

# Effects of Small Business Support Projects: Evidence from Korea<sup>†</sup>

By JINKOOK LEE\*

*On average, small business support projects appear to improve beneficiary sales, and the growth effect is obvious when supporting young or growing firms. However, the effect is largely offset by sales reductions due to overcrowding. Small business support projects must be operated in two ways to alleviate the overcrowding of businesses in a few industries and to enhance the overall effectiveness of the support programs.*

Key Word: Small Business Owner, SME, Support Policy,  
Support Project, Overcrowding  
JEL Code: C13, D40, L10, L20

## I. Introduction

In recent decades, small business budgets have increased rapidly. An examination of the small business budget of the Ministry of SMEs and Start-ups (henceforth ‘MSS’) shows that it increased from 0.6 trillion won in 2007 to 2.1 trillion won in 2017. As a result, the proportion of small business budgets for the MSS’s total budget rose from 11% to 26%.

In addition, administrative promotion efforts by the Ministry have led to strengthened budget coordination outcomes and enforcement system, and small business policies are being used as important tools to support the government's income-driven growth strategy. Therefore, budgets and policies for small businesses are likely to expand in the future.

This trend would have been possible because small businesses are an important part of the national economy. Small businesses form the basis of the industrial ecosystem, accounting for 84% of domestic establishments and 34% of the number of employees. Moreover, because companies usually start out as small businesses

\* Fellow, Korea Development Institute (E-mail: [ljik@kdi.re.kr](mailto:ljik@kdi.re.kr))

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and then go through a wide range of experiences to become larger companies, the growth of small businesses is essential for enhancing the sustainability of our economy. Furthermore, small businesses provide long-term and short-term labor opportunities for job seekers, unemployed people and retirees, and these functions of economic and social safety nets reinforce the need for government support.

Despite the fact that support for small businesses has expanded, assessments of whether supporting policies are achieving their intended goals have been insufficient. This may be due to low data availability and to a situation in which performance evaluations of ministries has little to do with the effectiveness of projects carried out by the ministries. Nevertheless, as budgets are expanding, evaluating project performance outcomes and attempting to improve the efficiency of projects should not be neglected.

Based on this perception, this study investigates the Korean small business industry and presents an overview of government policy and budget trends. In addition, the paper analyzes the impact of small business projects on beneficiary growth and then proposes policy recommendations.

## II. Related Literature

It's nothing new for small businesses to struggle with low profitability, perhaps because start-ups tend to be concentrated in a few industries, causing excessive competition, and because underperforming firms are likely to remain in the market with government support rather than leaving or switching to other industries.

This implies that there is an overcrowding phenomenon in which the number of businesses exceeds an appropriate scale for the market size. With emphasis on this aspect, a group of studies estimated the appropriate number of small businesses that the domestic market can afford and calculated the degree of overcrowding.

Noh *et al.* (2009) compiled panel data from 30 OECD countries (2000-2007) on income levels, income tax rates and unemployment rates to perform a regression analysis. Estimates of pooled OLS and random-effects models show that the excess of those self-employed reaches approximately 510,000 in wholesale and retail, close to 220,000 in food and hospitality, and 1.9~2.2 million in all industries. Suh *et al.* (2013) also estimated the appropriate self-employment size using data from 30 OECD countries. In addition to the variables used in Noh *et al.* (2009), their study also considered consumer prices, amounts of exports and imports, and bankruptcy rates as independent variables. By estimating with the random-effects model, they reported that the number of domestic self-employed was in excess of 3.4~3.7 million. A similar study by Suh and Kim (2012) showed that the share of the self-employment in the domestic retail industry was relatively high compared to those in Japan and OECD countries. These studies overall reveal that the domestic small business industry is facing an oversupply. However, given that the excessive scale fluctuates considerably depending on model used, it appears to be necessary to discover additional determinants of self-employment and to estimate the excessive scale more accurately.

Meanwhile, other studies qualitatively discuss the direction of the improvement of small business policies. Yuck and Ryu (2004) pointed out that many public

organizations carried out start-up supporting projects indiscriminately, resulting in severe similarity and duplication issues. Regarding these findings, the study suggested that a small business development center should be developed as a dedicated organization responsible for all start-up projects. The issue of similarity between projects was also discussed in Lee and Ko (2009). They identified subjects and types of each SME support project and divided them into ten sectors. Based on a comparative analysis, their study noted that the degree of similarity was generally high in the areas of funding, exports, outlets, and technology development, mainly because the support agents were not integrated.

Another group of studies evaluated the performance of small business projects. In order to verify the effectiveness of the projects, a researcher must obtain a list of beneficiaries and their performance information. However, until recently, it was difficult to obtain objective data. Accordingly, previous studies conducted surveys of beneficiary companies. Kim *et al.* (2012) analyzed the effects of small-business policy funds by comparing 500 beneficiaries with 500 non-beneficiaries, finding that with greater fund support, higher revenue growth rate of beneficiaries resulted. On the other hand, Yun (2013) used data from the Korea Credit Guarantee Foundation to identify the beneficiaries of SME policy funds and found that policy funds did not have a significant impact on the sales growth of the beneficiaries.<sup>1</sup>

Compared to previous studies, the present study attempts to identify the causal impact of supporting projects. Past research is commonly vulnerable to the possibility that the estimates cannot be viewed as akin to causal effects because they focused on only one project without controlling for others being supported simultaneously. In contrast, the present study controls for not only the MSS's projects but also for other central and local governments' types of support to improve the causality link.

In addition, this study identifies the underlying factors that influence the effectiveness of support projects and provides policy implications regarding the criteria to be considered when selecting beneficiaries.

### **III. Aspects of the Small Business Industry**

Looking at the domestic small business industry, we find that there are several factors which limit the success and growth of these businesses. This chapter examines the structural aspects and problems of the small business industry considering the following aspects: 1) the high frequency of start-ups in times of depression, 2) large numbers of firms concentrated in a few industries, and 3) the prevalence of unprepared start-ups.

#### *A. Start-ups in Times of Depression*

As of 2015, there were 3.24 million small businesses, accounting for 83.7% of the total number of establishments (3.87 million) in Korea. According to Figure 1, the

<sup>1</sup>Other studies which analyzed effects of small business support projects include Kim (2015), Jun *et al.* (2005), and Hwang *et al.* (2016).

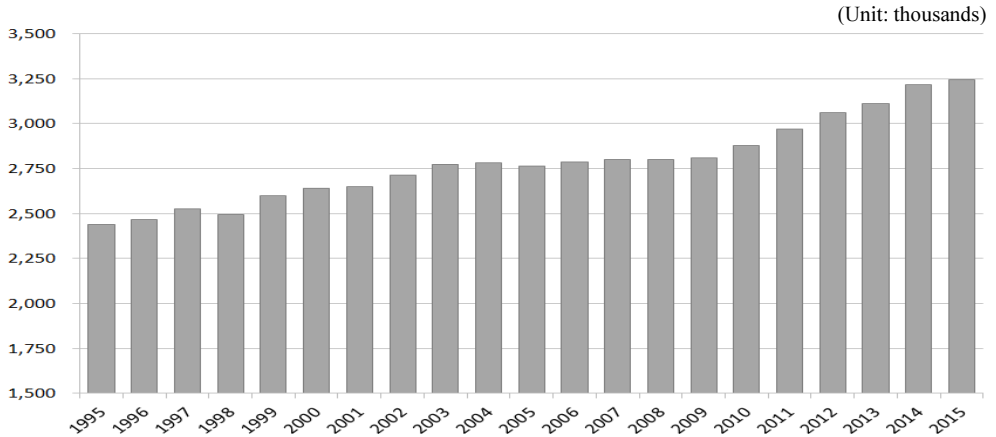


FIGURE 1. NUMBER OF SMALL BUSINESSES

Source: Based on Statistics Korea, "Census on Establishments," 1995-2014; "Economic Census," 2015.

number of small business owners increased during the period of 1995~2015, but sharp increases occurred after the Asian financial crisis and after the later global financial crisis.

In five years following the Asian financial crisis and after the global financial crisis, the number of small businesses owners increased by approximately 280,000 (during 1999-2003) and by nearly 400,000 (during 2010-2014), respectively. These two increases in sum account for 85% of the increase over the last two decades. This implies that small business start-ups tend to be particularly active when a crisis or recession arrives in our economy.

Small business start-ups can occur at any time, at the will of the founders. However, the fact that start-ups stand out when consumer sentiment is frozen and market demand stagnates can be a concern because it can intensify oversupply and lower the profitability of businesses.

