

$$lnSR = \beta_0 + \beta_1 lnL + \beta_2 lnK + \beta_3 lnX + e \qquad (1)$$

where:

$lnSR$ = the vector of the natural logarithm of sales revenue

lnL = the vector of the natural logarithm of total labor

lnK = the vector of the natural logarithm of capital

lnX = the vector of the natural logarithm of the controlling variables

e = residual

Specifically, the controlling variables include the value of investment, government budget investment, bank loan, FDI and the revenue from issuing securities. In addition, the national establishments' census of Mongolia does not provide information that exactly matches the concept of output. There are numerous studies have used total sales as a proxy for output (e.g., Khatri, Leruth, and Piesse, 2002). As a proxy for the output of individual firms, total sales revenue was used.

Spatial statistics (Moran's I)

The localized association between NTL and the main variables obtained from the survey has been quantitatively examined in this study. Specifically, the spatial autocorrelation statistic (Moran's I) has been applied for validating localized correlation. Equation (2) represents the mathematical representation of the Moran's I test.

$$Moran's\ I = \frac{n}{W_0} \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} W_{ij}(X_i - \bar{X})(X_j - \bar{X})}{\sum_{i=1}^{n}(X_i - \bar{X})^2} \qquad (2)$$

with the normalizing factor

$$W_o = \sum_{i=1}^{n} \sum_{j=1}^{n} W_{ij} \qquad (3)$$

where:

X_i = variable of interest

$\bar{X}$ = mean of X_i

N = number of spatial units indexed by i and j

W_{ij} = spatial weight matrix

$(X_i - \bar{X})$ = deviation of X_i from its mean

$(X_j - \bar{X})$ = deviation of X_j from its mean

The obtained value by *Moran I* quantitatively identifies the correlation between the pair of *X* located within the area specified by the spatial weight matrix W_{ij}. Fundamentally, the computation of *Moran I* is based on the concept of correlation. Hence, the value obtained by *Moran I* has a range between -1 and 1. A value close to 1 indicates that there exists a clustering value of *X* in most areas. On the other hand, a value of *Moran I* close to -1 specifies a dispersion pattern in which neighboring areas have the opposite characteristics.

It is noted that *Moran I* identify any similarity in the whole data set. However, there is still a limitation to identifying the specific location of correlation. Therefore, *Local Moran I* or local indicators of spatial association (LISA), have been developed as an alternative methodology enabling identification of the specific location of correlation. The mathematical representation of *Local Moran I* (LISA) is shown in equation (4).

$$Local\ Moran's\ I_i = \frac{(X_i - \bar{X})\sum_j W_{ij}(X_j - \bar{X})}{S_i^2} \tag{4}$$

where:

$$S_i^2 = \frac{\sum_j (X_j - \bar{X})^2}{(n-1)}$$

W_{ij}=spatial weight matrix

n= number of spatial units

The value of *Local Moran's I_i* obtained from computation based on equation (4), indicates the correlation of *X* in area *i* and those in the neighboring areas. Similar to the methodology for the conventional correlation test, the test of statistical significance of *Local Moran's I_i* can be obtained. The outcome of the test, conventionally identified as *p* value, empowers the application of *Local Moran's I_i* in the analysis of spatial data, allowing identification of the localized correlation.

Spatial Econometrics

Spatial dependence reflects a situation where values observed in one region, depending on the values of neighboring observations at near-by areas. Anselin (1988) have introduced the techniques of spatial econometrics with two specifications which are the Spatial Lag Model (SLM) and the Spatial Error Model (SEM). The former pertains to spatial correlation in the dependent variable, while the latter refers to the error term. Hence, it has become convenient to distinguish between spatial lag and spatial error model specifications. Under the assumption of normality distribution and independent

and identically distribution of disturbances, both the SLM and SEM can be estimated using Maximum Likelihood estimation (ML).

Spatial Lag Model: (SLM) is the extension of regression models. The spatial dependence is incorporated into the conventional linear regression as an additional independent variable. They allow observations of the dependent variable y in area i $(i=1,...,n)$ to depend on observations in neighboring areas $j \neq i$. The basic spatial lag model takes the form as in equation (5).

$$y_i = \rho \sum_{j=1}^{n} W_{ij} y_j + \sum_{q=1}^{Q} X_{iq} \beta_q + \varepsilon_i \tag{5}$$

In matrix notation, equation (5) may be written as

$$y = \rho W y + x\beta + \varepsilon_i \tag{6}$$

The above equation follows the standard specification, in which the independent variable X explains the variation of the dependent variable Y. Also, disturbance, ε_i, randomly and marginally effects Y. The key modification is that with a row standardized spatial weight matrix W (that is, the weights are standardized such that $\sum_j W_{ij} = 1$ for all i), this amounts to including the average of the neighbors as an additional variable into the regression specification. This variable, Wy, is referred as the incorporation of influence from the dependent variables in neighboring areas. The variation of Y is a combination of the effect by independent variables located in the host area and influence from the neighbors. An example of the matrix representation of this specification is shown by equation (7).

$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \rho \begin{bmatrix} (w_{11}y_1 + w_{12}y_2 + w_{13}y_3) \\ (w_{21}y_1 + w_{22}y_2 + w_{23}y_3) \\ (w_{31}y_1 + w_{32}y_2 + w_{33}y_3) \end{bmatrix} + \begin{bmatrix} x_{11} & x_{12} & x_{13} \\ x_{21} & x_{22} & x_{23} \\ x_{31} & x_{32} & x_{33} \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \beta_3 \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \end{bmatrix} \tag{7}$$

The above matrix representation of SLM clearly shows the significant role of spatial weight W. Particularly, the specification of all the elements of the spatial weight matrix governs spillover across locations, and in general, the attribute of matrix W is based on either the adjacency or the radius of distance.

$$lnSR = \rho W lny + \beta_1 lnK + \beta_2 lnL + \beta_3 lnX + \varepsilon \tag{8}$$

In this study, equation (8) is the SLM estimated using the soum and district level data obtained from the official establishments' census conducted in 2016. The magnitude and statistical significance of coefficient ρ is a parameter (to be estimated) identifying the strength of the spatial autoregressive relation of the cross-regional productivity.

