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How to Enhance the Efficiency of Fiscal Spending on Government Financing Programs for SMBs and Startups

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Introduction

Broadly speaking, the government financing programs for small and medium businesses (SMBs)[1] in Korea comprise loans and investments. Government agencies handling loans include the Small and Medium Business Corporation (SBC), Korea Finance Corporation (KOFC), Korea Technology Finance Corporation (KTFC), and the Korea Credit Guarantee Fund (KCGF), among others. Investments, on the other hand, are available from various Cabinet ministries as well as the SBC and KOFC. The Korean government invests in SMBs via intermediaries, such as the Startup Investment Fund and Venture Investment Fund. These funds combine capital contributions from both the government/public sector and the private sector.

While government financing is necessary to prevent and solve the market failure of disregarding potential and prospective SMBs, excessive government financing itself can lead to a host of problems (OECD, 2014). First, financing readily available from the public sector may serve to weaken the incentives for private-sector financial institutions to develop and apply more advanced and accurate credit rating and risk management techniques, thereby hampering the growth of the financial market in the long run. It may also lead private-sector banks to rely more and more on government guarantees of credit. Second,

1) In this report, the terms "SMBs" and "startups" are used interchangeably. As authors, we decided not to focus on the strictly technical distinction between the two types of businesses, as our focus was on businesses of small and medium sizes, irrespective of their phases in the growth cycle, that receive direct and indirect financial support from the government

excessive government financing may also serve to discourage SMBs from undergoing necessary restructuring, thus leading to a major increase in the number of zombie companies. Third, government financing for SMBs in all phases of the growth cycle may encourage SMBs to forever remain SMBs, forgoing the necessary steps toward enhancing the efficiency of their operations and realizing economies of scale.

The SMB community itself argues that government financing needs to be increased in both scope and scale. However, we cannot and should not accept the claim that the mere presence of excessive demand justifies a greater supply of anything. According to Son (2013), while the rate of increase in the scale of government financing has been slowing recently, it still hovers well above the rate of increase in the nominal gross domestic product (GDP), with the share of government financing in the nominal GDP also increasing at a faster pace. If we use the rate of increase in the nominal GDP as the guideline for deciding the rates of increase in any fiscal project, the rate of increase in government financing ought to decrease further.

The more pressing problems of government financing are its structure, which is excessively focused on loans (or credit guarantees), and the inefficiencies of its operations.[2] Everyone agrees that government support for early-stage companies is necessary in order to find and foster new engines of growth for the national economy as a whole and also to help individual companies grow and overcome the "valley of death." However, the current mode of government financing for SMBs in Korea, directly funded and handled by the government, is extremely inefficient. The inefficiency of these financing programs is most evident in the fact that little long-term and strategic investment is made in early-stage businesses or startups, and also in the multiplication of zombie companies.

2) This report does not provide quantitative data or indicators of the alleged inefficiency of government financing programs. We point out that, in theory, investment is far more effective at supporting SMBs than are loans, and that the currently loan–centered structure of government financing in Korea will ultimately become an added burden on Korea's already strained fiscal system. Part of our empirical evidence showing that SMBs receiving government support are not faring as well as hoped may serve as indirect support for our theoretical claim

Government financing programs in Korea today mostly focus on providing loans.[3] More specifically, as of the end of 2012, approximately KRW 466 trillion of all government financing provided to SMBs was in the form of bank loans, while only KRW 5 trillion was in the form of startup investments, and KRW 0.7 trillion in stock and corporate bond investments. In other words, the capital structure of government financing in Korea heavily favors bank loans. With government loans amounting to KRW 421 trillion as of the end of 2012, SMBs have become excessively dependent upon these loans. According to Son (2013), 87.4 percent of government financing was provided in the form of loans and credit guarantees and only 12.6 percent in investment. Startups with great growth potential require risk-taking, long-term investment strategies. Yet the current government financing market is heavily biased in favor of loans.