### B. *Bulk of Firms in a Few Industries*

Figure 2 shows that 86-88% of small business owners are engaged in the service industry. Moreover, focusing on service sectors as shown in Figure 3, 80% to 85% exist in the four sub-sectors of wholesale & retail, lodging & restaurants, transportation, and associations & personal services, with more than 50% engaged in wholesale & retail and lodging & restaurants.

Business concentration in these sectors appears to be a consistent trend in our economy, and this trend has been maintained because additional entries of small businesses are also concentrated in the four aforementioned service sectors. From 1995 to 2015, the number of small businesses increased by as much as 803,000, of which 656,000 (81.6%) were concentrated in the service industry and 441,000 (54.8%) were in the four service sectors above. That is, small businesses tended to start in a few sectors that are easy to enter, inducing overcrowding.

Most companies born during a recession are typically self-employed start-ups, as corporate restructuring shifts workers from the wage work environment to the small

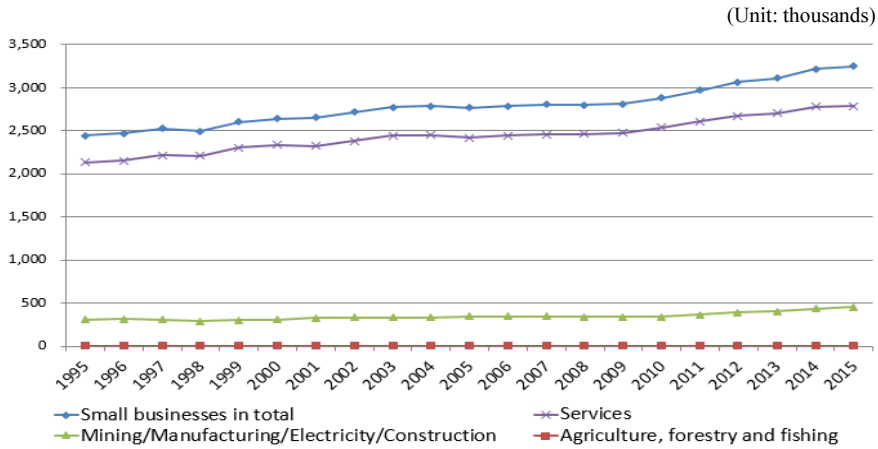


FIGURE 2. NUMBER OF SMALL BUSINESSES BY INDUSTRY AND YEAR

Source: Based on Statistics Korea, “Census on Establishments,” 1995-2014; “Economic Census,” 2015.

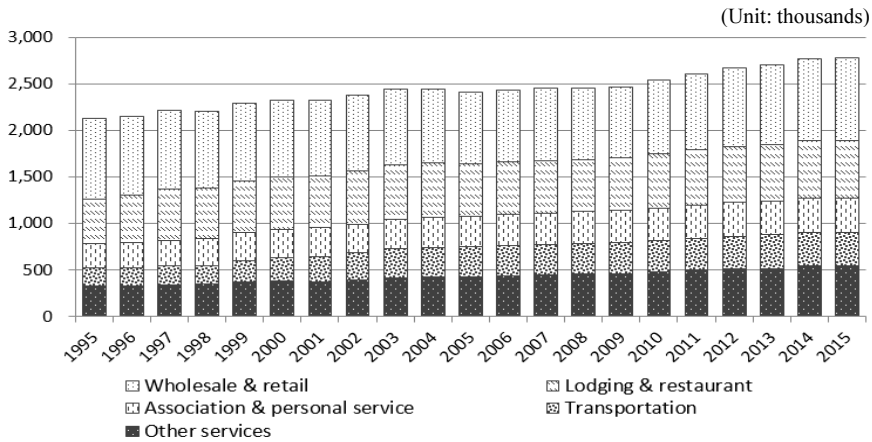


FIGURE 3. NUMBER OF SMALL BUSINESSES IN THE SERVICE SECTOR BY INDUSTRY AND YEAR

Source: Based on Statistics Korea, “Census on Establishments,” 1995-2014; “Economic Census,” 2015.

business industry. These self-employed companies are heavily constrained with regard to their earning a living and therefore tend to engage in a business that can be started quickly with a small amount of capital. In addition, the recent rapid growth of the franchise market in Korea has made it easier to start small businesses in the wholesale & retail and lodging & restaurants sectors.

### C. Prevalence of Unprepared Start-ups

Small business owners' choices over which sector to enter can be influenced by various conditions, such as their motivation and the preparation period for starting a business.

According to the Small Business Survey (see Table 1), 82.6 percent started their own business to make a living without other alternatives. On the other hand, only

TABLE 1—MOTIVATION FOR FOUNDING A SMALL BUSINESS

Motivation	Percentage
To make a living (without other alternatives)	82.6
Seeing the possibility of success	14.3
For business succession	1.3
Etc.	1.8

Source: Based on Ministry of SMEs and Start-ups, “National Small Business Survey,” 2013.

TABLE 2— PREPARATION PERIOD FOR SMALL BUSINESS START-UP

less than 1 month	less than 3 months	less than 6 months	less than 1 year	less than 2 years	2 years or more
10.8	23.9	26.2	12.7	10.3	16.2

Source: Based on Ministry of SMEs and Start-ups, “National Small Business Survey,” 2013.

14.3 percent of start-ups were hoping for success. In other words, the majority of small business start-ups are likely to be created so that their proprietors can make living rather than out of a business vision or due to the potential for success.

In addition, when looking at the preparation period for small businesses (see Table 2), 74% of start-ups prepared for less than one year, and 61% prepared for less than six months. The percentages of start-ups with less than three months and even less than one month of preparation were 35% and 11%, respectively.

While most small business owners open their shops to earn a living, they are not ready to be as competitive as possible before entering the market and tend to choose industries that are relatively easy to enter. Under these circumstances a vicious cycle (insufficient preparation – overcrowding in a few sectors – low profits and high closure rates) is likely to continue.

## IV. Projects and Budget for Small Businesses

### A. Analysis Scope for Support Projects

Before analyzing small business support projects, we should initially define which of the government's policies are applicable to small business owners. At the narrowest level, we can focus on projects undertaken by the MSS's Small Business Policy Office and on projects of Small Business Market Promotion Funds commissioned by the Small Business Market Agency. Because these projects are only for small business owners, they can suitably define the scope of small business support projects.

On the other hand, there is a wide variety of programs that assist SMEs from which small businesses satisfying certain requirements can also benefit. Hence, the scope of small business projects may include those by other offices of the MSS, programs of the SME Start-up and Promotion Fund (consigned by the Small and Medium Business Corporation), and other central or local government-related

Projects by Small Business Policy Office in Min. of the MSS + Projects of the Small Business Market Promotion Fund	<Policy Group A> Only for small businesses (Min. of MSS)	<Policy Group B> For small businesses & SMEs (Min. of MSS)
Projects by other offices in the MSS + Projects of the SME Start-up and Promotion Fund		
Projects by other central governments	<Policy Group C> For small businesses and SMEs (other central & local governments)	
Projects by local governments		

FIGURE 4. SCOPE OF SUPPORT POLICY FOR SMALL BUSINESSES

programs. In short, there is a narrow group of support projects from which only small business owners can receive assistance, and a broad group of projects where small businesses as well as SMEs can benefit, as shown in Figure 4.

In this section of the overviewing small business projects and budgets, we will focus on a narrow group of policies (policy group A). Because small business budgets are concentrated in the MSS and programs are mostly carried out by the Small Business Policy Office and Small Business Market Promotion Fund, this approach is suitable for identifying the trends of related policies and budgets.<sup>2</sup>

On the other hand, Chapter 5, which assesses the impact of small business projects, extends the scope of the analysis to policy group B while controlling for other projects in policy group C.

### B. Projects and Budget for Small Businesses: Total

When looking at the expenditures by the MSS based on Open Fiscal Data,<sup>3</sup> the figure rose from 5.5 trillion won in 2007 to 8.2 trillion won in 2017 (see Table 3).

TABLE 3— YEARLY SPENDING BY THE MSS

	(unit: 100 million won)											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR (*07-'17)
Total (A)	54,831	52,532	123,542	59,721	59,762	61,547	78,787	70,166	93,299	98,299	81,900	4.1
Spending for small businesses (B)	6,001	5,701	19,758	6,150	7,737	7,746	15,317	13,324	24,241	23,468	21,327	13.5
Ratio (B/A)	0.11	0.11	0.16	0.10	0.13	0.13	0.19	0.19	0.26	0.24	0.26	-

Note: Figures in 2009, 2013, 2015 and 2016 include supplementary budgets.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

<sup>2</sup>One may consider Policy Group B as the subject of the project and budget analysis. However, it is difficult to identify the percentage of the budget executed only for small businesses accurately.

