

中小企業貸款市場的競爭比賽能否提高融資效率？台灣隱性政策干預的研究

Can Horse Racing in the SME Loan Market Bolster Financing Efficiency? A Study of an Implicit Policy Intervention in Taiwan

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摘要

本研究顯示，善意的官方政策可能導致中小企業貸款市場的競爭比賽和過度信貸。由於經濟增長放緩，2016年8月，台灣政府通過獎勵計劃向國內銀行發出了強烈呼籲以緩解中小企業信貸緊縮。截至該年底，中小企業新增貸款餘額在四個月內出人意料地增長了三倍。然而，這種由政府驅動的慷慨一因而是具有政策性干預的本質—並沒有產生預期的結果。大部分貸款流向了上市櫃的中小企業，只有一小部分流向了私人中小企業，即便私人中小企業才通常面臨著更多的融資限制與流動性需求。遺憾的是在獲得大量資金之後，上市櫃中小企業隨後營運表現不佳。我們認為，政府對銀行的不當呼籲導致了市場信用分配的錯置以及對上市櫃中小企業的過度信貸，因而導致代理問題並損害績效。

關鍵詞：中小企業、政府干預、銀行貸款

Abstract

This study shows that a well-intended official policy can result in horse racing and misallocation problems in the SME loan market. As a result of slowing economic growth, in August 2016, the Taiwanese government made a clarion call to domestic banks by ramping up the incentives to alleviate the SME credit crunch. In the four months between the government's call and the end of the year, the balance of incremental SME loans underwent an unexpected three-fold increase. However, this generosity—motivated by the government and therefore political in nature—did not produce the desired outcomes. The majority of lending went to publicly listed SMEs, leaving only a tiny portion for privately held SMEs—a group that usually faces more financing constraints and needs the liquidity. Unfortunately, after receiving this substantial funding, publicly listed SMEs underperformed. We argue that the government's improper call to banks resulted in misallocation of credit in the market and over-crediting of publicly listed SMEs and gave rise to agency problems that harmed firms.

Keywords: SMEs, Government Intervention, Bank Loans

1. Introduction

Fostering small and medium enterprises (SMEs) is a crucial area of government policy (OECD, 2000; Klyuev, 2008; Abdulsaleh & Worthington, 2013). Most economists, politicians, and policymakers have recognized that the SME sector faces constrained access to external financing, which can negatively affect the instrumental role the sector plays in achieving national development goals. As such, many governmental initiatives and programs have been implemented in both developed and emerging economies to give SMEs easier access to financing.¹

Governments can implement these official schemes either alone or with the support of financial institutions to increase financing capacities for SMEs. Extant literature indicates that such programs and schemes can facilitate SME access to additional credit and bolster the sustainable growth and profitability of SMEs (Boocock & Shariff, 2005; Tambunan, 2008; Arráiz & Stucchi, 2014), which, in turn, can fuel national economic growth. However, do government attempts to support SMEs by making and implementing policy interventions always benefit the SME loan markets? Existing theoretical and empirical literature has yet to provide a clear answer to this question because researchers have lacked a suitable event for analysis. By analyzing a unique event related to an implicit policy intervention by the Taiwanese government, this paper aims to clarify whether officially encouraged horse racing in the SME loan market can bolster the efficiency of market financing and benefit SMEs.

Taiwan is a newly industrialized country with an SME-intensive economy and a sound banking environment in which bank loans serve as the main financing source for SMEs.^{2, 3} To provide more incentives to banks, the Financial Supervisory

¹ For example, in Croatia, the government implemented the National SME Loan Scheme jointly with eight domestic commercial banks beginning in 2000. The program aimed to increase the supply of financing for SMEs and to decrease the cost of borrowing (Abdulsaleh & Worthington, 2013). Similarly, the Canadian government guarantees up to 85 percent of loans under C\$250,000. Klyuev (2008) found that, during the 2005–2006 financial year, the Small Business Financing Program enabled SMEs to acquire more than 10,000 loans totaling more than C\$1 billion. Another successful case occurred in the UK. Launched in 1981, the Small Firms Loan Guarantee Scheme aims to facilitate SME access to financing by providing guarantees for SMEs loans (OECD, 2000).

² Taiwan's SMEs play a crucial role in social stability and economic development. Taiwan is

Commission (FSC) has established several rewards for banks that have demonstrated superior performance in facilitating SME loans, including the privilege to sell new financial products, new branch capacities, and permits to launch mobile payments (e.g., Apple Pay).⁴

Therefore, government authorities, e.g., the FSC, have played a crucial policy role in SME financing. In Taiwan, government financial supervision strongly affects the operation of both government-owned banks and other domestic commercial banks. Since SME sustainability is closely related to economic development and the credit crunch experienced by banks in failing markets hurts SMEs more than big companies, the FSC is highly concerned with SME liquidity problems. Typically, the FSC will “appeal” to banks to approve more loans for SMEs when the market supply of bank loans is weak rather than implementing explicit policy interventions. Appeals to banks that emphasize the importance of SME financing and highlight FSC rewards are usually effective, partially because most banks want to maintain positive relationships with the authorities. Thus, because of the FSC’s influence on banks, its signals or suggestions can be viewed as implicit policy interventions.

Rising global political risk, uncertain economic prospects in the global market, and slowing business cooperation with Mainland China caused Taiwan’s SME loan market to shrink dramatically over the first eight months of 2016. By August, domestic bank SME loans totaled a mere NT \$77.5 billion, 60 percent less than the

home to more than 1.4 million SMEs, accounting for more than 97 percent of companies across all industries. Together Taiwan’s SMEs hire more than 8.7 million employees, 78 percent of the nation’s workforce. Therefore, even though Taiwan has the world’s largest dedicated independent semiconductor foundry (TSMC) and the world’s largest contract electronics manufacturer (Foxconn), both of which are ranked among the Top 500 global companies, Taiwan remains a SME-oriented country.

³ Previous studies have shown that bank loans serve as the main external funding source for the SME sector in both developed and developing countries (Cole & Wolken 1995; Carey & Flynn, 2005; Wu et al., 2008; Ono & Uesugi, 2009; Vera & Onji, 2010).

⁴ Lending performance is basically evaluated based on the number of SME loans, the number of loan facilities, the distribution of loans to different SMEs in specific areas, the growth of lending amounts, etc. The FSC evaluates bank performance annually. The boom in bank loans for SMEs in Taiwan dates to July 2005, when the government implemented its official scheme to strengthen lending from domestic banks to SMEs. To encourage banks and SMEs to establish long-term partnerships and strengthen the operating environment for banks to provide more liquidity to SMEs, the FSC began promoting the “Outstanding SME Loans by Domestic Banks” program on July 1, 2005. As of mid-2016, the program had been operating for 12 consecutive years.

amount loaned during the same period in the preceding year (Tsai, 2016). After these statistics were reported, the FSC frequently urged banks to recognize the unprecedentedly low level of SME loans. At the same time, the FSC announced incentives to encourage banks to provide more liquidity to SMEs in need. Surprisingly, by the end of 2016, incremental SME loans financed by all government-owned banks and other local commercial banks had reached NT \$274.4 billion (US\$8.85 billion)—an increase of nearly NT \$200 billion between August and the end of the year. SME loans totaled NT \$274.4 billion in 2016, unexpectedly surpassing the goal of NT \$240 billion that the government set at the beginning of the year (Lin, 2017).