The current loan-centered government financing structure exerts little beneficial impact on the performance and achievements of SMBs. Gwak et al. (2004) shows that there is no statistically significant correlation between government financing and the management performance of SMBs. Of course, we may attribute this failure to the idiosyncrasies of the specific SMBs studied and/or to the macroeconomic factors that harmed all KOSDAQ-listed businesses at the time. Nevertheless, we cannot disregard the likelihood that the government agencies and financial institutions administering government financing programs may have failed to develop and implement effective and thorough criteria for identifying businesses to be supported and following up with them after the

3) A major shortfall of this report is that it fails to provide an in-depth analysis of the causes of the loan-centered structure of government financing today (which is a topic for future research). At this point, we hypothesize that the main causes would likely include the inertia of the established loan-centered structure; the sense of burden policymakers feel upon investing taxpayers' money in causes that do not promise certain returns, i.e., risk-avoiding tendency of the bureaucracy; and the sense of hindrance that businesses themselves may feel upon government investors attempting to interfere with their management by exercising their shareholder rights. While some of these problems may be overcome with new and alternative arrangements, increasing the share of investment in government financing still requires that larger, paradigmatic changes be made first, such as the establishment of a society-wide consensus (e.g., that investment in SMBs is akin to investment in university students and amounts to investing in the future) and the introduction of the portfolio system into fiscal spending programs (e.g., distinguishing between safe and risky assets). SMBs, in fact, tend to resist government investment, but will be forced to accept it if the size of the loans is radically reduced. In such a situation, change in supply will have induced change in demand

fact. Kim (2004) does provide limited empirical evidence on how government financing may be helpful, especially for early-stage SMBs. However, Kim's argument is that government financing, if it must be provided, is better directed to earlier-stage businesses than later-stage ones, and not that government financing for SMBs in all phases of the growth cycle must be maintained at all costs.

There is a growing demand in the policymaking circle for government financing to be focused on innovative SMBs and early-stage businesses. Kang and Jeong (2006), for instance, has shown that the increased scale of government loans in the aftermath of the Asian Financial Crisis played a central role in enhancing the profitability and growth potential of innovative SMBs in Korea. In particular, the effect was more prominent with respect to innovative SMBs that were relatively younger. Government financing, including loans and reduced interest rates, for SMBs lacking innovative technologies was not as effective. Cho and Yang (2008) distinguishes the effects of government financing between the primary effect (of direct grants) and the secondary effect (on the improvement of the management performance of supported businesses). For early-stage businesses, the primary effect was 1.3 times greater than it was for mature businesses. Furthermore, the smaller and younger the business is, the greater the secondary effect. The Dongguk University Industrial-Academic Cooperation Group (2011) divides government financing into diverse categories, such as funds for early-stage businesses, funds for new growth, emergency working funds, and funds for business change. The authors of the analysis conclude that government financing is most effective when directed to early-stage businesses, while the results of the analysis by Shin and Park (2010) show that government credit guarantees may actually have repercussions on the management performance of SMBs, particularly in terms of profitability and growth prospects. However, Ahn, Woo, and Jeong (2011) show that the effects of government financing on SMBs' profitability may vary when endogeneity it taken into account.

In the United States, private-sector startup investment companies are the ones that play a leading role in providing risk-taking, long-term investments for SMBs. While the amount of investment in SMBs has steadily increased over the last 15 years in Korea, our private-sector startup investment companies still

struggle, as much of the investment has been made and increased under the government's leadership. In other words, the outward growth of startup capital and investment in Korea reflects increases in government-established startup investment funds and other direct government financing programs rather than the growth of private-sector investment companies. In the United States, however, private investment companies play a central role in ensuring the efficient distribution of capital. The more specialized and expert an investment company is, the more likely it is to invest in startup businesses (Gupta and Sapienza, 1992; Norton and Tenenbaum, 1993). This is because investment companies that amass increasing knowledge of and connections within certain industries prefer to invest in early-stage businesses. Likewise, the more inexperienced an investment company is, the more likely it is to invest in later-stage businesses (Gompers, 1996). This is because such an investment company, itself, is pressed by the need to establish its reputation in the industry by inducing the initial public offering of the business in which it invests as early as possible. The relative lack of knowledge, experience, and connections in such younger investment companies also renders them more risk-avoidant, and thereby more inclined to invest in relatively risk-free, later-stage businesses. Kaplan and Stromberg (2003) show that investment companies in the United States generally sign contingent contracts with the businesses in which they invest so as to allow for subsequent investments contingent upon the businesses' satisfaction of certain financial and non-financial targets, rather than making one-off investments.