<sup>3</sup>Open Fiscal Data are accessible at <http://www.openfiscaldata.go.kr>.

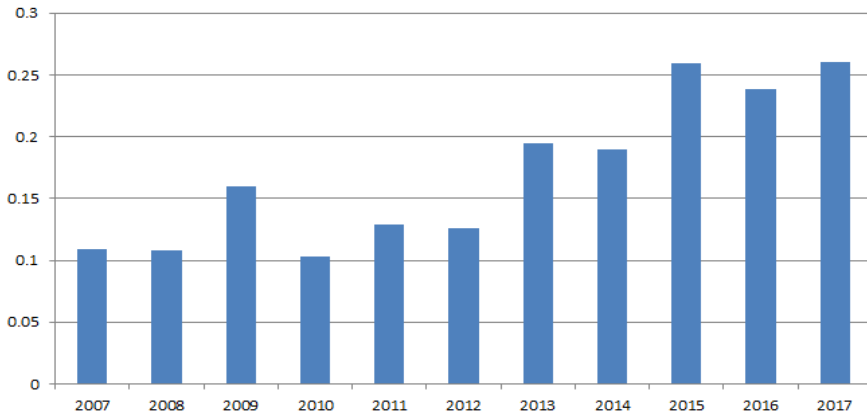


FIGURE 5. RATIO OF SMALL BUSINESS EXPENDITURES TO THE MSS'S BUDGET

Note: Figures in 2009, 2013, 2015 and 2016 include supplementary budgets.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance), Overview of Budget and Fund Management Plan (2007-2017, MSS)

Especially in 2009, 2013, 2015, and 2016, supplementary budgets were formed in response to the economic recession, which led to a significant increase in spending, whereas relatively steady increases were observed in other years.

Focusing on small business support projects, the budget increased from 0.6 trillion won in 2007 to 2.13 trillion won in 2017, increasing at an annual average rate of 13.5%. Overall, small business budgets have grown to more than a quarter of spending for SMEs (see Figure 5).

Figure 5 also shows that the ratios of small business budgets tended to increase significantly when the supplementary budgets were implemented. This means that additional budget funds tended to be used actively for small business projects in response to the economic downturn.

### C. Projects and Budgets for Small Businesses: by Category

Small business support programs by the MSS can be broadly divided into financial projects, ordinary projects, and traditional market support programs. Of these, the budget for financial projects is the largest, accounting for 1.7 trillion won (78.4%) out of 2.1 trillion won in 2017 (see Table 4).

There is the opinion that small business budgets must shift their focus from financial support to indirect program support, but the former still maintains a high proportion at 73~79% after the global financial crisis.

Earlier, we saw a significant increase in spending by the MSS during the years when supplementary budgeting was carried out. A closer look shows that approximately 20% of the supplementary budget has led to an increase in MSS budgets, while close to 20% of the increase in the MSS budgets has been used to support small businesses (see Table 5).

It is also noteworthy that most of the small business budget increase was used to expand the financial projects. Financial support would have been the easiest and quickest means by which the government could execute supplementary budgets



TABLE 4— BUDGET TRENDS FOR SMALL BUSINESS SUPPORT BY SECTOR

(Unit: 100 million won)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR (07-17)
Small business budget	6,001	5,701	19,758	6,150	7,737	7,746	15,317	13,324	24,241	23,468	21,327	13.52
Financial projects	3,716 (0.62)	3,220 (0.56)	17,267 (0.87)	3,500 (0.57)	4,650 (0.60)	4,550 (0.59)	11,600 (0.76)	9,713 (0.73)	19,156 (0.79)	18,248 (0.78)	16,727 (0.78)	16.23
Ordinary projects	321 (0.05)	156 (0.03)	452 (0.02)	684 (0.11)	877 (0.11)	978 (0.13)	1,380 (0.09)	1,425 (0.11)	1,704 (0.07)	1,603 (0.07)	1,138 (0.05)	13.51
Traditional market support programs	1,965 (0.33)	2,324 (0.41)	2,039 (0.10)	1,967 (0.32)	2,210 (0.29)	2,219 (0.29)	2,338 (0.15)	2,186 (0.16)	3,380 (0.14)	3,617 (0.15)	3,462 (0.16)	5.83

Note: 1) Figures in 2009, 2013, 2015 and 2016 include supplementary budgets. 2) Numbers in parentheses are relative to the total small business budget.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

TABLE 5— ALLOCATIONS OF SUPPLEMENTARY BUDGETS

(Unit: 100 million won)

	Y2009		Y2013		Y2015		Y2016	
	Increase in budget	Ratio	Increase in budget	Ratio	Increase in budget	Ratio	Increase in budget	Ratio
National budget (A)	177,000	-	70,000	-	93,000	-	122,000	-
▪ MSS budget (B)	43,291	0.24 (B/A)	12,555	0.18	14,439	0.16	17,376	0.14
• Small businesses (C)	6,081	0.14 (C/B)	3,173	0.25	3,633	0.25	2,428	0.14
-Ordinary projects (D)	114	0.02 (D/C)	100	0.03	-146	-0.04	-71	-0.03
<b>-Financial projects (E)</b>	<b>5,967</b>	<b>0.98</b> <b>(E/C)</b>	<b>3,000</b>	<b>0.95</b>	<b>3,245</b>	<b>0.89</b>	<b>2,100</b>	<b>0.86</b>
-Traditional market support programs (F)	0	0.00 (F/C)	73	0.02	534	0.15	399	0.16

Note: Figures in 2009, 2013, 2015 and 2016 include supplementary budgets.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

within months. In addition, beneficiary companies may prefer direct funding to indirect support because they can use the funds for a variety of purposes.

Looking at more detailed programs (see Table 6), financial projects provide direct funding using small business loans, as well as indirect financing through reinsurance of the regional credit guarantee foundation or local credit guarantee support.

On the other hand, ordinary projects indirectly help small business owners through various training and participation programs, such as education, information provision, consulting, marketing, and organization efforts (see Table 7). There are

TABLE 6— SUB-PROGRAMS IN SMALL BUSINESS FINANCIAL PROJECTS

(Unit: 100 million won)

Subprograms	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	3,716	3,220	17,267	3,500	4,650	4,550	11,600	9,713	19,156	18,248	16,727
Small business loans*	3,457	2,890	10,967	3,000	4,450	4,250	10,500	9,165	18,095	17,550	16,250
Reassurance for Local Credit Guarantee Foundation	105	330	2,600		200	300	1,100	548	600	600	387
Local Credit Guarantee Support	154		3,700	500							
Support the interest difference									101	98	90
Donate Sunshine loan									360		

Note: 1) Figures in 2009, 2013, 2015 and 2016 include supplementary budgets, 2) Small business loans are composed of the Growth Foundation Fund and the Management Stabilization Fund.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

TABLE 7— SUB-PROGRAMS IN SMALL BUSINESS ORDINARY PROJECTS

(Unit: 100 million won)

Subprograms	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	321	156	452	684	877	978	1,380	1,425	1,704	1,603	1,138
Start-up support	5	5	25	61	132	105	104	104	305	190	131
Growth Support	10	6	73	183	295	397	610	481	486	449	508
Revival Support							30	30	61	141	100
Specialized Support for Small Manufacturer						10	21	28	348	348	320
knowledge & service company support	5	4	104	99	210	200	305	422	403	403	
Infrastructure Support	300	142	250	341	240	266	310	361	102	73	78

Note: Figures in 2009, 2013, 2015 and 2016 include supplementary budgets.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

many detailed programs that constitute ordinary projects, but the budget is mostly small and only accounts for 5% of the overall small business budget.

However, recent budget increases are evident. The budget for ordinary projects was 32.1 billion won in 2007, but it increased rapidly to 113.8 billion won in 2017, showing an annual average growth rate of 13.5%.

The last group in the small business support category consists of traditional market

TABLE 8— SUB-PROGRAMS IN THE TRADITIONAL MARKET SUPPORT PROGRAM

(Unit: 100 million won)

Subprograms	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	1,965	2,324	2,039	1,967	2,210	2,219	2,338	2,186	3,380	3,617	3,462
Traditional Market / Distribution & Logistics Support	1,606	1,930	1,720	1,568	1,751	1,683	1,540	1,365	778	774	722
Traditional Market / Distribution & Logistics Support (Jeju)	50	42	32	29	48	47	51	58	44	42	40
Traditional Market / Distribution & Logistics Support (Sejong)											2
Improvements of the Parking Environment for Traditional Markets									965	1,001	998
Market Management Innovation Support	308	353	287	369	411	488	747	763	1,593	1,800	1,701

Note: Figures in 2009, 2013, 2015 and 2016 include supplementary budgets.