To the government, this appeared a successful intervention that led to a three-way win: the government fulfilled its duty to address the market failure, SMEs solved their financial problems, and the banks received their rewards by boosting business. Was this too good to be true? Given the time banks take to facilitate and approve loans to SMEs, how did they manage to lend NT \$200 billion to SMEs in only a few months? In addition, if the low level of SME loans in the first half of 2016 mainly resulted from weak SME demand, how did demand increase so dramatically in such a short period—especially given that economic growth was modest in the second half of 2016 and predicted to remain flat in 2017?

In general, listed SMEs obtain SME loans more easily and more quickly than other SMEs.^{5, 6} Most listed SMEs have spent years building lending relationships with banks that enable them to run through crediting processes more efficiently.⁷

⁵ In this paper, we refer to bigger SMEs, listed SMEs, and publicly listed SMEs interchangeably.

⁶ Based on the criteria of the Ministry of Economic Affairs (MOEA), around 400 publicly listed SMEs traded on the Taiwan stock market, accounting for 20 percent of all listed companies on the public stock market. Usually, these publicly listed SMEs borrow 30 to 60 percent of incremental SME loans in a year, while unlisted or private SMEs borrow the rest.

⁷ In practice, our claim here fits the general intuitive viewpoint; it is worth noting, however, that previous studies in the relationship banking literature have produced contrary findings regarding the impact of lender-borrower relationships. For example, Berger & Udell (1995) examine the role of relationship banking in small firm financing and generate findings that support the theoretical argument that relationship lending generates valuable information about borrower quality. Chen et al. (2013) examine the impact of underwriting relationships on subsequent lending activities for the same bank-firm pair. They show that firms are more likely to obtain bank loans from their underwriting banks. On the contrary,

Listed firms are also more information-transparent than unlisted companies, making them more reliable clients in loan markets when market risk or information uncertainty is high. Moreover, because they are larger and have broader scopes of operation, listed SMEs have greater loan capacities than other SMEs, making them larger scale clients for the banks. Thus, lending to listed SMEs is the best strategy for banks seeking to achieve the government's goal of SME financing in a short period of time. Based on the preceding arguments, we hypothesize that the outcome in question stemmed from bank successes in the SME loans market: the unprecedented increase in SME loans was primarily driven by the contributions of publicly listed SMEs.

To verify our conjecture, we first analyze whether the publicly listed SMEs were the main contributors to the unprecedented increase in loans to SMEs in late 2016. In subsequent analyses, we aim to answer a follow-up question: if the low level of SME loans in the first eight months of 2016 represented a conservative projection for the future economy, did the huge increases in SME loans help listed SMEs get through difficulties or was the provision of liquidity just redundant for listed SMEs and only beneficial for domestic banks pursuing credit rewards from the FSC?

Our analysis indicates that, as hypothesized, the majority of lending in late 2016 went to publicly listed SMEs, leaving only a tiny portion for unlisted and private SMEs—a group that usually faces more severe financing constraints and needs the liquidity. In addition, after receiving extra funds, the publicly listed SMEs did not focus the bulk of their spending on enriching working capital, improving R&D activities, or investing for the long run. Instead, we find that the listed SMEs spent more on distributing cash dividends, repurchasing shares, cash payments to M&As, and managerial compensation; predictably, the publicly listed SMEs performed poorly in the subsequent year. We argue that over-crediting bigger SMEs caused more severe agency problems that ultimately hurt the firms (Jensen, 1976). Our findings echo those of previous banking studies. For example, Khwaja & Mian (2008)

Burch et al. (2005) examine the relationship between loyalty to an underwriting bank and the fees charged for various financing activities. For a sample of offers, they find that loyalty is associated with lower fees for common stock offers, consistent with valuable relationship capital being built through loyalty. For debt offers, however, they find the opposite pattern, indicating that relationship capital is not as valuable.

and Ottonello & Winberry (2020) both show that larger firms tend to enjoy increased loan amounts when bank liquidity increases. Acharya et al. (2019) point out that the Outright Monetary Transaction launched by ECB in 2012 did not benefit economic growth because banks engaged in extensive zombie lending that built cash reserves rather than increasing investment after receiving loans.

In addition, although Abdulsaleh & Worthington (2013) suggest that indirect mechanisms and policies can help achieve these programs' objectives, our study shows that, in Taiwan, the FSC's indirect intervention only solved the illiquidity problem of the credit market without stamping out its root cause. Smaller SMEs may still face financing problems when over-financing causes bigger SMEs more problems. In short, the supply-side intervention (even if it was merely an implicit intervention) that drove the unprecedented increase in SME loans in late 2016 ended up outsmarting itself. In general, many previous studies claim that government policy or strategic intervention in financial markets is necessary and effective (e.g., Anginer & Warburton, 2014; Arráiz & Stucchi, 2014); by considering a unique SME lending event in Taiwan, we attempt to make valuable contributions to the literature and further clarify the proper role of credit market authorities in relation to SMEs.

The remainder of this study is organized as follows: Section 2 briefly reviews previous studies of policy interventions in the financial markets and the SME sector; Section 3 introduces the Taiwanese SMEs; Section 4 describes the sample we analyze; Section 5 presents our empirical findings; and Section 6 concludes the paper.

2. Literature Review

Given the ongoing debate between Keynesianism and liberalism among politicians and economists, financial markets may have already implicitly accepted government intervention as an effective instrument to fix troubled markets. Discussions regarding the effectiveness of government policy frequently address the U.S. government's long-standing policy of "constructive ambiguity" (Freixas 1999; Mishkin, 1999) regarding policy intervention in the financial sector during crises or periods of recession. According to Acharya et al. (2016, p. 3), to prevent investors from pricing for implicit support, the U.S. authorities do not typically announce their

intervention in institutions they consider too big to fail. Rather, they prefer to remain ambiguous about which troubled institutions, if any, will receive support. This has led authorities to take a seemingly random approach to intervention—for instance, saving AIG but not Lehman Brothers—to make it difficult for investors to rely on government bailouts.

Laeven & Valencia (2010) and Veronesi & Zingales (2010) attempt to understand the actual influence of official policy interventions by measuring the explicit cost of government support for failing financial institutions during crisis periods. Similarly, Anginer & Warburton (2014) examine the impact of implicit government intervention in Chrysler's bankruptcy process during the global financial crisis period.⁸ They find no evidence of a negative reaction to the Chrysler bailout by bondholders of unionized firms and suggest that bondholders interpreted the Chrysler bailout as a signal that the government would stand behind unionized firms. Their findings align with the notion that too-big-to-fail government policies generate moral hazards in the credit markets.