Spatial Error Model: The second specification of the spatial econometric method is the Spatial Error Model. Fundamentally this approach is based on the assumption that spatial influence is the omitted variable, and the error term across location is correlated. Equation (9) indicates the mathematical form of SEM;

$$y = X\beta + \varepsilon \quad ; \qquad \varepsilon = \lambda W \varepsilon + u \qquad (9)$$

Also, this relationship is represented in matrix form as shown in equation (10).

$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} x_{11} & x_{12} & x_{13} \\ x_{21} & x_{22} & x_{23} \\ x_{31} & x_{32} & x_{33} \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \beta_3 \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \end{bmatrix}; \quad \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \end{bmatrix} = \lambda \begin{bmatrix} (w_{11}y_1 + w_{12}y_2 + w_{13}y_3) \\ (w_{21}y_1 + w_{22}y_2 + w_{23}y_3) \\ (w_{31}y_1 + w_{32}y_2 + w_{33}y_3) \end{bmatrix} + \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \quad (10)$$

The above representation exhibits the role of the spatial weight matrix connecting the cross-location effect via error terms. Specifically, the magnitude and statistical significance of λ are the key determinants identifying the existence of the mechanism influencing propagation through spatially linked error terms.

$$lny = \beta_1 lnK + \beta_2 lnL + \beta_3 lnX + \varepsilon \quad ; \qquad \varepsilon = \lambda W \varepsilon + u \qquad (11)$$

In this study, the estimation based on SEM has the function form as shown in equation (11). The standard production function has been extended to incorporate the spatial error relationship.

3.3 Data

In this paper, we used two different sources of data which are National Statistics Office ground data and spatial Night Time Light (NTL) data. The official Establishments census 2016 conducted by the National Statistics Office of Mongolia is the main source of data in this paper. The nationwide survey was conducted in 2016, collecting all the information related to establishments in 2016 from 103,079 firms of which 55,638 firms were actively operated with the 639,235 employees. In this paper, we used soum (territorial administrative unit of Mongolia) and district level SME aggregated data

including sales revenue, capital, number of employees, investment that divided into a budget investment, bank loan, foreign direct investment and securities, and number of SMEs in the analysis. In 2016, there was total 43,753 SMEs (78.6% of total active establishments) were operating with the 368,347 employers (57.6% of total employees).

The NTL data for 2013 is the globally collected night time light of the Earth's surface during 8.30pm and 10.00pm, produced by the Defense Meteorological Satellite Program/Operational Linescan System (DMSP/OLS), administrated by the United States Air Force. In order to eliminate noise and irrelevant information, the raw data was cleaned and processed by the National Geophysical Data Center (NGDC), under the administration of the National Oceanic and Atmospheric Administration (NOAA). The processed data has been publicly available since 1992. Each pixel of this global data represents an area of 0.86 km^2 with the value of light intensity having the scale of 0-64. Many scholars used this data as an index that represents the urban density and economic activity and studies have documented the statistically significant NTL index.
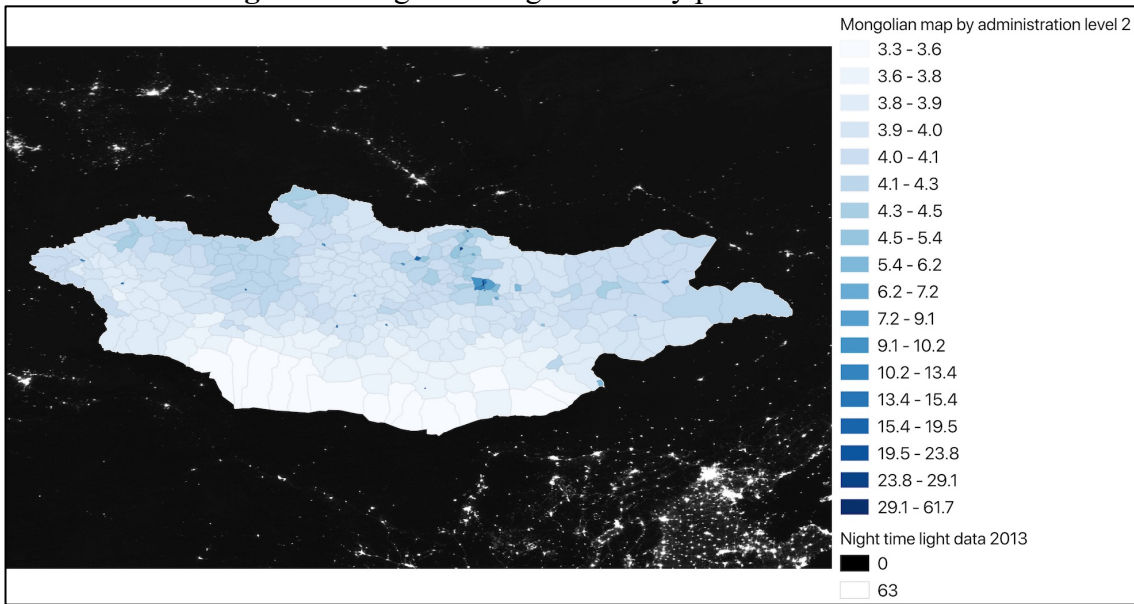
First, I computed the NTL data in QGIS software to calculate the NTL Index. NTL index will be used as a variable that indicates establishment density as illustrated in Figure 3.1 and 3.2.