Startup investment companies in Korea, however, are not as efficient as their American counterparts. While investment companies specializing in certain industries do tend to prefer investing in early-stage businesses (Lee and Yun, 2000), the evidence remains ambiguous regarding experienced investment companies (Lee and Yun, 2000; Lee et al., 2002). Also, the larger the investment company, the more likely it is to invest in later-stage businesses (Lee and Yun, 2000). More specifically, the larger the fund under the charge of an investment company, the greater the amount of investment it makes in each later-stage business. Therefore, the increasing size of a fund does not necessarily translate into an increase in the number of investments made, but may in fact have the opposite effect. The amount

of investment also tends to grow in proportion to the size of the business being invested in, while research and development (R&D) records and financial performance are regarded as relatively less important criteria (Son and Heo, 2012). All in all, the evidence to date suggests that startup investment companies in Korea tend to make investments from a myopic perspective, with a focus on tangible assets. We need to keep this tendency in mind throughout our exploration of the issues with the current government financing programs in Korea, and what they should do to foster the success of SMBs.

This report surveys the current status of government financing programs in Korea and identifies issues and possible solutions with the help of expert interviews, a literature survey,[4] and an opinion poll. Section II surveys the current status of diverse policy financing agencies and programs in Korea, while Section III provides both qualitative and quantitative analyses of government financing programs and their issues, on the basis of the survey of the established literature as well as an opinion poll. Finally, Section IV discusses possible solutions that could help mitigate the inefficiencies of the current government financing programs in Korea.

4) Much of this report is focused on providing qualitative analyses, not least because of the fact that the amount of available official data on SMBs is quite limited. Many of the financial statements provided by SMBs differ in nature from those issued by large corporations and do not provide a helpful guide to identifying the real issues

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Government Financing for SMBs in Korea Today

1 Government financing for SMBs in Korea today

We may divide the government financing programs for SMBs in Korea into several categories, including credit guarantees, policy funds, on-lending programs, funds of funds, and the aggregate credit ceiling program.

A. Credit guarantees

Credit guarantees are financial instruments with which a given institution supports SMBs, usually lacking sufficient assets or abilities to securitize the loans and other transactions they need, thereby allowing SMBs to find willing providers of loans and capital with greater ease in the private capital market. Noted agencies providing credit guarantees for SMBs in Korea include the KCGF, KTFC, and RCGFs. The KCGF uses capital contributions from the Korean government and financial institutions in order to provide credit guarantees for SMBs of all types. The KTFC, on the other hand, while also running on contributions from the government and financial institutions, focuses more narrowly on credit guarantees for technology startups and innovative SMBs. Finally, the RCGFs draw upon contributions from central and/or local government organizations, financial institutions, and large local corporations so as to provide credit guarantees for SMBs and small venders in their respective jurisdictions.

〈Table II-1〉 **Government Financing Agencies and Programs for SMBs**

Agency	Program type	Description
KCGF	Credit guarantee	The government guarantees the performance of liabilities on behalf of SMBs lacking sufficient physical assets to put up as collateral security for the loans and credit transactions they seek.
KTFC		
Regional credit guarantee foundations (RCGFs)		
SBC	Policy funds commissioned by the Small and Medium Business Administration (SMBA)	Fiscal funds set aside specifically for financing SMBs in need of help boosting their competitiveness.
SMBA and other agencies	Policy funds	Fiscal funds provided in support of SMBs of categories under the charge of each ministry/ department/agency of the Korean government.
Local governments	Local SMB fostering funds	Local governments support local SMBs with funds of their own in the form of loan interest subsidies, in addition to providing direct funds and loans.
KOFC	On-lending investments	On-lending enables the KOFC to share risks with banks and invest indirectly in SMBs.
Korea Venture Investment Corporation (KVIC)	Fund of funds	The KVIC raises a fund and maintains its growth year by year in order to support investment companies investing in startups.
Bank of Korea (BOK)	Mandatory loans for SMBs	The BOK requires all financial institutions to provide loans for SMBs in certain proportions to the increases in the funds for local currency loans.
	Aggregate credit ceiling	The BOK decides the amounts of funds it will provide for financial institutions on the basis of the loans those institutions have made to SMBs.

Source: Institute for Future Studies (IFS) (2013), p. 3.