Some studies argue that government intervention has a negative impact on firm performance. For instance, Jiang et al. (2010) empirically examine corporate bailouts at the firm level and show that firms bailed out by the government recover less robustly than firms bailed out by other stakeholders, because large shareholders and creditors are more likely than governments to actively monitor their firms during post-bailout periods. Faccio et al. (2006) suggest that governments tend to bail out firms with political connections rather than firms that are sound. They find that troubled firms with political connections are more likely to receive government bailouts than troubled firms without such connections. They also find that bailouts of connected firms are less economically efficient, at the firm level, than bailouts of

⁸ A brief description of the 2009 Chrysler bailout can be found in Anginer & Warburton (2014, p. 62): in late 2008 and early 2009, the outgoing Bush and incoming Obama administrations announced a series of steps to assist the struggling automakers, Chrysler and GM, in an extraordinary intervention into private industry. In December 2008, the Bush administration extended a \$17 billion loan to the two auto companies using Troubled Asset Relief Program (TARP) funds. The extension of credit was a bridge loan, intended to buy the automakers the extra months of breathing room necessary to avert bankruptcy until the incoming Obama administration settled into office. In the spring of 2009, the Obama administration made the determination that Chrysler and GM were no longer viable and must undergo a “quick and surgical” reorganization under the Bankruptcy Code.

non-connected firms. Similarly, Duchin & Sosyura (2010) find that politically connected banks, even underperforming ones, received more financial assistance under the Troubled Asset Relief Program (TARP) than other banks. Buera et al. (2013) argue that although market failures provide a rationale for policy intervention, policies are often hard to alter once in place, which means even those with the best intentions can have sizable adverse long-run effects on the market.⁹

While studies of corporate bailouts are most interested in the U.S market, many researchers examining the influence of the government intervention on the SME sector focus on other countries. For example, Hughes (1997) claims that government intervention in the U.K. is only warranted in the event of market failure, which, in the SME sector, refers to the failure of financial markets to provide capital to apparently viable smaller firms. Critics, however, argue that, while the existence of market failure may have empirical validity, it does not sufficiently justify the pursuit of such initiatives. That a government whose framework relies on the concept of free markets can pursue policies geared toward promoting one sector appears contradictory. Craig et al. (2008) suggest that the economic rationales for the U.K. government's policy interventions often focus on providing positive externalities—the notion that increasing SME resources will enhance competitive advantage, economic performance, and firm survival, which in turn will influence the country's employment rates.

Tambunan (2008) examines the survival of Indonesian SMEs in the course of economic development and highlights the importance of government promotion programs for SMEs, ultimately showing that both real GDP per capita and government development spending, especially funds used to finance SME development promotion programs, have positive impacts on SME growth. Similarly, Chandler (2012) investigates the economic impact of the Canada small business financing program, while Arráiz & Stucchi (2014) analyze the effect of government-

⁹ The theoretical framework of Buera et al. (2013) suggests that financial frictions in the markets lead to the creation of policies that provide subsidized credit to productive entrepreneurs to alleviate the credit constraints they face. In the short term, the government's targeted subsidies produce the desired effect; in the long run, however, individual productivities decline while individual-specific subsidies remain unchanged. Targeted subsidies support previously productive entrepreneurs that are now unproductive, while discouraging the entry of newly productive individuals. As a result, they depress both aggregate output and productivity.

backed partial credit guarantees on firms' performance in Colombia. Both studies find evidence of policy influence on the SME sector.

3. SMEs in Taiwan

3.1 Definition of SMEs

According to the SMEA, MOEA of Taiwan, the definition of SMEs in Taiwan (revised and reissued on September 2, 2009) includes enterprises that have completed company registration or business registration in accordance with legal requirements and adhering to the following two criteria:¹⁰

- (1) In the manufacturing, construction, mining, and quarrying industries, a paid-in capital of NT \$80 million (US \$2.42 million) or less.
- (2) In the agriculture, forestry and fisheries, water, electricity and gas, commercial, transportation, warehousing and communications, finance, insurance and real estate, industrial and commercial services or social and personal services industries, sales revenue of NT \$100 million (US \$3.03 million) or less in the previous year.

However, depending on the nature of the business for which they are providing guidance, government agencies may base their definitions of SME on the number of regular employees as noted below:

- (1) In the manufacturing, construction, mining and quarrying industries, the number of regular employees must be less than 200.
- (2) For enterprises in the following industries, those enterprises with less than 100 regular employees are classed as small and medium enterprises: agriculture, forestry, fisheries, and animal husbandry; water, electricity and gas; wholesaling and retailing; hotel and restaurant operation; transportation, warehousing and communications; finance and insurance; real estate and leasing; professional, scientific and technical services; educational services; medical, healthcare and social welfare services; cultural, sporting, and leisure services; and other service industries.

¹⁰ The definition of SMEs in Taiwan has evolved over time. The appendix lists earlier definitions of Taiwan SMEs.

3.2 The SME's status

Taiwan's economic growth rate declined distinctly from 4.01 percent in 2015 Q1 to -0.23 percent in 2016 Q1, and improved gradually to 2.58 percent in 2016 Q4 amid mild global recovery, rising global political uncertainty, and slowing economic cooperation with Mainland China, Taiwan's most important trading partner.¹¹ With a neutral economic forecast for 2017, the number of SMEs reached a record level of 1,408,313 in 2016, up 1.76 percent from 2015, and accounting for 97.73 percent of all enterprises in Taiwan. In addition, the number of persons employed by SMEs increased to 8,810,000, up 0.58 percent from 2015 (the highest level in recent years), representing 78.20 percent of all employed persons in Taiwan. Annual sales of SMEs in 2016 came to NT \$11,765 billion, accounting for 30.71 percent of total annual sales by all enterprises in Taiwan, 0.35 percentage points higher than in 2015.

3.3 SME financing sources

According to SMEA, MOEA, SMEs' main debt source is loans from financial institutions. Financial institution lending accounts for 50 to 55 percent of all SME debt, while the proportion for non-SMEs is merely 40 percent.¹² Among all financial institutions in Taiwan, domestic banks account for the majority of lending.¹³ Up to the end of 2016, the total loan balance for all financial institutions was NT \$23,581 billion, and the proportion contributed by all domestic banks was 94 percent. Government-owned banks contribute a higher market share to the SME loans market than other commercial banks. Most top ten lending banks are government-owned. According to Banking Bureau statistics reported by the FSC in 2016, only two

¹¹ The realized Taiwan GDP in Q1 and Q2 were 2.6 percent and 2.14 percent, respectively. However, according to Taiwan's Directorate-General of Budget, Accounting, and Statistics, the forecast for 2017 GDP was only 2 percent growth, with weaker economic performance forecasted in Q3 and Q4.

¹² The main debt source of non-SMEs (big companies) is commercial payables, which account for nearly 50 percent of total debt. These statistics were obtained from Section 3 of 2016 SMEs White Paper published by the SMEA, MOEA.

¹³ Other financial institutions include: Local Branches of Foreign and Mainland Chinese Banks, Credit Co-operative Associations, Credit Departments of Farmers' Associations, Credit Departments of Fishermen's Associations, Department of Savings & Remittances, Chunghwa Post Co., Life Insurance Companies, Property and Casualty Insurance Companies, Central Deposit Insurance Corporation, Bills Finance Companies, Securities Finance Companies, and Offshore Banking Units.

non-government-owned banks were listed among the top ten lenders to SMEs, indicating that government-owned banks responded more aggressively to the FSC's official scheme for SME loans. Coupled with the findings of previous studies (e.g., Wu et al., 2008; Ono & Uesugi, 2009; Vera & Onji, 2010), the above statistics demonstrate that banks are the main external capital providers for the SME sectors in Taiwan and throughout other developed and developing countries.

4. Sample Description

In our analysis, we consider data items from various sources. We obtained publicly listed SME financial information from the modules of financial statements in the Taiwan Economic Journal (TEJ) database, and collected the basic statistics for all SMEs from the SMEA of the MOEA. We gathered SME loan statistics and related lending information about financial institutions from the FSC Banking Bureau. Based on the criteria of MOEA, 443 publicly listed SMEs traded on the Taiwan stock market in 2016—nearly 20 percent of all listed firms, but only 0.03 percent of all SMEs. While listed SMEs comprise a very tiny proportion of all SMEs in Taiwan, they regularly obtain 30 to 60 percent of total annual SME loans. The fact that an outsized proportion of bank loans go to listed SMEs indicates that listed companies enjoy overwhelming advantages in financing activities, even though other SMEs tend to be subject to more financial constraints and liquidity limitations.