Source: Open Fiscal Data (2007-2017, Ministry of Economy and Finance); Overview of Budget and Fund Management Plan (2007-2017, MSS).

support programs. This group can be divided into two subgroups (see Table 8). One group of programs consists of programs aimed at the modernization of outdated facilities in traditional markets and the construction of public parking lots and distribution centers. The second group (market management innovation support) handles indirect programs such as education, marketing, consulting, and coordination for merchants.

Most of the budget increases with regard to traditional market support projects are associated with the second group: from 30.8 billion won in 2007 to 170 billion won in 2017, indicating that the focus of traditional market support is shifting from hardware building to software improvements.

## V. Evaluation of the Effectiveness of Small Business Support Projects

We have seen that support budgets for small businesses have expanded, but it has been difficult to evaluate the effectiveness of these projects mainly due to the lack of data pertaining to the details of this support. This study specifically assesses the effectiveness of small business projects through a micro-econometric analysis based on a support history database and on business performance data.

### A. Data overview

Essentially, two data groups are required to analyze the effectiveness of a support project. First, we need specific information about when and from which program beneficiaries received support. This study obtained detailed information about project contents, departments in charge, beneficiary companies, and the timing of the benefit from the SME Support History Database (SSHD).

Table 9 shows the amounts of support by central and local governments in 2010

and 2015. Because the database contains SME-supported projects, the MSS accounts for about half of the total.

In addition to the MSS, many central and local governments have also conducted SME support projects. This suggests that when assessing the effectiveness of small business support projects, these central and local government projects must also be controlled for in an appropriate manner.

The second set of data necessary contains the business performance outcomes of beneficiaries and non-beneficiaries. Accordingly, this study uses Korean Enterprise Data (2010-2015, henceforth 'KED'), which covers the annual performance information of SMEs and small businesses.

After merging SSHD and KED according to the business identification information

TABLE 9—AMOUNTS OF SUPPORT AS IDENTIFIED IN THE SSHD

Related Ministries	Year 2010		Year 2015		
	Frequency	Ratio	Frequency	Ratio	
Central governments	Min. of SMEs & Start-ups	270,982	47.3	372,295	49.3
	Min. of Employment & Labor	81,079	14.1	100,852	13.4
	Min. of Agriculture, Food & Rural Affairs	86,002	15.0	75,964	10.1
	Min. of Trade, Industry & Energy	6,560	1.1	8,539	1.1
	Defense Acquisition Program Admin.	3,201	0.6	7,417	1.0
	Min. of Culture, Sports & Tourism	2,070	0.4	4,870	0.6
	Min. of Food & Drug Safety	383	0.1	2,024	0.3
	Min. of Science & ICT	589	0.1	1,627	0.2
	Min. of Environment	398	0.1	1,532	0.2
Local governments	Seoul	6,737	1.2	9,131	1.2
	Busan	265	0.0	1,338	0.2
	Daegu	807	0.1	722	0.1
	Incheon	1,775	0.3	1,762	0.2
	Gwangju	2,563	0.4	1,942	0.3
	Daejeon	3,242	0.6	5,202	0.7
	Ulsan	7,935	1.4	11,005	1.5
	Sejong	32,274	5.6	40,084	5.3
	Gyeonggi	3,651	0.6	13,605	1.8
	Gangwon	566	0.1	1,048	0.1
	Chungbuk	1,618	0.3	1,962	0.3
	Chungnam	3,673	0.6	7,154	0.9
	Jeonbuk	38,366	6.7	32,870	4.4
	Jeonnam	7,781	1.4	19,226	2.5
	Gyeongbuk	2,351	0.4	6,714	0.9
	Gyeongnam	701	0.1	3,202	0.4
Jeju	7,476	1.3	22,527	3.0	
Total	573,045	100	754,614	100	

Source: Korea Small Business Institute (2010-2015)

and support year, only those establishments that meet small business standards were left in the final sample, while other SMEs and large enterprises were removed to account for heterogeneity by company size.<sup>4</sup> Table 10 shows descriptive statistics pertaining to the variables used in the regression analysis.

TABLE 10—DESCRIPTIVE STATISTICS OF THE VARIABLES

Variables	No. of observations	Mean	Std. Deviation	Min.	Max.
Sales (million won)	483,321	1,269	1,324	0.00	11,999
Operating profit (million won)	483,321	61.35	104.50	-417.39	700.39
Net profit (million won)	483,321	50.11	90.31	-499.16	588.24
Total capital (million won)	483,321	373	478	-537	4,172
Support (0/1)	483,321	0.12	0.33	0.00	1.00
Support_other (0/1)	483,321	0.25	0.43	0.00	1.00
Loans/Guarantees (0/1)	483,321	0.09	0.28	0.00	1.00
Export/Outlet/Marketing (0/1)	483,321	0.01	0.11	0.00	1.00
Technology/R&D (0/1)	483,321	0.01	0.09	0.00	1.00
Education/Diagnosis/Consulting (0/1)	483,321	0.02	0.13	0.00	1.00
Founding/Commercialization (0/1)	483,321	0.01	0.09	0.00	1.00
Organization/cooperation (0/1)	483,321	0.00	0.01	0.00	1.00
Recovery / Business Transition (0/1)	483,321	0.00	0.02	0.00	1.00
Labor (0/1)	483,321	0.01	0.08	0.00	1.00
No. of firms	483,321	428,013	327,056	1,499	1,015,074
No. of small businesses	483,321	367,951	295,543	520	894,549
Years of operation (years)	477,469	8.53	6.81	1.00	116.00
Years of operation_1-4 years (0/1)	483,321	0.35	0.48	0.00	1.00
Years of operation_5-7 years (0/1)	483,321	0.19	0.39	0.00	1.00
Years of operation_8-10 years (0/1)	483,321	0.14	0.35	0.00	1.00
Years of operation_10+ years (0/1)	483,321	0.33	0.47	0.00	1.00
Year_2011 (0/1)	483,321	0.11	0.31	0.00	1.00
Year_2012 (0/1)	483,321	0.15	0.36	0.00	1.00
Year_2013 (0/1)	483,321	0.19	0.40	0.00	1.00
Year_2014 (0/1)	483,321	0.23	0.42	0.00	1.00
Year_2015 (0/1)	483,321	0.23	0.42	0.00	1.00

Source: Korea Small Business Institute (2010-2015); Korea Enterprise Data (2010-2015).

<sup>4</sup>A small business is a micro-firm with less than a certain number of regular workers. Therefore, establishments that fall below the upper limit of a micro-firm's average sales were selected first, after which small businesses were selected using the number of regular workers by industry.

## B. Empirical Model and Estimation Method

The following empirical model was established to identify the effect of small business support projects on business performance outcomes.

$$y_{it} = \alpha + \sum_{k=1}^K \beta^k \text{support}_{it-1}^k + X_{it-1}\gamma + Z_{it-2}\delta + \varepsilon_i + \tau_t + u_{it}.$$

The dependent variable  $y_{it}$  denotes the business performance of firm  $i$  for year  $t$ . Depending on the model,  $y_{it}$  reflects a firm's annual sales as an indicator of the company's quantitative size; it also corresponds to operating profit and net profit to capture qualitative growth.

The independent variable  $\text{support}_{it-1}^k$  is a dummy variable that has a value of 1 if firm  $i$  was supported by project  $k$  in year  $t-1$  and a value of 0 otherwise.<sup>5</sup> In the estimations,  $\text{support}_{it-1}^k$  is set as the following hierarchical dummy variables: support project overall, by field, and by detailed program.

In addition, because the support effect may not occur immediately in the beneficiary year and given that approximately 80% of the support projects are executed in the second half, the point of support is set to the  $t-1$  year.

$X_{it-1}$  is a vector of control variables which may affect a firm's business performance, including the business period of a firm and dummy variables regarding whether or not they have been supported by other central or local government projects.

In addition, when ministries select beneficiaries, it is necessary to observe the various characteristics of the applicants. Therefore,  $Z_{it-2}$  includes the variables of sales and total capital, which can influence their decisions. These variables are set to  $t-2$ , one period before the support time.

$\varepsilon_i$  captures business characteristics that do not readily change and that are not observed by the researcher. Corresponding to a firm's fixed effect,  $\varepsilon_i$  can represent business know-how, industrial relationships and reputation among others.

$\tau_t$  is a dummy variable for each year and reflects fluctuations in the macro-economy or market environment, which are common to all businesses and which change over time. Finally,  $u_{it}$  is an error term that varies with the firm and over time.

