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Is Korea's Public Funding for SMEs Achieving Its Intended Goals?*

Woo Hyun Chang, Fellow at KDI

“Policies to support Small and Medium-sized Enterprises (SMEs) should be designed and managed in a way that SMEs are self-reliant and able to contribute to national economic goals. However, an evaluation of current public programs to support SME finance, an important policy instrument of Korea's SME support policy, shows that they have actually lowered the productivity of recipient firms and increased the survival probability of incompetent ones, negatively impacting the national economy. To produce the desired results, the government needs to (1) redefine the purpose of SME policy by shifting its emphasis from survival to productivity; (2) introduce a constant and scientific evaluation system by using appropriate performance indicators; and (3) restructure the policy to enhance efficiency based on evaluation results.”

Scientifically rigorous impact evaluations are the starting point for improving effectiveness of SME support

I. Introduction

A productive support policy for small and medium-sized enterprises (SMEs) should be able to correct market failures so that SMEs can grow and do so in a self-reliant manner. In doing so, SME policies must be planned and managed in such a way that SMEs can contribute to national economic goals of higher potential output growth and quality

* This article is based on “Study on the Enhancement of the Small and Medium-sized Enterprises(SMEs) Policy in Korea (I), (II)” written by Chang, Woo Hyun, Yang, Yong Hyeon and Woo, Seokjin.

policies, especially their contribution to individual companies' performance and the national economy. Nevertheless, this principle is not sufficiently reflected in current policy evaluation practices.

This study evaluates the policy effectiveness of Korea's public funding for SMEs, which is one of the most important SME-support policies existing today. From a research perspective, it also helps that these public finance programs maintain large and well-managed records, which allows for scientific evaluations.

As of 2014, public loans and guarantee balance of above 80 trillion won were provided by KODIT, KIBO and SBC.

This study collected the data on public funding for SMEs in 2009, which totaled about 60 trillion won.

job creation.¹⁾ To evaluate the success of SME policies in reaching these goals, we first need to analyze their effectiveness on the performance of individual firms; ensuring that companies perform better than they would without government support is the most basic requirement of policy management. Furthermore, only when effectiveness on the national economy is assessed and the findings are used to make policy improvements, can policy effectiveness and efficiency enhancement be attained, through which national economic goals can be correctly pursued.

However, evaluation findings from previous policy analyses and case studies on the impact of SME policies have been limited in generalizability. In contrast, this study analyzes the impact of the Korean government's financial assistance programs for SMEs (public funding for SMEs hereafter) on the performance of individual companies and the national economy's value-added with all the currently available information. Public funding for SMEs is one of the most important SME-support policies existing today. From a research perspective, it also helps that these public finance programs maintain large and well-managed records, which allows for scientific evaluations. Based on the findings, this study offers concrete recommendations to improve the current programs.

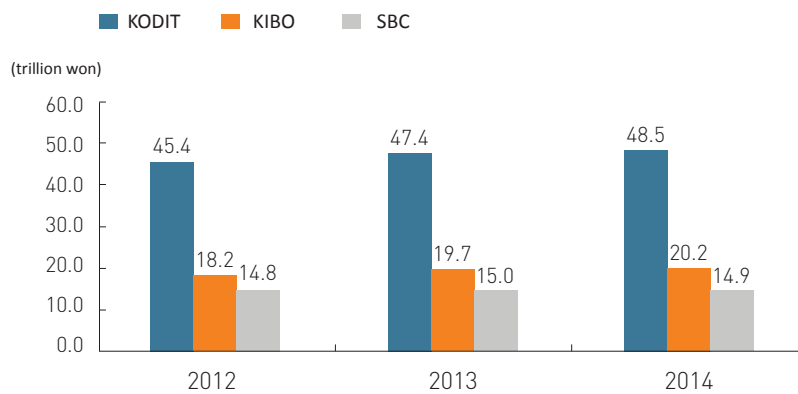
II . Data Compilation for Evaluations of Public Funding for SMEs