Figure 3.1 Night time light data of Mongolia by province for 2013
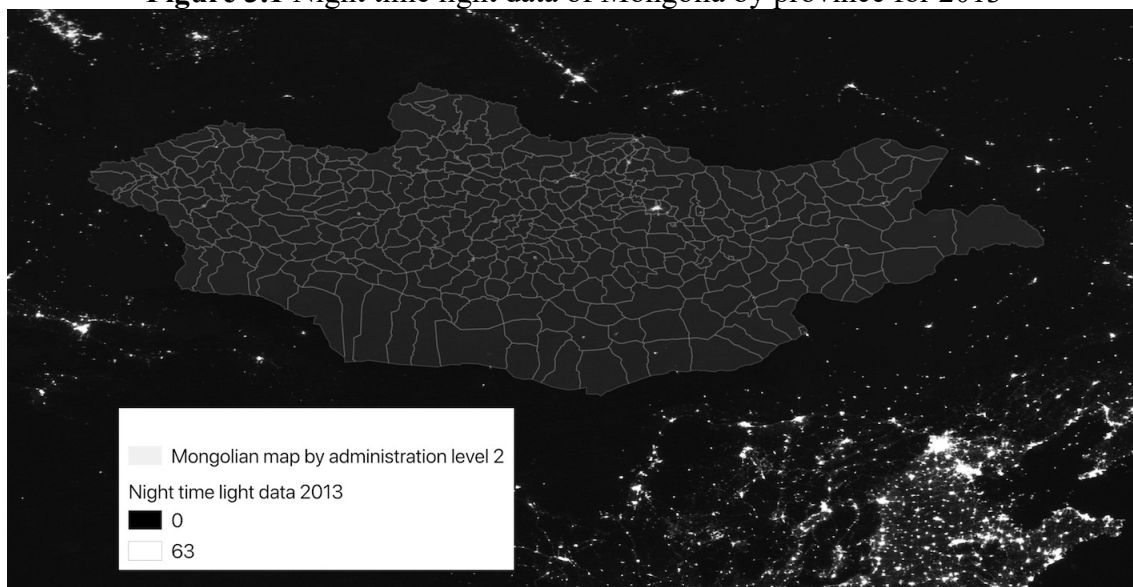
Note: NTL data computed in QGIS software by author.

Figure 3.2 Night time light Index by province for 2013

Note: NTL data computed in QGIS software by author.

Figure 3.2 illustrates the NTL index of Mongolia by soum[8] and district level. It shows that the Bayangol district in Ulaanbaatar has the highest density index 61.7, and the rest of the index is lower than 30.

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[8] Administration unit of Mongolia. Officially, Mongolia is divided into 3 administrative tiers, with different types of administrative unit on each tier. 1st tier divided into 21 provinces and capital city, 2nd tier divided into 332 *soums* and 9 districts as of 2018. 2nd tier further subdivided into *bags* and subdistricts.

<p align="center">**Table 3.1** Soum and Districts that have highest NTL index</p>

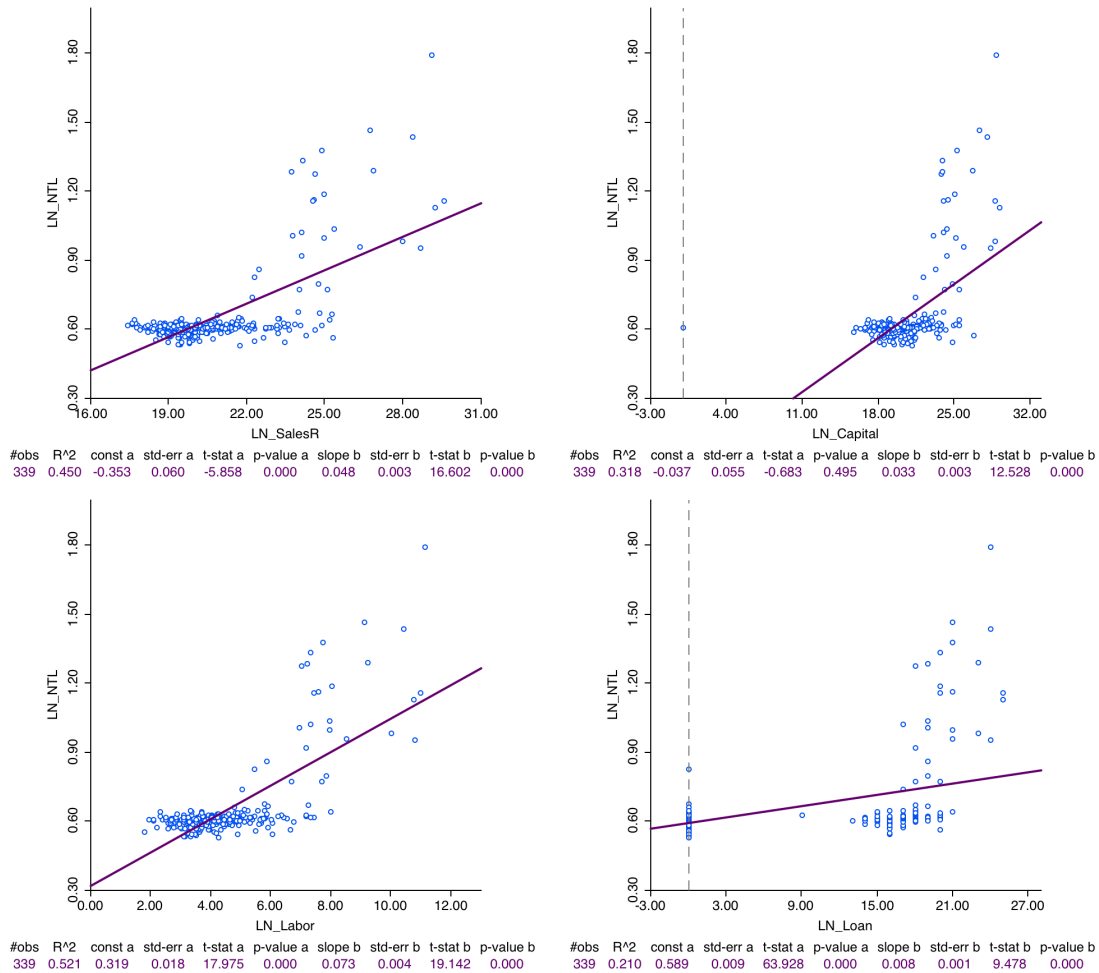| #	Province	District	NTL count	NTL sum	NTL mean
1	Ulaanbaatar	Bayangol	41	2530	61.71
2	Darkhan-Uul	Darkhan*	181	5273	29.13
3	Ulaanbaatar	Chingeltei	156	4269	27.37
4	Omnogovi	Dalanzadgad*	39	930	23.85
5	Selenge	Sukhbaatar*	91	1968	21.63
6	Orkhon	Bayan-Ondor*	483	9396	19.45
7	Zavkhan	Uliastai*	74	1420	19.19
8	Tov	Zuunmod*	34	642	18.88
9	Khovd	Jargalant*	127	1955	15.39
10	Bayankhongor	Bayankhongor*	106	1532	14.45
11	Ovorkhangai	Arvaikheer*	86	1238	14.40
12	Ulaanbaatar	Sukhbaatar*	371	5312	14.32
13	Ulaanbaatar	Xan-Uul	873	11670	13.37
14	Bayan-Olgii	Olgii*	176	1915	10.88
15	Arxangai	Erdenebulgan*	105	1104	10.51
16	Bulgan	Bulgan*	162	1646	10.16
17	Khovsgol	Moron*	186	1843	9.91
18	Ulaanbaatar	Songinokhairxan	2091	20030	9.58
19	Dornod	Kherlen*	496	4512	9.10
20	Ulaanbaatar	Bayanzurkh	2137	19174	8.97
21	Sukhbaatar	Baruun-Urt*	94	779	8.29
22	Ulaanbaatar	Bagaxangai	269	1936	7.20
23	Darkhan-Uul	Sharyngol	171	1143	6.68
24	Ulaanbaatar	Nalaix	1192	7432	6.23
25	Dornogovi	Zamyn Uud	776	4592	5.92
26	Ulaanbaatar	Baganuur	1074	6336	5.90
27	Hentii	Bor-Ondor	252	1373	5.45