The study utilized a panel regression analysis, considering the fact that support history and business performance information are identified by year. Using a fixed-effect model, the within transformations approach removes the unique characteristics ( $\varepsilon_i$ ) of a business and then identifies support effects.<sup>6</sup>

<sup>5</sup>In the SSHD, there are a number of observations that do not provide a specific amount of support. It may be difficult to identify the amount of support for individual companies in the case of indirect support program such as education, consulting, and infrastructure projects. Therefore, it would be reasonable to verify effectiveness of support projects based on the variable of support rather than of specific amount supported.

<sup>6</sup>It is also possible to create and control for as many variables as possible from the SSHD and KED data to perform a pooled OLS estimation. However, this method may not completely control for certain industrial and

### *C. Effects of Small Business Support Projects on the Quantitative Growth of Beneficiaries*

The estimation results indicate that small business support projects have contributed to the sales growth of beneficiaries on average. According to Model 1 in Table 11, small business owners who benefited from MSS projects tended to increase their sales by 42.4 million won.

TABLE 11—IMPACT OF BUSINESS SUPPORT ON THE SALES OF BENEFICIARIES

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3	Model 4
Support (t-1)	42.64*** (5.252)	22.75*** (5.265)		
Loans/Guarantees (t-1)			20.22*** (5.948)	11.47* (5.906)
Export/Outlet/Marketing (t-1)			44.32*** (15.085)	44.99*** (14.927)
Technology/R&D (t-1)			60.46*** (16.286)	43.04*** (16.153)
Education/Diagnosis/Consulting (t-1)			44.42*** (11.197)	25.18** (11.119)
Founding/Commercialization (t-1)			-13.83 (21.717)	-6.67 (21.460)
Organization/Cooperation (t-1)			-136.83 (234.636)	-127.02 (231.383)
Recovery/Business Transition (t-1)			77.62 (52.683)	48.85 (52.547)
Labor (t-1)			48.13** (20.185)	32.55 (19.980)
Support_other (t-1)		31.27*** (3.905)	38.64*** (3.924)	31.81*** (3.907)
Sales (t-2)	-0.02*** (0.003)	-0.03*** (0.003)	-0.02*** (0.003)	-0.03*** (0.003)
Total capital (t-2)	0.06*** (0.012)	-0.05*** (0.012)	0.06*** (0.012)	-0.05*** (0.012)
Years of operation (t-1)		52.12*** (3.291)		51.96*** (3.293)
Year_2012		33.34*** (8.813)		33.41*** (8.819)
Year_2013		24.85*** (5.762)		24.74*** (5.764)
Year_2014		-		-
Constant	1,438.12*** (4.726)	991.06*** (32.650)	1,431.25*** (4.793)	992.60*** (32.678)
No. of observations	226,198	223,475	226,198	223,475
R-squared	0.12	0.02	0.08	0.02
No. of groups	90,321	89,648	90,321	89,648

*Note:* Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

corporate characteristics that can affect business performance.

TABLE 12— FIRM DISTRIBUTION BY SUPPORT AND SUPPORT\_OTHER

Support	Support_other		Total
	0	1	
0	334,333	90,828	425,161
1	27,008	31,152	58,160
Total	361,341	121,980	483,321

Source: Korea Small Business Institute (2010-2015); Korea Enterprise Data (2010-2015).

On the other hand, SSHD contains support projects conducted not only by the MSS but also by central and local governments. As shown in Table 12, more than half of small businesses (31,152 out of 58,160 firms) supported by MSS projects also benefited from other central and local government projects. Considering this, Models 2 through 4 controlled for the dummy variable 'Support\_other' to separate the effects of MSS projects from those of other agencies' projects.

The result of Model 2 (in Table 11) shows again that support projects contribute to the sales growth of beneficiaries. However, the size of the sales increment (22.75 million) appears to be smaller than that in Model 1, indicating that Support is correlated with Support\_other, years of operation, and economic fluctuations. Thus, Models 2-4 appear to be freer from the endogeneity problem than Model 1.

If this is the case, in which group of projects does this effect stand out? To determine this, I classified the support projects in the SSHD into eight functional groups. The classification work was carried out based on the purpose, contents, and support method of each project described in the Overview of Budget and Fund Management Plan (2007-2017, MSS).<sup>7</sup>

Models 3 and 4 in Table 11 demonstrate that the five project groups of Loans/Guarantees, Export/Outlet/Marketing, Technology/R&D, Education/Diagnosis/Consulting, and Labor contributed to sales growth of beneficiaries significantly. While the magnitude of the coefficients varies depending on the model, the signs and significance levels of the coefficients are consistent.

According to Model 4, the companies supported by Loans/Guarantees programs tended to show increased sales by an average of 11.47 million won. Because Loans/Guarantees projects provide funds necessary for purchasing production factors or streamlining production methods, these projects can contribute to the stability and maintenance of the business and ultimately to sales growth.

There are a total of 16 unit projects in the Loans/Guarantees group. Among them, Accounts receivable insurance support, Small business management stabilization funds, and New growth funds tend to increase beneficiaries' sales significantly.<sup>8</sup>

Accounts receivable insurance support secures a stable cash flow by providing insurance money when SMEs fail to recover payouts due to bankruptcies or defaults of purchasing companies. Because this project helps to eliminate cases in which

<sup>7</sup>As a result, support projects were classified into i) Loans/Guarantees, ii) Export/Outlet/Marketing, iii) Technology/R&D, iv) Education/Diagnosis/Consulting, v) Founding/Commercialization, vi) Organization/Cooperation, vii) Recovery/Business Transition, and viii) Labor.

<sup>8</sup>The regression analysis conducted involved generating dummy variables for each unit project, and the estimation results are presented in Table A1 and Table A2 in the Appendix.



small business owners cannot receive payments, it can stabilize small business owners' management and thereby increase their sales.

It is also noteworthy that the Small business management stability fund has a significant and positive effect.<sup>9</sup> Given the controversy over the effectiveness of policy funds, the finding that general small business loans programs have a positive impact on beneficiaries' sales are encouraging. On the other hand, given the possibility that the sales of non-beneficiary companies decreased due to the deteriorating operating environment and lack of funds, the increase in sales of beneficiaries can be an effect related to the decrease in the sales of non-beneficiaries. In this case, it would be more reasonable to interpret the findings as meaning that the project contributed to business stability rather than to sales growth.

New growth funding is aimed at general SMEs, mainly providing funds for production facilities. This project sets business performance and technology as important assessments and primarily supports firms with increasing numbers of employees or sales. Because small business owners also belong to the group of SMEs, they can benefit from this project. Especially if a rapidly growing small business continued to grow even after benefitting from the project, sales growth could be significant.

Moving on to the Export/Outlet/Marketing group, Model 4 in Table 11 shows that this project group tended to improve the sales of beneficiaries by 44.99 million won. A statistically significant effect was found in five of the 23 unit projects. These are the projects of the Trade promotion group (Export consortium), Trade promotion group (Participation in overseas exhibition and market improvement), Regional SMEs export marketing, Support for performance certification inspection expenses, and Public procurement loans.

There will be many small business owners who are willing to export, but only a few firms are successful mainly because they are limited in terms of their utilization of various bidding opportunities in overseas markets. Moreover, even if they are prepared for order competition, they may fail to secure a final order due to this low recognition.

In this situation, Export consortiums, Participation in overseas exhibitions and market improvement, and Regional SMEs export marketing can stimulate firms' export activities by reducing the cost of developing overseas markets, facilitating the formation of a network with local buyers, opening new markets, and helping these companies gain a distribution network. On the other hand, Public procurement loans secure sales channels for final products and thus can increase SMEs' plant utilization rates. Support for performance certification inspection expenses facilitates the certification and conformity assessment process, making it easier for small businesses to overcome these types of technical barriers.

While the Technology/R&D group tends to increase beneficiaries' sales by 43.04 million won, Public-private joint investment technology development projects have a significant effect. In the Education/Diagnosis/Consulting group, Business support group operation projects and SME consulting support projects have significant effects, resulting in a sales increment of 25.18 million won. Lastly, the Labor group

<sup>9</sup>The small business management stability fund is a typical loan support program for small business. It lends funds up to 70 million won.

generated a sales improvement effect of 48.13 million won only in Model 3; this was driven by Joint employment training support projects of venture companies.

Overall, supporting projects which help to secure production factors (Loans/Guarantees, Technology/R&D, Labor), to increase the efficiency of business management (Education/Diagnosis/Consulting), or to secure final sales channels (Export/Outlet/Marketing) tend to have positive effect on the quantitative growth of beneficiaries. On the other hand, the other three project groups (Founding/Commercialization, Organization/Cooperation, Recovery/Business transition) did not have statistically significant effects at the 10% level.<sup>10</sup>

To sum up, small business support projects appear to contribute to the sales growth of beneficiaries, but the quantitative growth effect varies considerably depending on the project groups and unit programs.