Public funding for SMEs refers to direct government loans to SMEs or credit guarantees that will enable businesses to secure loans in the financial market. The objective is to compensate for market failures that arise when SMEs with promising business plans encounter difficulties in raising capital due to asymmetric information in the private sector. Indeed, in the Korean financial market, which is dominated by collateral-based loans, an individual company cannot easily attain funding simply by business potential and growth prospects. Therefore, government loans and guarantees for SMEs are considered important policy tools. They also have gained importance in terms of size. As of 2014, public loans and guarantee balance of more than 80 trillion won (about 70 billion USD) were offered from three major public financial institutions for SMEs i.e. Korea Credit Guarantee Fund (KODIT), Korea Technology Finance Corporation (KOTEC, or commonly known as KIBO) and Small & Medium Business Corporation (SBC). [Figure 1] below illustrates the size of the loans and guarantee balance reported by the above three institutions from 2012 to 2014.

Taking into consideration that there is a time lag between funding provision and its effect, this study evaluated the impact of public funding for SMEs in 2009 on recipient companies' productivity and value-added in 2011. This study was designed to use complete enumeration, and <Table 1> summarizes the data of public funding for SMEs

1) See Chapter 1 of "Study on the Enhancement of the Small and Medium-sized Enterprises (SMEs) Policy in Korea (I)" written by Woo Hyun Chang *et al.*

[Figure 1] Public funding for SMEs by KODIT, KIBO and SBC (2012–2014)



Note: Data on KODIT and KIBO are from the National Policy Committee's preliminary evaluation report submitted to the National Assembly on June 16, 2015. Data on SBC was processed using its audit report (as of Nov. 2015).

<Table 1> Number and size of public funding for SMEs in 2009 (all industries)

KODIT		KIBO		SBC	
Number	Size(million won)	Number	Size(million won)	Number	Size(million won)
255,350	37,124,694	64,094	17,105,444	16,308	4,729,708

in 2009 based on the total dataset compiled using the business registration number. According to the table, the size of public funding for SMEs in 2009 was approximately 37.1 trillion won from KODIT, 17.4 trillion won from KIBO, and 4.7 trillion won from SBC.

Data from the annual Korea's Mining and Manufacturing Survey, which canvasses companies with ten or more employees, was used as a corporate performance measure in the evaluation of public funding for SMEs. After linking the Survey and public funding for SMEs records, it was possible to evaluate the policy impact with generalizability, at least for establishments in the Manufacturing and Mining sectors. <Table 2> summarizes public funding for SMEs records for 2009—presented in <Table 1> — in connection with the Survey information.

The dataset covered all mining and manufacturing establishments with ten or more employees and contained the data on public funding for SMEs, which amounted to 19.6 trillion won; about 8.2 trillion won from KODIT to 13,279 companies, 8.9 trillion won from KIBO to 11,442 companies and 2.5 trillion won from SBC to 5,663 companies. Therefore, this study compiled public funding for SMEs records that were linked to corporate performance information. It also included information on companies that were not given public funding (non-recipients), which is necessary to identify untreated groups in the policy evaluation. The resulting dataset enabled a comprehensive analysis of the effectiveness of public funding for SMEs in the mining and manufacturing sectors with generalizable outcomes.

This study used the data on mining and manufacturing companies with ten or more employees and linked it to public funding for SMEs records. This led to an evaluation of public funding for SMEs of about 19.6 trillion won.