Note: * represents the capital of the Province.
Source: Author's calculation.

Table 3.1 illustrates the administration units that have highest value of NTL Index (NTL mean). 16 central cities of the province out of total 21 province, except Ulaanbaatar, has the high NTL value than other soum ranging between 8.29 and 29.13. Central soums Sainshand 4.14 (Dornogovi province), Yesonbulag 4.10 (Govi-altai province), Ulaangom 4.38 (Uvs province), Sumber 4.09 (Govisumber province), Saintsagaan 3.96 (Dundgovi province) has the almost same index value with other remote soums. Other 312 soums, except illustrated in Table 3.1, has the NTL index value between 3.35 and 4.73.

Next, I checked the correlation between sales revenue, number of employees, capital, and bank loan with the NTL Index respectively. As shown in Figure 3.3 the result shows statistically significant with positive correlation which means NTL data can be applied to estimate the spatial concentration of key variables.

Figure 3.3 Correlation between NTL Index and other variables

#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
339	0.450	-0.353	0.060	-5.858	0.000	0.048	0.003	16.602	0.000

#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
339	0.318	-0.037	0.055	-0.683	0.495	0.033	0.003	12.528	0.000

#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
339	0.521	0.319	0.018	17.975	0.000	0.073	0.004	19.142	0.000

#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
339	0.210	0.589	0.009	63.928	0.000	0.008	0.001	9.478	0.000

Note: Correlation coefficients corresponding to each administration unit are shown in Table A.1in Annex.

3.4 Spatial statistical analysis result (LISA)

Figure 3.4, Figure 3.5, Figure 3.6 illustrates the result of local indicators of spatial association (LISA) between NTL and the firms' sales revenue. The low value of *Moran's I* 0.09 shows that the firms' nationwide concentration of sales revenue is low (Figure 3.4). However, the outcome of LISA (Figure 3.5) is the main result of identifying a specific area of concentration. Specifically, provinces with the red color in Figure 3.5 are areas in which both NTL and sales revenue are statistically higher than in other provinces. On the

other hand, provinces with the dark blue color are those having NTL and sales revenue statistically lower than other provinces.

Result of the LISA represents there exists a cluster of high value in provinces painted with red color which include all 9 district of Ulaanbaatar city, 13 soum of Tuv province, 13 soum of Selenge province (agricultural cluster), all 4 soum of Darkhan-Uul province, 2 soum of Bulgan province, and 1 soum from Khentii province and 1 soum from Govisumber province which means high productivity (has highest sales revenue) companies are located in these areas. The light red areas represent there exists a cluster of the high value of sales revenue however low NTL value. These areas include 4 soum of Umnugovi aimag where Tavan-Tolgoi and Oyu-Tolgoi mining are located. In addition, one of the important border crossing between Mongolia and China which is a free economic zone Zamyn-Uud in Dornogovi province has a high concentration of sales revenue however low value of NTL.

Figure 3.6 correspondingly illustrates the probability value, where the dark green indicates the p value at 1 percent, and light green indicates the p value at 5 percent. This outcome clearly specifies the statistically significant concentration of both NTL and sales revenue in the central areas which are Ulaanbaatar city and its neighboring areas, plus areas with mining and agricultural activities.
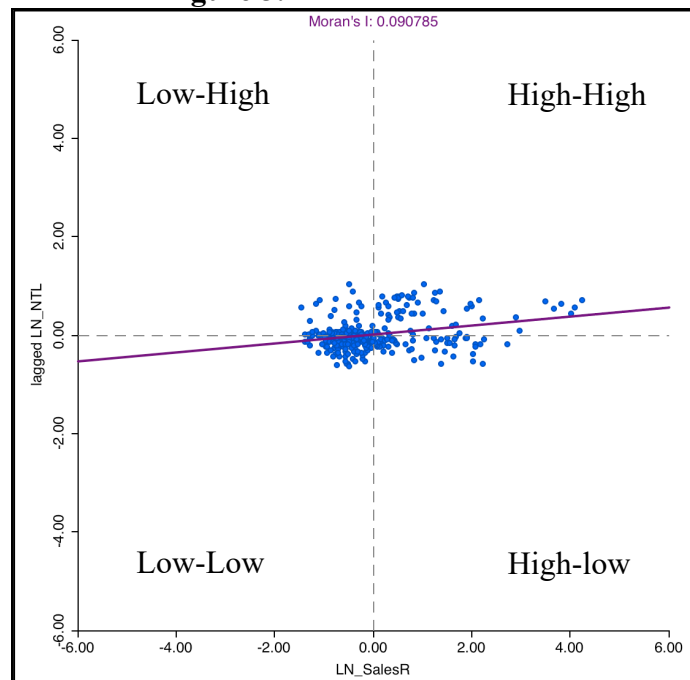
Figure 3.4 Moran Scatter Plot