We report the descriptive statistics for the sample SMEs in Panel A of Table 1. As the table shows, the mean (median) of total (paid-in) capital of all listed SMEs is 731.5 (500) million, much greater than the capital criteria of 80 million for SMEs. Similarly, the mean (median) of total sales revenue for all sample SMEs is 938.3 (57) million, much higher than the revenue criteria of 100 million for SMEs. However, the mean (median) of the number of regular employees is 94 (84), while the maximum number of regular employees is 199, which meets SME standards. These statistics suggest that most listed firms are classified as SEMs because they have fewer regular employees. Since the first quartile of total capital (revenue) for listed SMEs is still higher than the stipulated value of 80 (100) million, we expect that less than 20 percent of listed firms are classified as SMEs based on their capital or revenue size.

For comparison, the average annual revenue of all Taiwanese SMEs in 2016 was merely 8.4 million, given that the reported total revenue of 1.41 million SMEs was 11.8 trillion. Accordingly, the firm size of a listed SME, on average, must be distinctly greater than a non-listed SME. In addition, while SMEs in Taiwan are about 7 to 10 years of age, the average age of listed SMEs in our sample is nearly 20. Moreover, the 10-year survival rate of SMEs in Taiwan is below 50 percent, while the 10-year survival rate of listed SMEs is greater than 90 percent.¹⁴ The differences between listed SMEs and non-listed SMEs suggest that listed SMEs are relatively unconstrained financially since Almeida et al. (2004) show that firm age and size are important determinates of financial constraints and younger and smaller firms suffer from liquidity problems more.

The other two variables in Panel A describe the basic firm characteristics of publicly listed SMEs. The mean (median) of the total market value of common shares for sample SMEs is 2.6 (1.1) billion, much different from the general stereotype about SMEs. The leverage ratio is defined as the proportion of total debt to total assets. The mean (median) leverage ratio of the sample SMEs is 0.31 (0.27), lower than the 0.43 of other listed companies as well as the 0.44 of other SMEs.¹⁵ The relatively low leverage ratio of sample firms implies that publicly listed SMEs have more capacity for new loans than other listed companies.

¹⁴ We obtained the statistics for SMEs from the annual reports of MOEA but derive the statistics for listed SMEs from our calculations of TEJ variables.

¹⁵ Table 1 does not report the latter two statistics.

Table 1: Sample Description

This table reports the descriptive statistics and the distribution of industries for the sample SMEs in Panel A and Panel B, respectively. Total Capital is total paid-in capital by the end of 2016. Number of Employees is the number of regular employees in 2016. Total Revenue is total sales revenue by the end of 2016. Market Value is the total market value of common shares by the end of 2016. Leverage is defined as the proportion of total debt to total assets, measure by the end of 2016.

<i>Panel A: Descriptive Statistics</i>					
	Total Capital (NT\$1,000)	Number of Employees	Total Revenue (NT\$1,000)	Market Value (NT\$1000)	Leverage (%)
Mean	731,512	91	938,303	2,640,110	31.23
St. dev.	828,181	52	1,312,466	4,991,387	20.12
Median	500,000	84	571,986	1,136,085	27.19
Mode	120,000	100	0	NA	56.79
Max	5,890,910	199	11,741,599	48,909,135	96.99
Min	20,908	8	0	79,649	1.08
3 rd Quartile	774,019	130	1,094,145	2,389,543	45.52
1 st Quartile	294,036	49	205,831	565,575	15.18
Obs.	443	441	439	423	443
<i>Panel B: Distribution of Industries</i>					
Industry Type	# of Firms	Industry Type	# of Firms		
Agriculture, Forestry, Fishing and Animal Husbandry	2 0.45%	Information and Communication	22 4.97%		
Manufacturing	353 79.68%	Real Estate Activities	37 8.35%		
Water Supply and Remediation Activities	1 0.23%	Professional, Scientific and Technical Activities	3 0.68%		
Construction	5 1.13%	Accommodation and Food Service Activities	3 0.68%		
Wholesale and Retail Trade	12 2.71%	Other Service Activities	4 0.90%		
Transportation and Storage	1 0.23%	Total Number of Firms	443		

Source: This study

Panel B in Table 1 shows the distribution of industries among all listed SMEs. As reported, the sample SMEs include firms from across eleven different industries (listed in order of sample proportion): Manufacturing; Real Estate Activities; Information and Communication; Wholesale and Retail Trade; Construction; Other Service Activities; Accommodation and Food Service Activities; Professional, Scientific, and Technical Activities; Agriculture, Forestry, Fishing and Animal Husbandry; Water Supply and Remediation Activities; and Transportation and Storage. Among these industries, an overwhelming proportion—nearly 80 percent of the sample—are Manufacturing SMEs. The distribution of the industries of publicly listed SMEs also differs from that of other SMEs. According to SMEA statistics, the main SME industry is Wholesale and Retail Trade, which accounts for nearly 50 percent of all SMEs.

5. Empirical Results

5.1 Distribution of SME Loans

To examine whether the majority of the unprecedented increase in SME loans in 2016 went to publicly listed SMEs, we compute the total amount of incremental bank lending for all sampled SMEs and the total number of all SME loans from all domestic banks during the same period. For comparison, we also compute the amounts for 2014 and 2015. We report the results in Table 2.

Panel A shows the total bank loans borrowed by all sample SMEs. As reported, all listed SMEs borrowed NT \$157.6 billion from domestic banks in 2016, down a modest 4.76 percent from 2015, but distinctly higher than the amount borrowed in 2014. We also investigate the distribution of bank lending during the first two quarters and the subsequent two quarters for each year. In the first half of 2016, all listed SMEs borrowed NT \$66.8 billion from banks, accounting for 42 percent of all loans; in the following two quarters, SMEs borrowed NT \$ 91 billion, accounting for 58 percent of all loans during that time. The unequal distribution in 2016 is not a regular phenomenon; the distribution of bank lending between the first and second halves of other years are relatively even. The distributions are 48 percent versus 52 percent and 52 percent versus 48 percent in 2015 and 2014, respectively. The results in Panel A indicate that, compared to previous years, listed SMEs borrowed much

more in the latter months of 2016.

The uneven distribution of bank loans to listed SMEs in 2016 resembles the distribution of SMEs loans issued by domestic banks during the same period. Panel B of Table 2 shows that total SME lending from domestic banks in 2016 was NT \$194.5 billion, with a much higher proportion of 55 percent in the second half-year.¹⁶ The results imply a close association between bank loans to publicly listed SMEs and the domestic bank system's lending supply in 2016. In each half of 2015 and 2014, the distributions of bank loans for listed SMEs were flat: the distributions of SMEs loans issued by domestic banks in 2015 and 2014 were 60 percent versus 40 percent and 51 percent versus 49 percent, respectively. Whether bank loans to publicly listed SMEs were closely associated with the lending supply of domestic banks in 2014 and 2015 remains unclear; our findings merely suggest that in these years publicly listed SMEs had a steady demand for bank loans, which the bank lending supply met in 2014 but did not meet in 2015. Panel C presents the proportion of domestic banks' SME loans borrowed by publicly listed SMEs. As reported, the proportion was the highest in 2016 with a record level of 85 percent in the second half of the year.

In sum, the results of Table 2 suggest that before the second half of 2016, the amount of bank loans to publicly listed SMEs did not mirror the lending supply of domestic banks. However, given the trend of decreasing domestic bank supply in previous years, the level of the bank loans borrowed by publicly listed SMEs still reached a record high with a distinct increase near the end of 2016. To more clearly elucidate this pattern, we plot the dynamics of the supply of SME loans and the amount of bank loans to listed SMEs over time in Figure 1.