<Table 2> Summary statistics for public funding for SMEs linked to corporate financial data

Mining and Manufacturing Survey (2008)	KODIT (2009)			KIBO (2009)			SBC (2009)		
	No. of recipients	Percentage of recipients	Total amount (mil. won)	No. of recipients	Percentage of recipients	Total amount (mil. won)	No. of recipients	Percentage of recipients	Total amount (mil. won)
Total companies	13,279	22.82%	8,211,487	11,442	19.66%	8,943,221	5,663	9.73%	2,489,881

III . Impact of Public Funding for SMEs on Corporate Productivity and National Value-Added

When operated as intended, public funding can significantly assist SMEs in accessing credit. SMEs in Korea can experience greater difficulties in raising capital despite promising business potential because corporate banking is dominated by collateral-based lending. If this is the case, these public programs may help SMEs improve their profitability and productivity. Conversely, public funding may end up sustaining unproductive companies with poor business prospects and create moral hazard, where recipients become dependent on public funding and complacent on improving productivity. This will lower the productivity of recipient SMEs since they can survive market competition without making greater efforts. In this regard, it is vital to find out whether public funding has improved SMEs' productivity as initially intended, or only led to lower productivity and heightened the survival probability of undeserving firms.

This section estimates the impact of Korea's public funding for SMEs on the productivity and value-added of individual companies using the data discussed in the previous section. To this end, this study used total factor productivity (TFP) as a policy evaluation indicator to measure the productivity and value-added of individual companies. TFP is a comprehensive indicator that accounts for the efficiency of value-added output against the input of an individual company, and was therefore suitable for measuring the impact of productivity changes on the value-added. In order to estimate the TFP, this study collected the Mining and Manufacturing Survey from 2007 to 2011, and used them to estimate individual company's production function in accordance with the Levinsohn-Petrin methodology, which produces the TFP of individual establishments. The Levinsohn-Petrin production function estimation resolves the bias of estimation of production function and TFP, using intermediate input data based on panel data on companies; it was appropriate for estimating productivity function using the Survey, since it gathered sufficient information on intermediate input and input factors.

Next, by using the TFP estimates above, this study analyzed the impact of public funding for SMEs awarded in 2009 on the TFP difference between 2009 and 2011 employing the

<Table 3> Analysis of TFP Difference between Recipients and Non-Recipients of Public Funding for SMEs

Difference in TFP	Average	Standard Error	p value	In value-added
PSME result	-2.73	0.44	0.000	-2.4770 trillion won (- 4.92%)

Propensity Score Matching Estimation (PSME).²⁾ PSME is a scientific methodology which can be used to identify policy effects by calculating the difference in outcome between the recipient (treated group) and non-recipient (untreated group)—a matching between recipients of public funding for SMEs and non-recipients whose probability of receiving funding is almost the same as the recipient's. Then, in order to control the endogenous factors between recipient and non-recipient while using the PSME, this study constructed a dataset consisting of treated and untreated groups using information on the characteristics of companies and industries they belonged to as of 2008, right before companies were chosen as recipients of public funding for SMEs in 2009. Then, after confirming that PSME assumptions were satisfied, this study compared the change in average performance seen in treated and untreated groups from 2008 to 2011. The result showed that, if an SME received public funding in 2009, its average TFP increase between 2008 and 2011 was 2.73 less than non-recipient firms with similar characteristics in 2008 <Table 3>.³⁾

Since it is intuitively difficult to get a sense of these TFP differences in national economy terms, we apply the TFP differences to individual recipient firms of public funding for SMEs to convert these numbers to money figures. As a first step, we calculate hypothetical value-added assuming that recipients increased productivity to the same level as non-recipients. Then, this hypothetical value-added is compared with the actual value-added. The comparison result showed that public funding for SMEs in 2009 produced a potential loss in GDP of about 2.5 trillion won (in 2010 prices) in 2011. To be specific, companies awarded public funding for SMEs in 2009 received about 19.6 trillion won, but their actual value-added in 2010 was only 47.83 trillion won. However, if these recipients achieved a productivity increase to the same level as non-recipients, their actual value-added would have reached an estimated 50.31 trillion won, meaning that the value-added decreased by about 4.92% due to public funding.

The table below displays the results of the PSME analysis of recipients' survival probability based on the data on public funding for SMEs released by all public financial institutions involved. [Table 4] shows that companies given public funding for SMEs in 2009 were 5.32%p more likely to survive until 2011 than without public funding.