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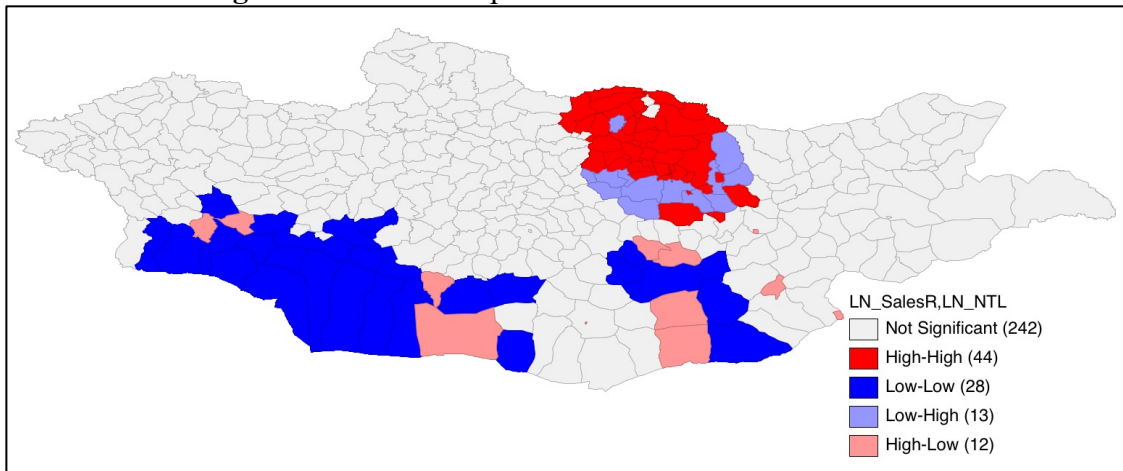**Figure 3.5** Cluster map between NTL and Sales revenue

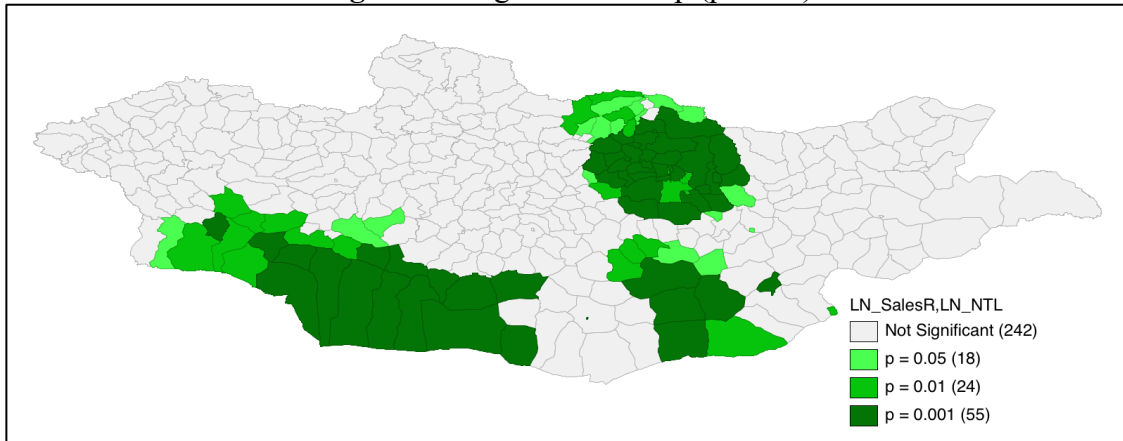**Figure 3.6** Significance map (p value)

Figure 3.7, Figure 3.8, Figure 3.9 illustrates the result of local indicators of spatial association (LISA) between NTL and the number of employees. Figure 3.10, Figure 3.11, Figure 3.12 illustrates the result of local indicators of spatial association (LISA) between NTL and the capital. Like firms' sales revenue, the nationwide concentration of the number of employees and capital are low, however, there exists a cluster of high values in the capital city Ulaanbaatar and its neighboring provinces; Tuv, Selenge, Darkhan-Uul, Bulgan, Khentii, and Govisumber.