#### *D. Effects of Small Business Support Projects on the Qualitative Growth of Beneficiaries*

The findings above raise the question of how small business support projects affect the qualitative growth of beneficiaries. The qualitative growth of firms can be identified using various types of financial information. This study focuses on operating profit and net profit included in the KED data, as shown in Table 13. The results for sales in Model 1 are identical to those in Model 4 in Table 11.

First, the most important finding is that the Loans/Guarantees and Export/Outlet/Marketing group, which had positive effects on sales, tends to increase the operating profits of beneficiaries as well. Small businesses that received Loans/Guarantees and Export/Outlet/Marketing types of assistance are estimated to experience operating profit improvements on average of 1.79 million won and 4.4 million won, respectively, compared to those who were not beneficiaries. The extent of the growth of operating profit corresponds to 10~15% of sales growth. If small business owners do not experience unfair practices such as lower supply prices or passing promotional costs, an increase in sales usually leads to an increase in operating profit. In this regard, support projects with sales growth may have had a positive impact on operating profit.

However, there was no statistically significant effect on net profit. This suggests that these types of projects are unlikely to affect the ultimate profitability of beneficiaries. Of course, net profit can be affected by various factors, such as non-operating expenses, taxes, and delays in payments, making it difficult to provide an assertive interpretation.

However, the Technology/R&D and Recovery/Business Transition groups have very different results. Technology/R&D had a positive effect on sales, whereas it appears negatively to affect firms' operating profits. Even if sales improve, operating profit can decrease due to higher costs from technology investments. Moreover, it may take more than one year for technology investments to lead to higher operating profit.

In contrast, Recovery/Business Transition did not show a positive impact on sales,

<sup>10</sup> I estimated the effects of Support (t-2) and Support (t-3), but the overall results were very similar to the effect of Support (t-1). The estimation results are available upon request.

TABLE 13— IMPACT OF BUSINESS SUPPORT ON THE OPERATING PROFIT AND NET INCOME OF BENEFICIARIES

Dept. var. (million won)	Model 1 Sales	Model 2 Operating profit	Model 3 Net profit
Loans/Guarantees (t-1)	11.47* (5.906)	1.79** (0.760)	-0.40 (0.718)
Export/Outlet/Marketing (t-1)	44.99*** (14.927)	4.40** (1.922)	1.66 (1.816)
Technology/R&D (t-1)	43.04*** (16.153)	-7.75*** (2.080)	0.39 (1.965)
Education/Diagnosis/Consulting (t-1)	25.18** (11.119)	0.63 (1.432)	-0.73 (1.352)
Founding/Commercialization (t-1)	-6.67 (21.460)	-3.73 (2.763)	-2.37 (2.610)
Organization/cooperation (t-1)	-127.02 (231.383)	-3.92 (29.793)	-9.45 (28.145)
Recovery/Business Transition (t-1)	48.85 (52.547)	15.49** (6.766)	10.32 (6.392)
Labor (t-1)	32.55 (19.980)	1.30 (2.573)	-1.19 (2.430)
Support_other (t-1)	31.81*** (3.907)	1.95*** (0.503)	0.03 (0.475)
Sales (t-2)	-0.03*** (0.003)	-0.00*** (0.000)	-0.00*** (0.000)
Total capital (t-2)	-0.05*** (0.012)	-0.06*** (0.002)	-0.06*** (0.001)
Years of operation (t-1)	51.96*** (3.293)	8.78*** (0.424)	9.03*** (0.401)
Year_2012	33.41*** (8.819)	3.73*** (1.136)	4.70*** (1.073)
Year_2013	24.74*** (5.764)	1.65** (0.742)	2.79*** (0.701)
Year_2014	-	-	-
Constant	992.60*** (32.678)	13.71*** (4.208)	-0.43 (3.975)
No. of observations	223,475	223,475	223,475
R-squared	0.02	0.00	0.00
No. of groups	89,648	89,648	89,648

Note: Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

but this group tended to increase operating profits. During periods of closing or business restructuring, unnecessary production or operating costs are eliminated and thus operating profit can improve without sales growth.

Overall, the impact on net profit was not significant in any of the project groups, but the positive effects on operating profits from to Loans/Guarantees and Export/Outlet/Marketing group were meaningful results given the low profitability of the domestic small business industry.

## VI. Trends in the Effectiveness of Support Projects

The analysis thus far has identified the effectiveness of support projects. At this point, we now focus on beneficiaries and examine the relationship between firm characteristics and the effectiveness of projects. This analysis has important policy implications in that it can provide government departments with criteria that can be used to select beneficiaries.

### A. Effectiveness of Support Projects: Years of Operation

First, we examine how the effect of support projects depends on the operating period of the business. Table 14 reports the estimated results by adding the operating period as an independent variable. Operating periods are set as discrete variables:

TABLE 14— EFFECTIVENESS OF PROJECTS BY THE OPERATING PERIODS OF BENEFICIARIES

Dept. var.: Sales (million won)	Model 1	Model 2
Support (t-1)	25.34*** (5.279)	3.88 (9.183)
Support_other (t-1)	37.55*** (3.910)	37.53*** (3.910)
Sales (t-2)	-0.04*** (0.003)	-0.04*** (0.003)
Total capital (t-2)	-0.05*** (0.012)	-0.05*** (0.012)
Operating period_1-4 (t-1)	184.96*** (11.607)	183.93*** (11.740)
Operating period_5-7 (t-1)	202.49*** (9.877)	199.65*** (10.010)
Operating period_8-10 (t-1)	124.91*** (7.476)	119.47*** (7.659)
Support×Operating period_1-4 (t-1)		22.05* (13.070)
Support×Operating period_5-7 (t-1)		31.72** (13.580)
Support×Operating period_8-10 (t-1)		47.87*** (14.919)
Year_2012	-162.85*** (4.848)	-163.09*** (4.849)
Year_2013	-103.56*** (4.072)	-103.71*** (4.073)
Year_2014	-64.23*** (3.360)	-64.32*** (3.360)
Constant	1,446.43*** (7.977)	1,448.31*** (8.011)
No. of observations	226,198	226,198
R-squared	0.10	0.10
No. of groups	90,321	90,321

Note: Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

1-4 years, 5-7 years, 8-10 years, more than 10 years.

According to Model 1, firms with 1-4 years, 5-7 years, and 8-10 years of operation tend to have higher sales (compared to businesses with more than 10 years of operation) by 185 million won, 202 million won, and 125 million won, respectively. Overall, start-ups with shorter operating periods tend to have higher sales.

A notable variable in Model 2 is the interaction term of Support and Operating period. In this model, Support (t-1) represents the effect of support projects for companies with more than 10 years of operation, and no statistically significant coefficients were obtained. On the other hand, when the projects were targeted at firms with 1-4 years, 5-7 years, 8-10 years of operation, beneficiaries' sales tend to increase by 22.05 million won, 31.72 million won, 47.87 million won, respectively.

These results suggest that relatively young companies tend to have high sales and that growth effects are more likely to occur when supporting these younger firms.

### B. Effectiveness of Support Projects: Sales Growth

Table 15 shows how the effect of small business support programs depends on the

TABLE 15— EFFECTIVENESS OF PROJECTS BY THE SALES GROWTH OF BENEFICIARIES

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3
Support (t-1)	23.13*** (5.246)	-1.05 (7.716)	2.44 (6.860)
Sales growth (t-1)	102.78*** (3.279)	97.98*** (3.466)	
Support×Sales growth (t-1)		39.85*** (9.324)	
Support_other (t-1)	30.25*** (3.891)	30.32*** (3.890)	27.81*** (3.902)
Sales (t-2)	-0.00 (0.003)	-0.00 (0.003)	-0.06*** (0.003)
Total capital (t-2)	-0.04*** (0.012)	-0.04*** (0.012)	-0.04*** (0.012)
Sales growth (t-2)			66.32*** (3.753)
Support×Sales growth (t-2)			39.73*** (8.928)
Years of operation (t-1)	53.03*** (3.279)	53.10*** (3.279)	41.69*** (3.327)
Year_2012	32.19*** (8.781)	32.43*** (8.780)	46.08*** (8.823)
Year_2013	27.13*** (5.741)	27.24*** (5.741)	12.56** (5.786)
Year_2014	-	-	-
Constant	876.23*** (32.737)	878.25*** (32.738)	1,092.81*** (32.980)
No. of observations	223,475	223,475	223,475
R-squared	0.00	0.00	0.06
No. of groups	89,648	89,648	89,648

Note: Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

sales growth of the companies. For example, Sales growth (t-1) is a dummy variable with a value of 1 when sales (t-1) exceed the sales (t-2) of the previous year. Estimates of Model 1 show that businesses with increased sales at the time of support (t-1) tend to increase their sales in year t.