The analysis of the impact of public funding for SMEs on firm productivity showed that recipients showed significantly lower productivity than non-recipients.

The findings showed that public funding for SMEs in 2009 produced a potential loss in GDP of about 2.5 trillion won (in 2010 prices) in 2011 under an assumption that companies awarded public funding achieved a productivity increase to the same level as non-recipients.

2) See Chapter 5 of "Study on the Enhancement of the Small and Medium-sized Enterprises (SMEs) Policy in Korea (II)" written by Woo Hyun Chang *et al.*

3) All evaluations by respective policy financing institutions found negative impact, which is not included here due to space limitation. For further details, refer to Chapter 5 of "Study on the Enhancement of the Small and Medium-sized Enterprises (SMEs) Policy in Korea (II)" written by Woo Hyun Chang *et al.*

<Table 4> Survival Probability Difference between Recipients and Non-Recipients of Public Funding for SMEs

Difference in survival probability	Average	Standard Error	p value
PSME result	5.32%p	0.46%p	0.000

Companies given public funding for SMEs in 2009 were 5.32%p more likely to survive than without public funding.

The analysis above recaps the infographics below [Figure 2]. Companies that received public funding for SMEs of about 19.6 trillion won in 2009 had an estimated 4.92% (2.5 trillion won) less productivity in 2011 than if they had no public funding, but their survival probability increased by 5.32%p.

The lost value-added of 2.5 trillion won accounts for about 0.2% of the GDP in 2010.⁴⁾ The loss of this size cannot be treated lightly considering that even a 0.1% increase in GDP is not easy to achieve in Korea's current situation. In fact, the actual loss in national economy terms could be much larger. It is possible that a similar loss might have occurred in non-mining and manufacturing industries, which this study could not include due to limited data availability. If all economic sectors are taken into account, public funding for SMEs might have generated a much larger mid- to long-term loss in GDP.

These results can be interpreted to be the negative consequences of government intervention wherein public funding led to market distortion and undermined the market's efficiency-enhancing mechanism. In a market, only efficient firms survive under fierce competition while less efficient ones have to downsize or shut down. Input factors used by companies that close can be then used by more efficient ones or new market entrants equipped with new ideas and better business models, thereby increasing the productivity of society as a whole. Resultant efficiency improvement is one of the strongest merits of the market system, through which the value-added of the overall economy can be created at a more efficient level. Such efficiency enhancement will be hindered if underserving companies survive thanks to government intervention but fail to improve efficiency sufficiently.

Business closures or reorganization induced by market competition is a natural phenomenon, not a market failure. If government steps in indiscriminately whenever an SME experiences operational difficulties, it is working against the market. Such intervention is hard to justify from both theoretical and policy perspectives. The findings that public funding for SMEs has increased the survival probability of recipient companies but their productivity improvement is relatively low suggest that it has not achieved its intended goals.

These results can be interpreted to be the negative consequences of government intervention. Market's efficiency enhancement will be hindered if underserving companies survive thanks to government intervention but fail to improve efficiency sufficiently. This will negatively impact overall economy's productivity.

4) Calculated by applying the nominal GDP for 2010 (1,265 trillion won).

[Figure 2] Economic Effects of Public Funding for SMEs in 2009 (Mining and Manufacturing Companies with Ten or More Employees)



IV . Future Directions and Policy Suggestions

This study has empirically evaluated the outcomes of public funding for SMEs in Korea using the data on mining and manufacturing companies with ten or more employees, and the result revealed a worrying discrepancy between the policy goal and the actual effect. Based on these findings, this study offers following concrete recommendations.