Figure 3.7 Moran Scatter Plot
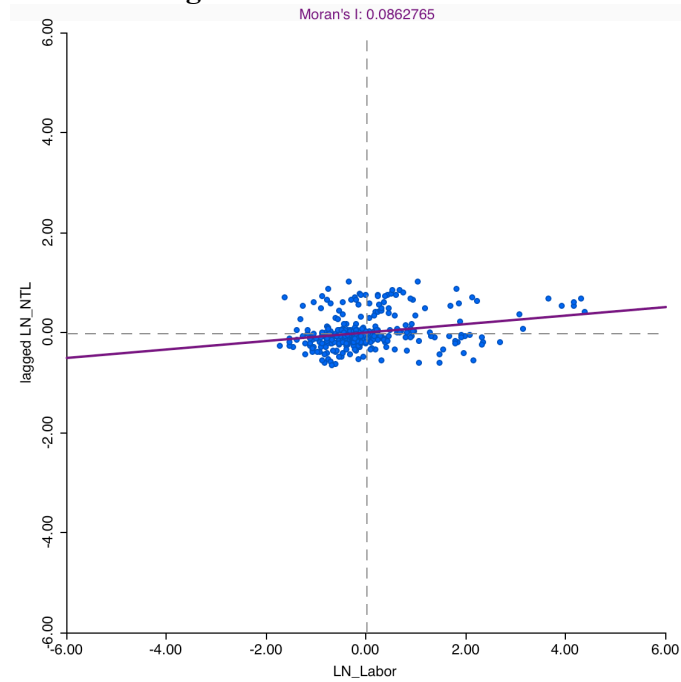
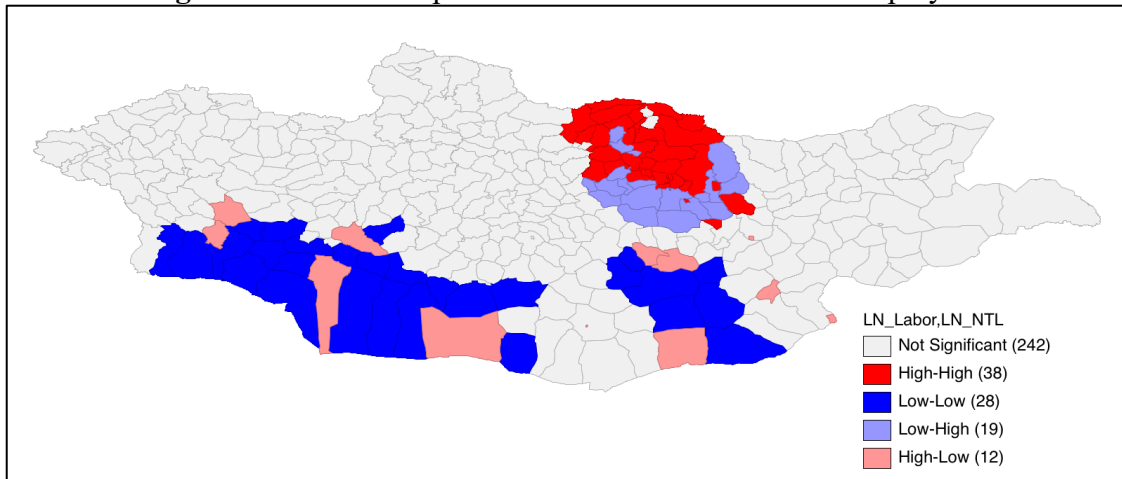**Figure 3.8** Cluster map between NTL and Number of Employees

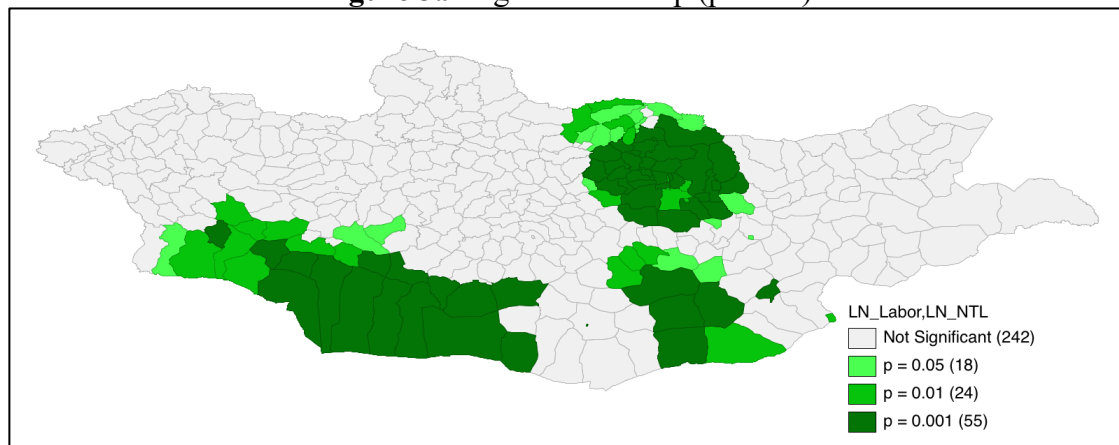
Figure 3.9 Significance map (p value)
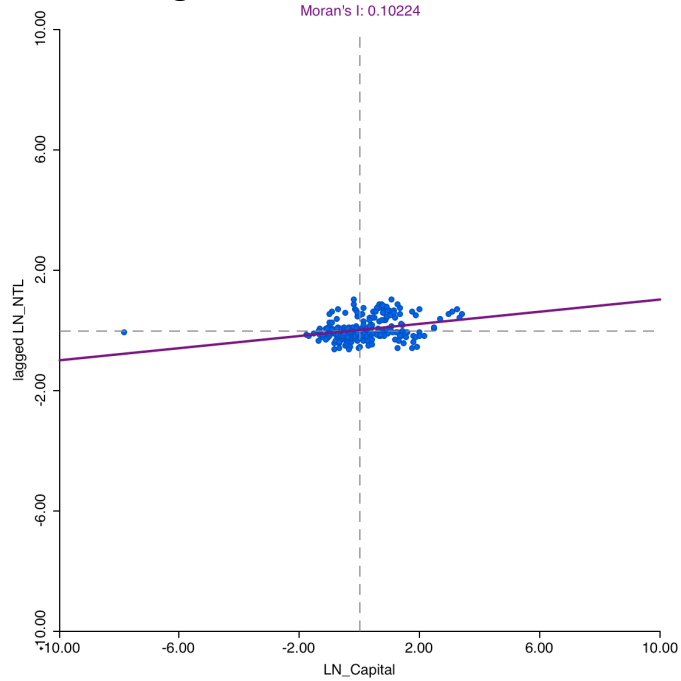
Figure 3.10 Moran Scatter Plot