¹⁶ In December 2016, SME loans hit NT\$127.3 billion, a record high in local banking history, resulting in NT\$274.4 billion for the whole year and topping the government's goal of NT\$240 billion. However, in addition to the normal year-end fund demand, the unprecedented increase mainly came from a NT\$80 billion loan to Micron Semiconductor Taiwan Co. for the acquisition of a 67 percent stake in Taiwan-based Inotera Memories Inc. Micron Semiconductor Taiwan Co. is classified as a private SME because of its low number of regular employees, though its capital is much bigger than many publicly listed companies. Since this unusual mega syndicated loan upward-biased the annual level of SME loans, we removed it from our computation.

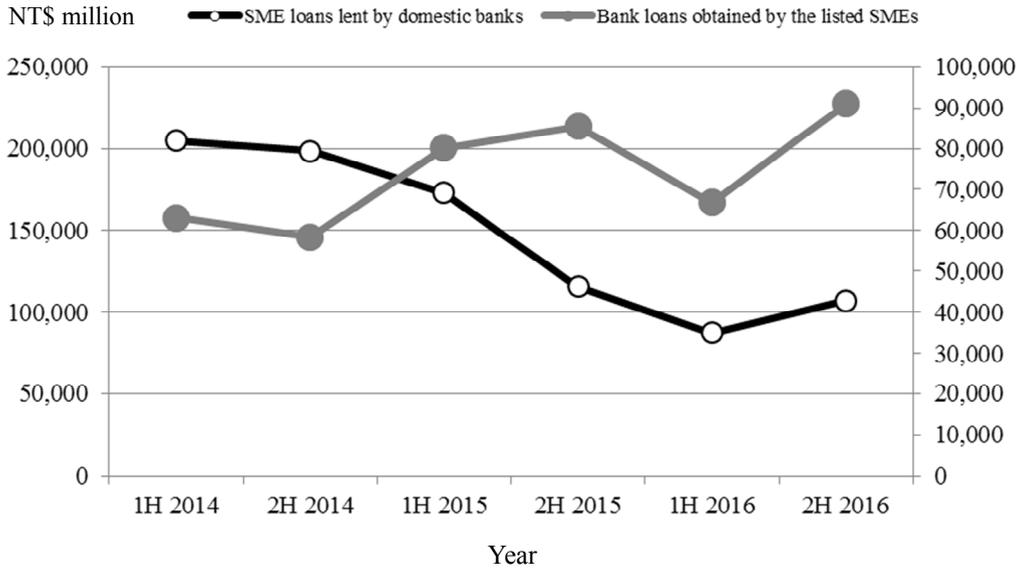


Figure 1: SME loans of domestic banks and bank loans of the listed SMEs

Source: This study

We conclude that the distinct increase in bank loans for publicly listed SMEs in the second half of 2016 was mainly driven by an unpredicted increase in the supply of SME loans around the same time. The fact that total SME loans shrank in 2016 indicates that domestic banks selectively provided many more loans to publicly listed SMEs to surpass the goal of the government’s SME lending program, while devoting only a tiny proportion of the lending capacity to other smaller SMEs. Although the government attempted to lure domestic banks to increase liquidity to SMEs by providing more rewards, this implicit intervention caused an even more severe resource misallocation in the SME loan market.

Table 2: Distribution of SME Loans

This table reports the total amount of incremental bank lending for all sampled SMEs and the total number of all SME loans from all domestic banks during the same period in Pane A and Pane B, respectively. Panel C presents the proportion of domestic banks' SME loans borrowed by publicly-listed SMEs. The amount of incremental SME loans from all domestic banks in 2016 (Panel B) has excluded the single loan of 80 billion borrowed by Micro Tech. Inc., Taiwan in December, 2016.

<i>Panel A: Incremental bank lending for all publicly-listed SMEs (\$1,000,000)</i>					
Year	Whole Year	Q1 to Q2	Q1 to Q2 proportion	Q3 to Q4	Q3 to Q4 proportion
2016	157,596	66,774	42.27%	90,977	57.73%
2015	165,471	80,093	48.40%	85,378	51.60%
2014	121,636	63,197	51.96%	58,439	48.04%
<i>Panel B: Incremental SME loans from all domestic banks (\$1,000,000)</i>					
Year	Whole Year	Q1 to Q2	Q1 to Q2 proportion	Q3 to Q4	Q3 to Q4 proportion
2016	194,457	87,621	45.06%	106,836	54.94%
2015	288,553	172,937	59.93%	115,616	40.07%
2014	402,906	204,649	50.79%	198,257	49.21%
<i>Panel C: The proportion of domestic banks' SME loans borrowed by publicly-listed SMEs</i>					
Year	Whole Year	Q1 to Q2	Q3 to Q4		
2016	81.04%	66,774/87,621 = 76.21%		90,977/106,836 = 85.16%	
2015	57.35%	80,093/172,937 = 46.31%		85,378/115,616 = 73.85%	
2014	30.19%	63,197/204,649 = 30.88%		58,439/198,257 = 29.48%	

Source: This study

5.2 The use of increased bank loans

Table 2 shows that the listed SMEs obtained more bank loans in 2016, with the majority of lending clustered in the second half of the year. Did the increased funding represent timely aid for the listed SMEs? To analyze the use of bank loans, we consider four areas in which sample SMEs could invest their increased funds: working capital, R&D expenditures, long-term investments for fixed assets, and investments in financial assets. If the listed SMEs had extra need for funds to improve their short-term debt-paying abilities, engage in long-term investments benefiting their future value, or increase investment income from financial markets,

we should see corresponding changes in the areas listed above. Table 3 reports the changes in working capital, R&D expenditures, long-term investments, and financial investments for 2016. We also compute the changes for 2015 for the sake of comparison. Similar to Table 2, Table 3 displays the results for the first half of the year, the second half of the year, and the whole year.

Our analysis begins by considering the changes for the whole year. As the table shows, in 2016, investments in working capital, R&D expenditures, and financial investments decreased from the previous year, particularly for investments in working capital. This finding aligns with the notion that the listed SMEs attempted to use the increased bank loans to improve their companies. Although long-term investments increased in 2016, the difference is negligible.

Since the increased bank loans to the listed SMEs were clustered in the second half of 2016, resulting in higher numbers of bank loans compared to the same period in 2015, we investigate whether changes in various areas in the second half of 2016 were correspondingly higher. As the table shows, except for working capital, investment in other areas decreased. Spending on working capital increased by around NT \$10 billion, which may be partially related to the increased bank loans.

Table 3 shows that the listed SMEs might have used extra funds to improve their working capital, but there is no evidence that the listed SMEs spent bank loans on R&D and other investments—expenditures that could increase the future value of the firm (e.g., McConnell & Muscarella, 1985; Gupta et al., 2017; Kim et al., 2018). For the majority of unused funds provided via increased bank loans, we examine what factors are more likely related to the use of extra funds among the listed SMEs. Prior research (e.g., Jensen, 1986) argues that managers of firms with extra cash tend to make corporate decisions that cause agency problems. In this regard, we consider cash payouts (dividends and repurchases), managerial compensation (salary, bonuses, and special expenses), and M&A expenditures to examine the spending decisions of the listed SMEs. Such expenditures are more likely to be associated with manager myopia but not long-run value creation. For example, market-catering incentives drive cash payout decisions (e.g., Jiang et al., 2013; Kulchania, 2013); managerial entrenchment, including manager compensation and self-benefit investment, represents diminished board control and hurts firm value (e.g., Faleye, 2007).