Model 2 includes a cross-term between sales growth and support. The effect of support increased by 39.85 million won when supporting firms with increased sales (rather than supporting those with reduced sales).

However, Sales growth (t-1) is a variable that can be measured only when sales (t-1) are realized, and it is generally difficult to observe during the period (t-1) when beneficiaries are selected. To handle this issue, Model 3 includes Sales growth (t-2) to examine the effects of the project when an actual sales increase was observed and then supported. These results were very similar to those of Model 2.

The results indicate that the growth effect can be accelerated when the projects support quantitatively growing firms. Therefore, it is crucial to identify businesses which are growing (or that are likely to grow) and then to run support projects to resolve their managerial difficulties.

### *C. Effectiveness of Support Projects: Business Overcrowding*

Chapter 3 showed that four major service sectors are crowded with small business owners, and further entries by small businesses are also concentrated in these industries.

This leads to the question of how this overcrowding affects the sales of small business owners. Model 1 in Table 16 additionally controls for the total number of small businesses by industry in the preceding empirical model. As a result, as one more small business enters the market, they tend to experience an annual sales decline of 4,000 won. In Model 2, which separately controls for each support project group, the estimated coefficients appear to be very similar to those in Model 1.

Subsequently, Model 3 controls for not only the number of small businesses but also for the number of non-small businesses. These results indicate that the sales reduction due to the increasing number of small businesses is lowered to approximately 3,000 won, while the sales reduction due to the increasing number of non-small businesses is estimated to be 4,000 won.

In general, when market competition increases, it leads to higher productivity and efficiency, lower prices, and ultimately better consumer welfare. In this case, increasing the number of businesses can increase the market size as well as the sales of individual firms.

However, when additional entries tend to involve the reproduction of existing goods and services and do not have any clear differentiation, the sector can become overcrowded with market growth limited, resulting in a decline of sales of individual businesses. The findings of this study are more likely to support the latter possibility more than the former.

The estimates above represent the average effect of one additional entry of a small business; thus, the magnitude of the overall sales reduction due to industry overcrowding can be calculated by multiplying the estimates and the changes in the number of small businesses.<sup>11</sup> According to Table 17, the effects of overcrowding

<sup>11</sup>The marginal effect of one more entry may decrease or increase when the size of the business exceeds a

TABLE 16—EFFECTIVENESS OF PROJECTS BY BUSINESS OVERCROWDING

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3
Support (t-1)	22.44*** (5.264)		
Loans/Guarantees (t-1)		11.40* (5.904)	11.53* (5.903)
Export/Outlet/Marketing (t-1)		45.16*** (14.920)	45.90*** (14.920)
Technology/R&D (t-1)		39.99** (16.156)	38.69** (16.156)
Education/Diagnosis/Consulting (t-1)		24.58** (11.117)	23.76** (11.118)
Founding/Commercialization (t-1)		-5.49 (21.450)	-4.54 (21.448)
Organization/cooperation (t-1)		-128.35 (231.268)	-129.04 (231.246)
Recovery/Business Transition (t-1)		47.85 (52.521)	46.92 (52.516)
Labor (t-1)		32.97* (19.970)	31.20 (19.971)
No. of firms_small business	-0.004*** (0.000)	-0.004*** (0.000)	-0.003*** (0.000)
No. of firms_non small business			-0.004*** (0.001)
Industry sales*	0.00*** (0.000)	0.00*** (0.000)	0.00*** (0.000)
Support_other (t-1)	30.51*** (3.903)	31.06*** (3.905)	31.17*** (3.905)
Sales (t-2)	-0.03*** (0.003)	-0.03*** (0.003)	-0.03*** (0.003)
Total capital (t-2)	-0.06*** (0.012)	-0.06*** (0.012)	-0.06*** (0.012)
Total capital (t-1)	74.58*** (3.916)	74.42*** (3.918)	76.22*** (3.933)
Year_2012	65.54*** (10.564)	65.07*** (10.570)	51.55*** (10.888)
Year_2013	14.60** (6.179)	14.35** (6.180)	14.82** (6.180)
Year_2014	-	-	-
Constant	1,988.54*** (91.434)	1,986.66*** (91.451)	1,813.07*** (97.407)
No. of observations	223,475	223,475	223,475
R-squared	0.03	0.03	0.03
No. of groups	89,648	89,648	89,648

Note: 1) Industry sales are figures excluding the firm's own sales, 2) Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at 10%, 5%, and 1% level, respectively.

certain point, in which case it may not be appropriate simply to multiply the marginal effect by the amount of change in the businesses.

TABLE 17— AVERAGE ANNUAL CHANGE IN THE NUMBER OF BUSINESSES BY INDUSTRY

Industry	Changes in No. of firms*			Coefficient* × Changes in No. of small business
	Total	Non-small business	Small business	
Wholesale and retail trade	24,669.2	6,726.4	20,957.6	-82.6
Manufacturing	17,407.2	1,288.4	16,118.8	-63.5
Accommodation and food service activities	15,239.8	7,923.0	7,316.8	-28.8
Construction	7,392.8	254.2	7,138.6	-28.1
Transportation and storage	6,450.4	385.8	6,064.6	-23.9
Professional, scientific and technical activities	6,420.2	2,090.6	4,329.6	-17.1
Membership organizations, repair and other personal services	4,649.8	1,593.6	3,056.2	-12.0
Real estate activities	4,070.2	1,043.0	3,027.2	-11.9
Information and communication	3,210.0	886.6	2,323.4	-9.2
Business facilities management and business support services; rental and leasing activities	3,132.8	1,342.8	1,790.0	-7.1
Education	1,877.0	843.8	1,033.2	-4.1
Water supply; sewage, waste management, materials recovery	506.0	183.0	323.0	-1.3
Human health and social work activities	5,108.2	4,845.2	263.0	-1.0
Financial and insurance activities	555.6	345.6	210.0	-0.8
Agriculture, forestry and fishing	186.8	105.6	81.2	-0.3
Electricity, gas, steam and air conditioning supply	91.4	38.8	52.6	-0.2
Mining and quarrying	47.2	-4.0	51.2	-0.2
Public administration and defense; compulsory social security	87.0	114.0	-27.0	0.1
Services related to arts, sports and recreation	-377.0	999.8	-1,376.8	5.4

Note: 1) The change in the number of firms represents the average annual change during the period of 2010-2015, 2) The coefficient is the estimate (-0.003941) of the number of small businesses estimated in Model 2 in Table 16.

on small businesses' sales reduction were approximately 82.6 million won in wholesale and retail trade, 63.5 million won in manufacturing, 28.8 million won in accommodation and food service activities, 28.1 million won in construction and 23.9 million won in transportation and storage.

It is important to note that if we compare the effect of the sales decline due to such overcrowding with the sales increase due to support projects, a worrying trend appears (see Figure 6). To be specific, the size of the sales reduction due to overcrowding in the wholesale and retail (82.6 million won) sector is greater in absolute terms than the sales increase by support projects, with significant effects in Model 2 in Table 16: Loans/guarantees (11.4 million won), Education/diagnosis/



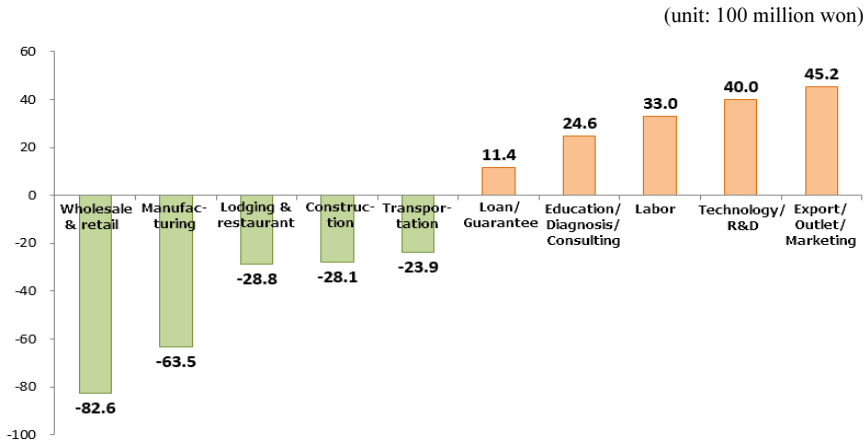


FIGURE 6. COMPARISON OF THE SALES REDUCTION EFFECT OF OVERCROWDING AND THE SALES INCREASING EFFECT OF SUPPORTING PROJECTS

Source: Based on Statistics Korea, "Census on Establishments," 2010-2014; "Economic Census," 2015; and estimated coefficients in the regression model in Table 16.

consulting (24.6 million won), Labor (33 million won), Technology/R&D (40 million won), and Export/outlet/marketing (45.2 million won). Other industries such as manufacturing, accommodation and food, and transportation, where small businesses are densely located, experience similar situations with varying degrees.