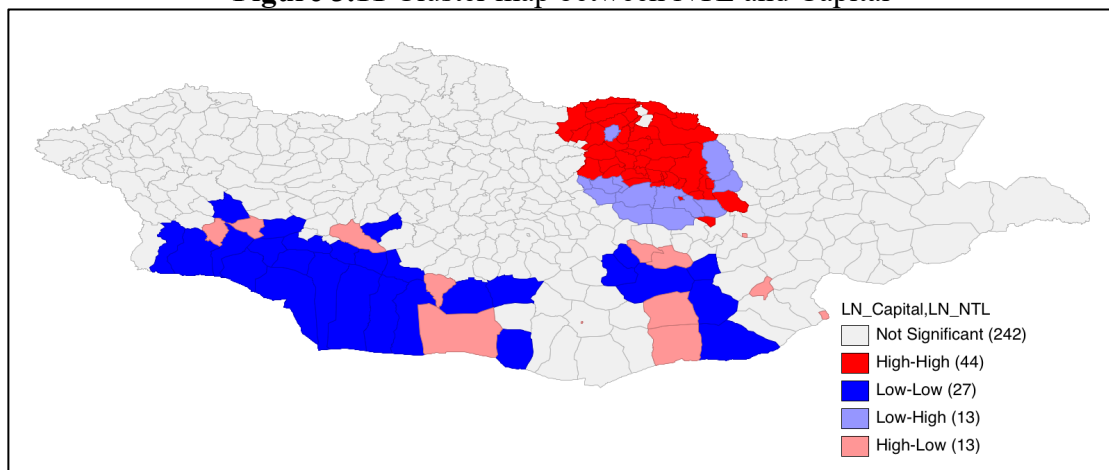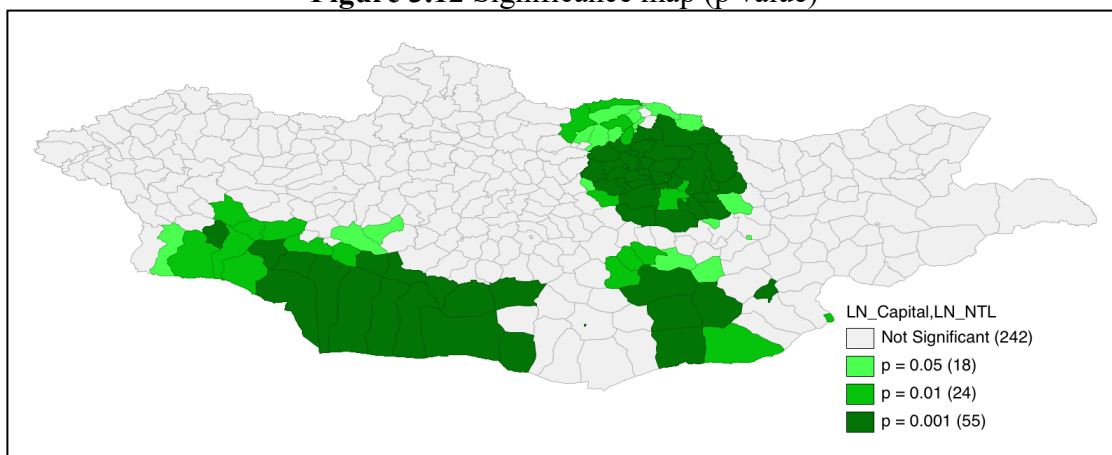**Figure 3.11** Cluster map between NTL and Capital

Figure 3.12 Significance map (p value)

3.5 Regression result

The results obtained from the spatial statistical analysis clearly verify the significant concentration in the capital city Ulaanbaatar and its neighboring areas. The neighboring area near Ulaanbaatar city hosts the highest economic performance. This section applies the spatial econometric technique to the nationwide establishments' census. Specifically, this empirical test is based on the theoretical background discussed in section 3.2.

Table 3.2 lists the results obtained from three estimation techniques, the Ordinary Least Square (OLS) regression, the spatial lag model (SLM), and the spatial error model (SEM). Following the conventional form of the modified Cobb-Douglas production function as the main specification, the first column of Table 3.2 illustrates the result obtained from OLS regression. Most results are consistent with those demonstrated in literature covering this field. The labor (lnL) and capital (lnK) have a positive and statistically significant contribution to the creation of output. The bank loan has a positive influence on firms' performance. However, the involvement of FDI, budget investment and securities do not have a statistically significant impact. The second and third columns in Table 3.2 lists the results obtained from the estimation based on the SLM and SEM. Both SLM and SEM model has similar results and still affirm the positive contribution of labor, capital, loan, FDI, budget investment and securities on firms' productivity. However, same as OLS result FDI, budget investment and securities do not have a statistically significant impact. Following the theoretical concept of the key features of the spatial econometric approach, the coefficient of the spatial lag of sales revenue (W_LN_SalesR) identifies the magnitude of output spillover from the neighboring provinces. In this study, the result of SLM affirms that there exists a positive spatial externality of output with a magnitude of 0.24, and this outcome reveals that the output spillover is one of the key factors generating agglomeration in the area near capital city Ulaanbaatar which induces firms to located closer to each other. In other words, firms operating in those areas can increase their output, in our case sales revenue. Thus, not only SMEs but also major industrial establishments and labor are induced to cluster within the area of the capital city Ulaanbaatar. These statistical results jointly explain why we can observe the spatial concentration as shown in spatial statistical analysis in the previous section. The result of SEM, the coefficient of the spatial error model λ affirms

that there exists a mechanism influencing propagation through spatially linked error terms with a magnitude of 0.7. In other words, this outcome reveals that the firms operating in those areas can be affected by other firms indirectly.

Table 3.2 Result of spatial econometric analysis (Dependent variable *lnSR*)

	OLS	Spatial econometric model	
		SLM	SEM
lnK	0.31	0.26	0.21
	(0.03)*	(0.03)*	(0.03)*
lnL	0.68	0.72	0.83
	(0.06)*	(0.06)*	(0.05)*
ln_loan	0.02	0.02	0.02
	(0.01)*	(0.01)*	(0.01)*
ln_FDI	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
ln_Securities	0.03	0.02	0.02
	(0.02)	(0.02)	(0.02)
ln_Budget investment	0.01	0.01	0.004
	(0.01)	(0.007)	(0.01)
Constant	11.04	6.99	12.45
	(0.48)*	(0.91)*	(0.49)*
ρ (***W_LN_SalesR***)		0.24	
		(0.05)*	
λ			0.704
			(0.08)*
Statistical detail			
F-stat	289.80		
R-Squared	0.84		
Pseudo-R-Squared		0.85	0.87
Log likelihood	-426.57	-413.71	-399.62
AIC	867.14	843.43	813.25
Moran's I (error)	10.19*		
Lagrange Multiplier (lag)	30.99*		
Robust LM (lag)	6.23*		
Lagrange Multiplier (error)	84.77*		
Robust LM (error)	60.01*		
Lagrange Multiplier (SARMA)	91.00*		
Number of observations	339	339	339

Notes: The numbers in parenthesis are the standard error. ***, **, and * indicate the level of statistical significance at 1, 5, and 10 percent, respectively. OLS = ordinary least square, SLM = spatial lag model, SEM = spatial error model, AIC = Akaike information criterion, Robust LM lag = robust Lagrange multiplier test for spatial lag model, and Robust LM error = robust Lagrange multiplier test for spatial error.