Table 4 reports the changes for these measures in 2016, and, for comparison, we

also compute the changes in 2015. As in Table 3, we show the results for the first half of the year, the second half of the year, and the whole year.¹⁷ As the whole year comparison shows, all listed SMEs paid more cash dividends in 2016. Cash dividends increased by NT \$2.47 billion in 2016, up 60 percent from the previous year. However, from 2015 to 2016, the total recurring net income of all listed SMEs modestly decreased, from NT \$12,195 billion to NT \$12,194 billion, and the total gross profit of all listed SMEs was NT \$364.4 billion in 2016, up only 3.85 percent from the previous year. Given the stability in earnings and operating profits, the distinct increase in cash dividends in 2016 seems unreasonable.

The listed SMEs also spent more on managerial compensation and repurchased more shares from the market. Furthermore, we find that increases in managerial compensation and share repurchasing in the last two quarters accounted for the majority of the total increases in 2016. For instance, cash payments to M&A increased NT \$787 million in the last two quarters of 2016, compared to an annual decrease of NT \$384 million in 2015. In addition, managerial compensation and share repurchases increased NT \$455 million and by 17.7 million shares in the last two quarters, accounting for 96.40 percent and 90.74 percent of annual increases.

In summary, the results of Table 4 indicate that publicly listed SMEs spent more money on various non-value-maximum events, given that the companies were not actually more profitable in 2016. The phenomenon worsened in the second half of 2016. Since the listed SMEs obtained more bank loans in the latter period of 2016, we believe that portions of extra funds were spent on catering to shareholders with higher cash distributions (cash dividends and share repurchases) and more severe managerial entrenchment (managerial compensation and M&A expenditures). These findings are consistent with the documented relationship between extra cash and agency problems in the literature (Jensen & Meckling, 1976).

Table 3 only includes comparisons based on the aggregation of all publicly listed SMEs. To further consider the differences between sample SMEs and to control for firm characteristics, we conduct regression analyses to test the robustness of the results in Table 3. The regression model is as follows:

$$Y_i = Loan_i + Lag(Y_i) + Size_i + Lev_i + Intercept + Ind_{dummy} + \varepsilon_i \quad (1)$$

¹⁷ Since information regarding cash dividend payments is only disclosed in annual reports, we do not present the cash dividend results in six-month periods.

Table 3: The Spending on Firm Liquidity and Investment Activities

This table reports the level and the changes in Working Capital, R&D Expenditures, Long Investments, and Financial Investments. Working Capital is computed as total liquid asset minus total liquid debt. R&D Expenditure is total spending on research and development (R&D). Long Investment measures incremental long-run investments, including capital instruments, land, and other long-term investment instruments. Financial Investment measures the incremental investments in financial assets that are not incorporated in Long Investments.

	Q1 and Q2				Q3 and Q4				Whole Year			
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Working Capital NT \$million	335,344	354,732	287,315	337,345	315,436	305,436	672,689	670,168	592,751			
Changes across periods	-	19,388	-67,417	-	-21,909	-10,000	-	-2,521	-77,417			
R&D Expenditure NT \$million	10,515	13,224	14,801	26,670	32,689	35,074	37,185	45,912	49,876			
Changes across periods	-	2,709	1,577	-	6,019	2,385	-	8,727	3,964			
Long Investment NT \$million	678	943	786	2,556	1,165	826	3,235	2,107	1,612			
Changes across periods	-	265	-157	-	-1,391	-339	-	-1,128	-495			
Financial Investment NT \$million	1,949	-40	459	-1,129	3,404	3,762	820	3,364	4,220			
Changes across periods	-	-1,989	499	-	4,533	358	-	2,544	856			

Source: This study

Table 4: The Spending on Non-Value-Creation Activities

This table reports the level and the changes in Cash Dividend, Managerial Compensation, Share Repurchase, and M&A Expenditure. Cash Dividend is the total distribution of cash dividends. Managerial Compensation is the total compensation of senior managers, including salary, bonuses, and special expenses. Share Repurchase is the total number of common stock shares repurchased by the firm. M&A Expenditure is the total cash payment to M&A activities.

	Q1 and Q2						Q3 and Q4				Whole Year		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2016
Cash Dividend NT \$million	-	-	-	-	-	-	-	-	-	19,092	20,633	23,060	
Changes across periods	-	-	-	-	-	-	-	-	-	-	1,541	2,472	
Managerial Compensation NT \$ million	2,935	2,961	2,979	2,796	2,987	3,442	2,796	2,987	3,442	5,731	5,949	6,421	
Changes across periods	-	26	18	-	191	455	-	191	455	-	218	472	
Share Repurchase #1,000	99,693	76,619	78,428	106,353	89,467	107,195	106,353	89,467	107,195	206,046	166,086	185,623	
Changes across periods	-	-23,074	1,809	-	-16,886	17,728	-	-16,886	17,728	-	-39,960	19,537	
M&A Expenditure NT \$million	706	1,466	295	431	531	1,318	431	531	1,318	1,137	1,997	1,613	
Changes across periods	-	760	-1,171	-	100	787	-	100	787	-	860	-384	

Source: This study

$Loan_i$ is the total amount of bank loans for the listed SME i in the last two quarters. Y_i is Δ Working Capital, Δ R&D Expenditures, Δ Long-Term Investments, or Δ Financial Investments in the second half of the year between two consecutive years.¹⁸ $Size_i$ is the average total market value of common stocks for the listed SME i in the last two quarters. Lev_i is the average debt-to-asset ratio for the listed SME i . To control for the variation among different industries, we add an industry dummy in the regression model.¹⁹ We conduct the regression analyses for 2015 and 2016 individually. If the listed SMEs show no distinct tendency to spend the extra funds received in the last two quarters on improving working capital and other value-enhancing activities in 2016, the coefficients of $Loan_i$ for 2016 should be lower than those for 2015. We report the regression results in Table 5.

As the models in Table 5 indicate, we find that all coefficients of $Loan_i$ for 2016 are lower than those for 2015. Except for model (2) of R&D Expenditures, the differences in the coefficient of $Loan_i$ between 2015 and 2016 are statistically significant. Overall, the findings displayed in Table 5 support the results presented in Table 3.

In the same manner, we perform a regression analysis to test the robustness of the results in Table 4. The regression model is identical to Equation (1) with different dependent variables, including Δ Cash Dividends, Δ Share Repurchases, Δ M&A Expenditures, and Δ Managerial Compensation. We conduct the regression analyses for 2015 and 2016 individually. If the listed SMEs show stronger tendencies to spend the extra funds during the last two quarters on various non-value-maximum events in 2016, the coefficients of $Loan_i$ for 2016 should be higher than those for 2015. We report the regression results in Table 6.

¹⁸ When calculating the changes in the working capital and expenditure variables, we use the raw value rather than the scaled value, since it is more straightforward to examine how the changes in the level of working capital and expenditure variables relate to the incremental amounts of bank loans. Scaled variables, such as the expenditure changes divided by total assets, represent relative changes in variables and do not directly convey the information we want to address in the analysis. We apply the same settings in the Table 6 analysis.

¹⁹ Although we present only 11 industry categories for the sample description in Table 1, the industry dummies in the regression are constructed using 30 more accurate categories to better capture the industry effect.

Again, the findings of Table 6 support the results presented in Table 4. All coefficients of $Loan_i$ for 2016 are higher than those for 2015. Except for model (3) of M&A expenditures, the differences in the coefficient of $Loan_i$ between 2015 and 2016 are significant in the other models.