〈Table II-2〉 **Credit Guarantees Provided for SMBs**

(Unit: KRW 1 trillion)

Agency	2008	2009	2010	2011	2012	2013
KCGF	31.7	42.3	43.0	42.4	43.2	44.0
KTFC	12.6	17.1	17.4	17.3	18.2	19.7
RCGFs	6.0	11.2	13.2	13.6	13.5	14.3
Total	50.3	70.6	73.6	73.3	74.9	78.0

Source: Financial Services Commission (FSC) (data on the credit guarantee balance of each guaranteeing agency)

Over the years, the total amount of credit guarantees for SMBs in Korea has increased dramatically, from KRW 50.3 trillion in 2008 to KRW 78 trillion by 2013. The government radically increased the amount of capital for SMB credit guarantees between 2008 and 2009 in order to provide assistance for businesses struggling with the after effects of the global financial crisis. The KCGF remains the largest provider of credit guarantees for SMBs, having provided KRW 44.4 trillion in 2013 alone, followed by the KTFC with KRW 19.7 trillion and the RCGFs with KRW 14.3 trillion. In 2012, the KTFC provided KRW 7.5709 trillion in credit guarantees for startups and KRW 10.7428 trillion for technology SMBs.

〈Table II-3〉 **KTFC's Credit Guarantees for Startups and Technology SMBs**

(Unit: number of businesses, KRW 100 million)

	2008		2009		2010		2011		2012	
	Businesses	Balance	Businesses	Balance	Businesses	Balance	Businesses	Balance	Businesses	Balance
SMBs	26,423	88,413	31,948	125,866	36,652	136,850	40,256	132,314	45,342	137,635
Startups	21,053	45,379	25,315	64,626	28,508	67,630	31,765	69,204	36,527	75,709
Technology SMBs	13,523	70,326	16,791	100,910	20,325	114,968	22,249	105,586	24,002	107,428

Note: "Startups" in this context refers to SMBs that were created within the five years prior to receiving the KTFC's credit guarantee support. "Technology SMBs" are innovative SMBs certified by the KTFC that received credit guarantees irrespective of their phases in the growth cycle. A business that was both a startup and a technology SMB at the time of receiving the support was counted once in each regard. The "SMBs" row lists numbers that omit overlappin businesses

Source: Board of Audit and Inspection (BAI) (2014), p. 59.

〈Table II-4〉 **KCGF's Government Financing Programs**

Type	Program	Objective	Targets	Included benefits
Credit guarantee	Credit Guarantee for Innovative Startups	To foster competitive startups, particularly those with the potential for innovation in such areas as technology, knowledge, and specialized qualifications.	SMBs that were founded within the five years prior to receiving the guarantee; startups in possession of innovative technology or knowledge; and startups with specially qualified entrepreneurs.	– Subject loans: loans for operation and facility acquisition. – Limit: up to KRW 10 billion, in facility loans – Guarantee fee: 0.1-percent discount
	Special Credit Guarantee for Young Entrepreneurs	To encourage young people to found their own businesses, thereby solving the youth unemployment problem.	Any SMB whose entrepreneur is between the ages of 20 and 39 as of the date on which the application for the credit guarantee is filed.	Funds and loans for starting and operating businesses, renting work- spaces, and acquiring related facilities.
	Credit Guarantee for Entrepreneurs-in-the-making	To help aspiring entrepreneurs get a head start on their businesses and achieve success by receiving the credit guarantee they need based on preliminary screening results.	Aspiring entrepreneurs who plan to open and run their own businesses in six months' time.	– Subject loans: loans for operation and facility acquisition. – Limit: up to KRW 100 million – Guarantee fees: 0.3% for young entrepreneurs, 0.7% for other entrepreneurs
	Credit Guarantee for Startups	To provide financial support customized to each phase of the startup period.	Startups of six months or less; Startups of one year or less; Startups of between one and three years	– Subject loans: loans for operation, facility acquisition, and rent. – Limit: up to KRW 300 million over three years from approval
	Credit Guarantee for Single-Person Startups	To ensure the future growth of the Korean economy by fostering creative and specialized single-person startups.	Each creative and specialized startup founded and run by either a single individual or fewer than five individuals without the help of a full-time staff.	– Subject loans: loans for operation and facility acquisition. – Limit: up to KRW 100 million per business – Guarantee fees: 0.5% per annum – Guarantee duration: five years or more (negotiable)
	Special Credit Guarantee for Facility Funds	To foster the growth potential and competitiveness of Korean industries by encouraging SMBs to invest in facility expansion.	SMBs struggling to secure the financing necessary for facility acquisition and expansion.	– Limit: up to KRW 10 billion – Guarantee coverage: 90 to 100%
	Credit Guarantee for Intellectual Property	To provide credit guarantees for R&D, technology transfer, and commercialization.	SMBs in possession of patents, utility designs, etc. or SMBs developing new technologies.	– Different guarantees for different loans (development loans, transfer loans, commercialization loans, project loans, and valuation loans). – Different guarantee limits for different guarantee types.