The positive effect of supporting projects, which was an encouraging result, appears to be largely offset by the negative effect of the overcrowding of small businesses. These findings suggest that the effects of government support projects will be largely limited if the overcrowding of small businesses in a few industries cannot be overcome. In addition, these results may explain cases in which the government's budget for small business support has expanded rapidly, but the beneficiaries do not realize the effects of this support.

In the future, two goals of small business support policies should be to reduce the overcrowding of certain industries and to improve their overall effectiveness.

## VII. Conclusion and Policy Implications

To better understand the domestic small business industry, this paper looked into industrial aspects, large and small policies, and related budget trends. The paper also empirically examined the effectiveness of small business support projects from various perspectives.

The findings suggest that for the small business industry to grow steadily, two policy directions must be pursued at the same time: to alleviate overcrowding in some sectors and to increase the effectiveness of the support projects.

First, in order to alleviate overcrowding in a few industries, prospective founders must have more information about market conditions, the characteristics of commercial districts, and the degree of industry overcrowding, after which they should be able to enter more diverse industries. Specifically, overcrowding can be

mitigated by providing richer information about commercial districts. The MSS is currently operating a Commercial Information System (CIS) as part of its small business start-up support program. To increase the utilization of this system, the use of the CIS can be designated as an essential curriculum for a start-up education support project. Moreover, founders can be encouraged to submit self-assessment documents about their use of the CIS when applying for small business funding projects.

In addition, because market entries without sufficient preparation can cause the overcrowding of the small business industry as well, it is necessary to reinforce consulting support during the preparation stage for start-ups and to strengthen the sharing channels of technology, products, sales, and the procurement of know-how by successful entrepreneurs.

On the other hand, to enhance the effectiveness of small business support projects, governments must select and focus on firms that are young and have high growth potential and should operate support projects to resolve their management difficulties. Supporting a large number of companies, including declining and old firms is unlikely to stimulate the growth incentives of small businesses.

## APPENDIX

TABLE A1— LOANS/GUARANTEES, EXPORT/OUTLET/MARKETING, TECHNOLOGY/R&D, EDUCATION/DIAGNOSIS/CONSULTING

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3	Model 4
Loans/Guarantees(t-1)		11.67** (5.908)	11.42* (5.907)	11.84** (5.941)
└ Accounts receivable insurance support (t-1)	36.61*** (12.627)			
└ New growth fund (t-1)	80.41*** (30.241)			
└ Small business management stabilization fund (t-1)	36.22** (15.005)			
└ Youth Exclusive Founding Fund (t-1)	-150.16** (74.049)			
Export/Outlet/Marketing (t-1)	45.10*** (14.930)		45.98*** (14.936)	45.28*** (14.929)
└ Public procurement loans (t-1)		92.93* (51.879)		
└ Support for performance certification inspection expenses (t-1)		127.65* (76.469)		
└ Trade promotion group (Participation in overseas exhibitions and market improvement) (t-1)		82.23** (39.504)		
└ Regional small and medium business export marketing (t-1)		64.40* (33.574)		
└ Trade promotion group (Export consortium) (t-1)		199.73* (107.793)		

TABLE A1— LOANS/GUARANTEES, EXPORT/OUTLET/MARKETING, TECHNOLOGY/R&amp;D, EDUCATION/DIAGNOSIS/CONSULTING (CON'D)

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3	Model 4
Technology/R&D (t-1)	43.10*** (16.160)	43.47*** (16.177)		45.21*** (16.268)
└ Public-private joint investment technology Development (t-1)			216.58* (131.404)	
└ Skill transfer system (t-1)			-371.97* (210.075)	
Education/Diagnosis/Consulting (t-1)	22.47** (11.290)	25.24** (11.126)	26.21** (11.230)	
└ Business support group operation project (t-1)				72.97*** (24.629)
└ SME consulting support (t-1)				96.83** (39.217)
Founding/Commercialization (t-1)	-2.62 (21.656)	-6.56 (21.470)	-7.37 (21.474)	-7.01 (21.461)
Organization/cooperation (t-1)	-119.59 (231.404)	-131.89 (231.394)	-126.80 (231.391)	-126.06 (231.399)
Recovery/Business Transition (t-1)	44.50 (59.902)	47.92 (52.572)	48.56 (52.566)	46.24 (52.570)
Labor (t-1)	31.57 (19.985)	33.31* (19.989)	31.88 (19.996)	33.14* (19.983)
Support_other (t-1)	31.56*** (3.921)	31.83*** (3.907)	31.72*** (3.907)	32.02*** (3.910)
Sales (t-2)	-0.03*** (0.003)	-0.03*** (0.003)	-0.03*** (0.003)	-0.03*** (0.003)
Total capital (t-2)	-0.05*** (0.012)	-0.05*** (0.012)	-0.05*** (0.012)	-0.05*** (0.012)
Years of operation (t-1)	52.13*** (3.297)	52.15*** (3.298)	51.94*** (3.297)	52.07*** (3.294)
Year_2012	34.65*** (8.838)	33.86*** (8.828)	33.31*** (8.826)	33.51*** (8.819)
Year_2013	25.74*** (5.775)	25.01*** (5.768)	24.63*** (5.767)	24.79*** (5.764)
Year_2014	-	-	-	-
Constant	991.13*** (32.720)	990.71*** (32.722)	992.90*** (32.713)	991.34*** (32.682)
No. of observations	223,475	223,475	223,475	223,475
R-squared	0.02	0.02	0.02	0.02
No. of groups	89,648	89,648	89,648	89,648

Note: Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table A2—FOUNDING/COMMERCIALIZATION, ORGANIZATION/COOPERATION,  
RECOVERY/BUSINESS, TRANSITION LABOR

Dept. var.: Sales (million won)	Model 1	Model 2	Model 3	Model 4
Loans/Guarantees (t-1)	11.30* (5.909)	11.47* (5.906)	11.42* (5.908)	11.44* (5.906)
Export/Outlet/Marketing (t-1)	45.16*** (14.928)	45.00*** (14.928)	45.19*** (14.928)	45.21*** (14.928)
Technology/R&D (t-1)	42.50*** (16.164)	43.04*** (16.153)	43.19*** (16.153)	43.01*** (16.155)
Education/Diagnosis/Consulting (t-1)	25.04** (11.121)	25.18** (11.119)	25.31** (11.119)	25.36** (11.120)
Founding/Commercialization (t-1)	0	-6.70 (21.460)	-6.59 (21.460)	-7.09 (21.462)
Organization/cooperation (t-1)	-130.46 (231.402)	0	-126.99 (231.382)	-126.92 (231.383)
Recovery/Business Transition (t-1)	48.87 (52.550)	48.85 (52.547)	0	48.63 (52.548)
Labor (t-1)	31.78 (20.074)	32.55 (19.980)	31.93 (19.983)	0
Support_other (t-1)	31.78*** (3.907)	31.81*** (3.907)	31.79*** (3.907)	31.79*** (3.907)
Sales (t-2)	-0.03*** (0.003)	-0.03*** (0.003)	-0.03*** (0.003)	-0.03*** (0.003)
Total capital (t-2)	-0.05*** (0.012)	-0.05*** (0.012)	-0.05*** (0.012)	-0.05*** (0.012)
Years of operation (t-1)	51.92*** (3.295)	51.96*** (3.294)	51.98*** (3.294)	51.86*** (3.294)
Year_2012	33.41*** (8.824)	33.40*** (8.819)	33.42*** (8.820)	33.13*** (8.820)
Year_2013	24.74*** (5.766)	24.74*** (5.764)	24.76*** (5.764)	24.53*** (5.765)
Year_2014	-	-	-	-
Constant	993.09*** (32.690)	992.62*** (32.678)	992.52*** (32.680)	993.58*** (32.682)
No. of observations	223,475	223,475	223,475	223,475
R-squared	0.02	0.02	0.02	0.02
No. of groups	89,648	89,648	89,648	89,648

Note: 1) Standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at 10%, 5%, and 1% level, respectively, 2) 0 means that unit projects of each business group were controlled. No projects had a statistically significant effect..

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