Table 5: The Regression Analysis for the Use of Increased Bank Loans on Firm Liquidity and Investment Activities

This table reports the results of the regression analysis for Table 3. The regression is performed by Equation (1). $Loan_i$ is the total amount of bank loans for the listed SME i in the last two quarters. $Size_i$ is the average total market value of common stocks for the listed SME i in the last two quarters. Lev_i is the average debt-to-asset ratio for the listed SME i . To control for the variation among different industries, industry dummies are included in the regression. The definition of dependent variables is the same as Table 3. The standard errors are reported in parentheses. ***, **, * and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependents	(1)			(2)			(3)			(4)			
	ΔWorking Capital			ΔR&D Expenditure			ΔLong-Term Investments			ΔFinancial Investments			
	2015	2016	2015	2015	2016	2015	2015	2016	2015	2016	2015	2016	
Loan	0.230 (0.033)	*** -0.484 (0.124)	***	-0.002 (0.002)	0.002 (0.003)	0.002	0.019 (0.004)	*** 0.001 (0.002)	0.018 (0.010)	*	-0.021 (0.011)	*	
Lag(Dep.)	-0.515 (0.008)	*** 0.424 (0.087)	***	0.415 (0.050)	*** 0.388 (0.046)	***	-0.035 (0.153)	*** -0.519 (0.082)	*	-0.176 (0.106)	*	0.760 (0.110)	***
SIZE	0.072 (0.008)	*** -0.025 (0.016)	***	0.002 (0.001)	*** -0.001 (0.001)	**	0.002 (0.001)	** 0.000 (0.000)	*** -0.013 (0.002)	***	0.005 (0.002)	***	
LEV	-725 (1929)	1,168 (5,124)	53 (129)	-66 (135)	76 (41)	*	550 (212)	*** (41)	200 (632)		453 (570)		
Intercept	79,023 (602,760)	27,124 (228,659)	-16,560 (40,872)	4,763 (32,557)	1,843 (18,198)	90,748 (196,192)	-25,495 (66,925)	1,843 (18,198)	90,748 (196,192)	187,663 (137,590)			
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R ²	0.832	0.113	0.392	0.203	0.298	0.102	0.206	0.298	0.102	0.154	0.154	0.154	
Obs.	374	408	374	408	408	374	374	408	374	408	374	408	

Source: This study

Table 6: The Regression Analysis for the Spending on Non-Value-Creation Activities

This table reports the results of the regression analysis for Table 4. The regression is performed by Equation (1). $Loan_i$ is the total amount of bank loans for the listed SME i in the last two quarters. $Size_i$ is the average total market value of common stocks for the listed SME i in the last two quarters. Lev_i is the average debt-to-asset ratio for the listed SME i . To control for the variation among different industries, industry dummies are included in the regression. The definition of dependent variables is the same as Table 4. The standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependents	ΔCash Dividend			ΔShare Repurchase			ΔM&A Expenditure			ΔManagerial Compensation		
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Independents												
Loan	0.005 (0.004)	0.008 * (0.004)	-0.006 (0.044)	0.179 *** (0.069)	0.252 (0.825)	0.344 (0.290)	-0.605 ** (0.284)	0.885 ** (0.417)				
Lag_dep	-0.428 *** (0.026)	0.021 (0.040)	-709 *** (32)	-299 *** (67)	-1.157 *** (0.043)	-0.970 *** (0.165)	-0.459 *** (0.031)	-0.526 *** (0.034)				
SIZE	0.002 *** (0.001)	0.001 * (0.001)	0.001 (0.010)	0.014 (0.010)	0.000 (0.000)	-0.001 (0.000)	0.000 *** (0.000)	0.000 *** (0.000)				
LEV	313 ** (197)	69 (226)	1,299 (2,673)	-260 (337)	-44 (50)	28 (140)	31 * (170)	12 (19)				
Intercept	123,511 ** (61,431)	-20,587 (54,900)	-33,622 (829,861)	-62,786 (821,761)	1,149 (15,601)	3,810 (34,531)	136 (5,346)	179 (4,496)				
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
R^2	0.490	0.056	0.609	0.085	0.745	0.135	0.423	0.434				
Obs.	374	408	374	408	374	408	374	408				

Source: This study

5.3 The performance of listed SMEs after acquiring extra loans

In Section 5.2, we suggest that after obtaining more bank loans in the second half of 2016, the listed SMEs spent too much on cash distribution and managerial entrenchment activities—actions that are indeed harmful to both debtholders and stockholders. If listed SMEs are subject to more severe agency costs for business operations, performance after acquiring extra loans should worsen. To examine the performance of listed SMEs, we compare them to other listed companies (non-SMEs) on the Taiwan stock market.²⁰ We focus on changes in different profitability measures between 2016 and 2017. The profitability measures include earnings per share (EPS), recurring operating revenue per share (RPS), and gross profit rate. Changes in the profitability measures between 2015 and 2016 are given as the benchmarks. We present the results in Table 7.

As the table indicates, our analysis shows that in the year after obtaining extra bank loans, the EPS of the listed SMEs was only 0.49, a dramatic drop from 2.37 in 2016, representing a decline of 79 percent. During the same period, however, the EPS of non-SMEs only decreased by around 4 percent. Given that the changes of EPS in 2016 for the listed SMEs and non-SMEs were 6.76 percent and 6.41 percent, respectively, the deviation for these two groups in 2017—the period right after the listed SMEs received more bank loans—suggests that the listed SMEs performed more poorly than non-SMEs in the same market.

Table 7: The Performance of Listed SMEs and Non-SME Listed Firms in the Following Year

This table compares the performance between listed SMEs and other listed firms by four profitability measures, including the earnings per share (Earnings Per Share), the recurring operating revenue per share (Revenue Per Share), and the gross profit rate (Gross Profit Rate).

²⁰ We examine listed SMEs and non-SME listed firms rather than non-listed SMEs in the following analysis because SMEs are not required to publicly disclose their financial statements unless they are listed on the stock market; the unavailability of data thus makes directly comparing the financial performance of listed SMEs and non-listed SMEs impossible. However, if we find that listed SMEs performed relatively poorly compared to their listed peers after acquiring extra bank loans, we can still infer that receiving extra liquidity harmed the financial performance of listed SMEs.

Quarterly Average	Listed SMEs			Non-SME listed firms		
	2015	2016	2017	2015	2016	2017
Earnings Per Share \$	2.22	2.37	0.49	3.12	3.32	3.19
Changes across periods		6.76%	-79.32%		6.41%	-3.92%
Revenue Per Share \$	0.67	0.69	0.21	0.86	0.97	0.99
Changes across periods		2.99%	-69.57%		12.79%	2.06%
Gross Profit Rate %	27.87	27.92	16.29	22.6	23.42	23.58
Changes across periods		0.18%	-41.65%		3.63%	0.68%

Source: This study

We see similar patterns in the RPS and the gross profit rate. The RPS and the gross profit rate of the listed SMEs declined 70 percent and 42 percent in 2017, respectively, while the RPS and the gross profit rate of non-SMEs conversely increased 2 percent and 1 percent, respectively during the same period. Furthermore, the dramatic deviation in the profitability of listed SMEs and non-SMEs in 2017 did not occur in 2016, indicating that the deteriorated performance of the listed SMEs most likely stemmed from agency problems caused by over-crediting in 2016.

$$Y_i = SME_i + Loan_i + Lag(Y_i) + Size_i + Lev_i + Intercept + Ind_dummy + \varepsilon_i \quad (2)$$

SME_i is an indicator and equal to one if the firm i is a listed SME, zero if the firm i is a non-SME. Y_i is Δ Earnings Per Share, Δ Operating Revenue Per Share, or Δ Gross Profit Rate in the first half of the year between the two consecutive years. Other variables are defined as in Equation (1). We conduct regression analyses for 2016 and 2017 individually. If the listed SMEs perform relatively poorly compared to the non-SMEs after receiving extra bank loans, the coefficients of SME_i in 2017 should be negative and much lower than in 2016. We report the regression results in Table 8.