Chapter 4. Concluding remarks and recommendations

4.1 Concluding remarks

SMEs are playing an important role in economic activity by fostering economic growth, generating employment, and income which are an integral part of the economic transformation process. Moreover, it helps to reduce poverty and income inequality, diversifying economic activity, revitalizing local economies and in supporting inclusive growth.

In Japan, priority industries were supported heavily after the II World War, when Japan was trying to escape from war driven economic devastation. After a successful economic reconstruction process, priority industries have matured and able to operate on their own, the Government of Japan shifted its attention to SME supporting policies more aggressively. The framework for supporting the SME sector have already built during the reconstruction period with the huge domestic financing capacity. In addition, not only supporting financially Government of Japan have also implemented other measures for SMEs through management, fiscal, commerce, and regional supporting framework. Government of Japan had formulated SME supporting policy according to the national development policy, and its characteristics have been changed according to the development state of the economy. One of the reasons these policies have successfully achieved is the Fiscal Investment and Loan Program. Through this system Government of Japan supported weak sectors and regions, therefore successfully avoided from bottlenecks and achieved balanced development nationwide.

Mongolia has shifted from the centrally planned economy at a significant pace since early 1990, and past decade Mongolia has ranked as one of the fastest-growing economies in the world given its wealth of natural resource. However, the Government of Mongolia has been focused on the mining sector more aggressively than other sectors especially the SME sector so far. SMEs are facing a various challenge when access to financial needs. Moreover, social and political condition, macro economy, legal and institutional uncertain condition are the most challenging factors in the business environment of SMEs. These issues prove that SMEs are kind of left behind because the economy is highly depended on the mining sector. In order to realize its full economic potential, the government needs to make growth sustainable in order to become less

vulnerable to commodity price shocks. This can be achieved if growth is broad-based across various sectors and business segments, ranging from large corporations to SMEs.

In addition to supporting SMEs through the tax policy, the development of a comprehensive legal framework for SMEs and a comprehensive government policy aimed at improving their educational and financial capacity will be a step towards a greater result. Moreover, the Government of Mongolia needs to address the concentration of the economic activity in central city and mining based provinces in order to achieve a balanced development of the country. The nationwide balanced development is vital for sustainable development of the country as we have seen from the Japanese development history. The excessive concentration of economic activity and SMEs in the capital city Ulaanbaatar have examined and verified with the spatial econometric method in this research paper. Also, from the statistical data, we have verified that regional financial support and other measures are very low. Thus, we need to consider the experience of Japan's Fiscal Investment and Loan Program in order to support weak sectors or SMEs.

Even though Government have been formulated a various policy and plans to develop regional SMEs according to "Regional development strategy" since 2009, and laws that support industrialization were issued and adopted in Mongolia. However, very few of them were implemented and produced outcomes. Many laws were adopted, such as the Law on Industry and the Law on Technology, SMEs, Investment and Innovation. Also, many decisions were made, such as the governmental resolution on the 'New Era of Industrialization', the project to industrialize Mongolia and the Law to Support Exports. However, none of them have reached notable results so far. Furthermore, the Government of Mongolia established a Soum Development Fund to financially support regional SMEs since 2011 and gave the rights to regional Government offices allocate the fund directly on their own without transferred through commercial banks. This could be the one reason for irresponsible financial management.

4.2 Recommendations and Policy implications for Government of Mongolia

In order to improve its SME supporting measures and to pursue balanced development of the country Government of Mongolia need to address the following issues:

- Develop internal loan assessment tool for SME Development fund, as implemented in the Japan Finance Corporation. Even regional staff in charge of loan assessment has a lack of knowledge, loan staff could assess the loan appropriately. Further, using this tool could help to reduce the disparity between regional loan committee decisions.

- Improve the SME Development Fund financial management by restructuring the monitoring of the loan repayment schedules and improve transparency. Currently, only direct loans from SME development Fund have disclosed the information of loan applicants, name of the legal entities (individual and establishments), loan amount, loan period, interest rate, and the name of the project. However, most of the fund has been extended through commercial banks, and the information hasn't disclosed to the public. If we improve the financial management and transparency the irresponsible allocation of the SME Development fund will be eliminated as well.

- One of the measures in SMEs Development Program (2014-2016) which is to establish a business-incubation center in each province and to support its activities haven't implemented due to instability in government actions, structural change has been made 3 times during this period. In National SMEs Development Program (2019-2022) this measure changed to establish business-incubation center and to promote their human resource skills without an exact number of incubation center will be built. Thus, in order to promote regional SMEs, the government have to address the measures related to regional development of the SMEs.

- Establish an educational, technological, etc. cooperative system connecting large enterprises with medium enterprises and medium enterprises with small enterprises. To create an enabling environment connecting them with co-operation as implemented in Japan's cooperatives.

- To attract skillful human resource to regional areas, establish a promotion policy for not only for SME regional staffs but also all public sector human resources especially for health and education.

- To sustain SME policy implementation, the government need to consider establishing an independent SME agency and need to address instability in policy actions to improve the credibility of the public sector in general.
- To improve policy effectiveness, establish a policy effectiveness cycle: diagnosis (the identification of functional problems), assessment (the manifestation of power asymmetries and bargaining arrangements), and targeting (how incentives and preferences can reshape the policy arena) (World Bank 2017).

Last but not least, in order to tackle these issues, effective collaboration of all stakeholders will be necessary including public, private sector, scientific organizations as well as international organizations. If we successfully implement the regional SME development policy by improving their competitiveness and educational and financial capacity, I believe in the near future we will no longer be dependent on the mining sector only.

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