1. Setting the right goal for SME support policy

To improve the effectiveness of the SME-support policy —notably, public funding, its purpose must first be recalibrated; the focus should move toward improving productivity, away from increasing survivability. To put it another way, the goals of government intervention need to be clarified to mitigate market failure affecting a “growing company,” not offer help to a “troubled company.” It is also highly important that the SME-support policy is used as a way to compensate for market failure, not an alternative to market-based solutions. In other words, the government’s role should be limited to providing financial support to companies that have promising business plans worthy of investment but are struggling to raise the necessary capital due to information asymmetry.

The goal of SME support policy should move away from increasing survivability toward improving the productivity of self-reliant SMEs by mitigating market failures.

2. Improving performance indicators to fulfill policy targets and executing policies based on performance indicators

Once the government’s role is clarified and policy goals are set in the right direction, it is necessary to develop appropriate indicators to evaluate the performance of policy which can fully reflect the policy goals. This study suggests that policy performance evaluation should include fewer quantitative indicators—sales, employment and survival

Once policy goals are set right, the next step is to develop appropriate indicators to evaluate the performance of SME support policy which can fully reflect the policy goals.

Performance indicators should include fewer quantitative indicators—sales, employment and survival probability—and more of qualitative indicators—per-capita value-added and operational profit, which are more closely related to productivity.

Implementing agencies should perform targeting and execution in a way to improve these indicators.

probability—and more of productivity-related qualitative indicators—per-capita value-added and operational profit. In particular, when it comes to choosing recipients and managing them, increasing per-capita operational profit is recommended as a top priority for policy management and retaining workers should be secondary. Per-capita operational profit is easily extractable and manageable using corporate accounting data, and is closely related to TFP, the end target of management in terms of the value-added of the national economy.⁵⁾

Per-capita operating profit can be improved by (1) increasing operating profit while maintaining employment or (2) reducing employment. The former may not be considered controversial but the latter is different. Reduced employment may be a sign of significant productivity improvement but it may not be a desired policy outcome in itself.⁶⁾ Therefore, the policy may select companies that can increase per-capita operating profit with public funding while employment is managed separately.

After choosing performance indicators, implementing agencies should perform targeting and execution in a way to achieve improvement on these indicators. Individual public financial institutions for SMEs need to identify companies that are capable of improving on performance indicators and monitor their operations once they become recipients. These procedures should be applied to not only new recipients but also those applying for a funding extension. Only those that meet performance requisites should be given financial support. Other than new and expiring recipients, incumbent recipients should be subject to constant monitoring and mid-term evaluation.

3. Neutral policy evaluation, feedback, and policy adjustment

The next step is to build a SME policy evaluation system that ensures a neutral agency conducts quantitative policy evaluation on a regular basis. The starting point is scientific classification and record management of SME policies.⁷⁾ The evaluation should contain not only performance indicators such as per-capita operating profit managed by respective policy implementing agencies, and but also productivity indicators such as the value-added and TFP that can be drawn from an econometric analysis. As shown in this study, scientifically rigorous evaluation of SME policy is certainly possible under the current condition, meaning there can be no excuse for further delay.

Lastly, a policy coordinating authority is needed. The authority, in collaboration with

5) Using per-capita value-added as a performance indicator is preferable, but since it is not generally easy to obtain it from corporate accounting data, this study used per-capita operating profit.

6) Taking into account severe youth unemployment as of 2015 and the value of long-term human capital formation, it is highly likely that employment will cause long-term external effect, meaning that employment, in particular among the youth, can be a significant policy target.

7) Refer to Woo Hyun Chang, "Improving the Efficiency of SME Policy," NEAC-KDI-KOSBI Joint Seminar, presentation material, 2014.

respective implementing agencies, needs to review results of policy evaluations conducted by a neutral evaluation agency and should adjust or abolish poorly performing policies so that the potential output growth of the national economy can improve. What should be noted here is that the policy evaluation results are less a performance scorecard than a useful source for improvement in policy effectiveness.

A policy coordinating authority needs to review the evaluation results produced by a neutral evaluation agency on a regular basis in order to identify areas for improvement and ensure effective implementation.

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