As expected, we find that the coefficients of SME_i of each profitability measure for 2017 are significantly negative, while the same coefficients for 2016 are all insignificant. The findings in Table 8 align with those reported in Table 7, further supporting our inference regarding the performance of the listed SMEs after they obtained more bank loans: the extra bank loans initiated by the government's implicit intervention in the SME loans market in 2016 did not actually help the SMEs.

Table 8: The Regression Analysis for the Performance of Listed SMEs and Non-SME Listed Firms

This table reports the results of the regression analysis for Table 7. The regression is performed by Equation (2). SME_i is an indicator and equal to one if the firm i is a listed SME, zero if the firm i is a non-SME listed firm. $Loan_i$ is the total amount (in billion) of bank loans for the listed SME i in the last two quarters. $Size_i$ is the average total market value of common stocks for the listed SME i in the last two quarters. Lev_i is the average debt-to-asset ratio for the listed SME i . To control for the variation among different industries, industry dummies are included in the regression. The definition of dependent variables is the same as Table 7. The standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	ΔEarnings Per Share			ΔOperating Revenue Per Share			Δ Gross Profit Rate		
	2016	2017	2016	2016	2017	2016	2016	2017	2017
SME	0.073 (0.278)	-0.498 * (0.278)	-0.163 (0.116)	-0.258 * (0.132)	-0.402 (0.517)	-1.810 *** (0.507)			
Loan	0.691 * (0.398)	0.658 (0.411)	0.045 (0.152)	0.006 (0.353)	1.731 ** (0.674)	1.552 ** (0.754)			
Lag_dep	0.036 *** (0.009)	0.028 *** (0.009)	0.118 *** (0.018)	0.201 *** (0.016)	-0.089 *** (0.013)	-0.057 *** (0.013)			
SIZE	0.000 (0.000)	0.000 ** (0.000)	0.000 *** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)			
LEV	0.008 (0.007)	0.022 *** (0.006)	0.004 (0.003)	0.009 *** (0.003)	-0.026 ** (0.012)	-0.011 (0.012)			
Intercept	-1.926 ** (0.785)	-0.930 (0.787)	-0.354 (0.355)	-0.457 (0.393)	3.907 *** (1.488)	-0.762 (1.504)			
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes			
R ²	0.072	0.061	0.176	0.079	0.087	0.062			
Obs.	1,088	1,200	937	1,036	1,182	1,231			

Source: This study

6. Summary and Conclusion

Taiwan is home to more than 1.4 million SMEs, accounting for more than 97 percent of companies across all industries. Together Taiwan's SMEs hire more than 8.7 million employees, 78 percent of the nation's workforce. Therefore, Taiwan's SMEs play a very crucial role in the labor market and economic development. Since the SME sector faces constrained access to external financing, which may negatively affect its relevant role in achieving national development goals, the authorities in Taiwan have implemented various policies or programs to ensure that SMEs have easier access to outside financing.

For example, Taiwan's Financial Supervisory Commission (FSC) established the program of "Outstanding SME Loans by Domestic Banks" on July 1, 2005 to urge domestic banks to increase lending to SMEs. Every year, the banking authority rewards domestic banks, either government-owned or local private banks, based on their "contribution" to the SME credit market via this program. Under this mechanism, the government's frequent calls to banks to increase liquidity provision became an implicit policy intervention in the loan market for SMEs. However, we know little about the effectiveness of this implicit intervention in addressing the credit market failure and the resource misallocation for SMEs.

Fortunately, an unusual event occurred in 2016 that provides a means of discerning the effectiveness of the FSC's market interventions. Due to concern regarding future economic development, through August 2016, domestic banks loaned SMEs a net total of NT \$77.5 billion, down 60 percent from the same period in 2015. Following the publication of these statistics, the FSC issued an urgent appeal to domestic banks to facilitate more lending to SMEs. Surprisingly, by the end of 2016, incremental SME loans financed by domestic banks reached NT \$275 billion—the result of a nearly NT \$200 billion increase between August and the end of the year. Does this dramatic change suggest that the government's intervention efficiently and effectively solved the problems in the SME loan market, or does it merely indicate that domestic banks cater to the government by behaving opportunistically in pursuit of rewards? In this study, we seek to answer these questions.

Our findings indicate that, unfortunately, the majority of the loans that comprised this dramatic increase in bank loans in late 2016 went to publicly listed SMEs, leaving a record low portion for relatively smaller SMEs—a group that needed more liquidity. Moreover, the publicly listed SMEs who received these funds did not invest them properly; instead, we find that the listed SMEs were most likely to increase spending on cash dividends, share repurchases, paying M&As, and increasing managerial compensation. These non-value-creation activities caused publicly listed SMEs to perform more poorly than non-SMEs in the following year, a predictable outcome that reflects the more severe agency problems in the listed SMEs. Different from most studies suggesting that government policy interventions bolster the development of SMEs, we suggest that, in this unique case in Taiwan, supply-side influence on the part of the government upset the policy itself due to bank misbehavior and a debatable reward program.

Appendix: The Evolving Definition of SMEs in Taiwan

	Manufacturing	Construction	Mining and quarrying	Commerce, transportation services and other services
Sep 1967	Capital under NT\$ 5 million;	and regular employees under 100 persons.		Annual operating revenue under NT\$ 5 million; and regular employees under 50 persons.
Mar 1973	Registered capital under NT\$ 5 million and total assets not exceeding NT\$ 20 million, or registered capital under NT\$ 5 million and the number of regular employees in accordance with the standards as below: (1) under 300 persons for garments, clothing and electronics industry; (2) under 200 persons for food products industry; (3) under 100 persons for others.			No change
Aug 1977	Paid-in capital under NT\$ 20 million and total assets amount not exceeds NT\$ 60 million, and the number of regular employees not exceeds 300 persons.		Paid-in capital under NT\$ 20 million and the number of regular employees not exceed 500 persons.	Annual operating revenue under NT\$ 20 million; and regular employees under 50 persons.
Feb 1979	No change		Paid-in capital under NT\$ 40 million.	No change
Jul 1982	Paid-in capital under NT\$ 40 million and total assets amount not exceed NT\$ 120 million.		No change	Annual operating revenue under NT\$ 40 million.
Nov 1991	No change, except for extending industry terms into construction.		No change	
Sep 1995	Paid-in capital not exceeds NT\$ 60 million;	or regular employees not exceed 200 persons.		Total operating revenue in the preceding year not exceeds NT \$80 million; or its regular employees not exceed 50 persons (extending industry terms to agriculture).
May 2000	Paid-in capital not exceeds NT\$ 80 million;	or regular employees not exceed 200 persons.		Total operating revenue in the preceding year not exceeds NT\$ 100 million; or its regular employees not exceed 50 persons (extending industry terms to agriculture).
Jul 2005	Paid-in capital not exceed NT\$ 80 million;	or regular employees not exceed 200 persons.		Total operating revenue in the preceding year not exceeds NT\$ 100 million; or its regular employees not exceed 50 persons

Source: The Small and Medium Enterprise Administration, Ministry of Economic Affairs

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