〈Table II-5〉 **KTFC's Government Financing Programs**

	Program	Objective	Targets	Included benefits
Credit guarantee	Preliminary Credit Guarantee for Entrepreneurs-in-the-making	To provide aspiring entrepreneurs with a measure of financial stability by giving them a credit guarantee determined through a pre-foundation technology evaluation.	Aspiring entrepreneurs with business plans that meet the criteria of Future Creating Businesses, New Growth Engines, intellectual property rights, and other entrepreneurship programs/contests.	– Subject loans: loans for operation, facility acquisition, and rent. – Limits: up to KRW 500 million (to be provided according to the technology evaluation results, i.e., KRW 500 million for enterprises of Grade BBB, KRW 300 million for those of Grades B and BB, and KRW 100 million for those of Grade CCC).
	Special Credit Guarantee for Young Entrepreneurs	To encourage entrepreneurship among youth by providing support for the commercialization of young people's ideas.	Any technology SMB founded within three years prior to application and whose representative/CEO is between the ages of 20 and 39.	– Subject loans: loans for operation, facility acquisition, and rent. – Limit: up to KRW 300 million per business
	Special Credit Guarantee for Startups with Patents	To encourage entrepreneurs to commercialize their intellectual property rights (IPRs) and innovative technologies.	Any SMB that has filed a patent application or been granted a patent application within the last two years or any SMB holding IPRs less than five years old.	– Subject loans: loans for operation and facility acquisition. – Limit: up to KRW 500 million per business (up to KRW 300 million for operation loans)
	Special Guarantee Contingent upon Successful Completion of R&D Projects	To provide SMBs with financial support customized to their respective phases in the R&D cycle.	– Development phase (1): An R&D project to be completed within two years of the application date. – Pre-commercialization phase (2): An R&D project that was completed within two years prior to the application date. – Commercialization phase (3): A government R&D project that was successfully completed in the last three years.	– For phases (1) and (2): guarantee coverage = 95% – For phase (3): up to 90% of the loan from the Industrial Bank of Korea (IBK), with a 1.5% discount on the interest rate.
	Special Credit Guarantee for New Growth	To enable SMBs to achieve greater growth by providing them with credit guarantees for operation, facilities, and R&D loans.	Technology SMBs and "Innobiz" companies specializing in any of the 17 "New Growth Engine Industries."	– Subject loans: loans for operation and facility acquisition. – Guarantee fee: 0.3% discount – Preferred guarantee coverage rate: 90% to 95%.
	R&D Credit Guarantee	To provide systematic financial support for R&D by meeting the financial needs of all phases of the R&D cycle, from conceptualization to commercialization.	– Development and pre-commercialization phases (1) and (2): SMBs recognized as possessing "feasible R&D projects" and ranked Grade B or above on the R&D evaluation rubric. – Commercialization phase (3): SMBs that have successfully completed government- or public-commissioned R&D projects, their own R&D projects, or launched R&D projects based on transferred technology within the last five years.	– Phase (1): loans needed to develop new technologies. – Phase (2): loans needed to produce prototypes of developed technologies. – Phase (3): operation and/or facility loans needed to manufacture developed technologies/prototypes.

〈Table II-5〉 **Continued**

	Program	Objective	Targets	Included benefits
Credit guarantee	Special Credit Guarantee for Technology-Industry Convergence	To provide SMBs with financial support at each phase of convergence.	Innovative SMBs that have launched convergence projects or set out to use the outcomes of convergence.	Guarantee fee: 0.3% discount (no overlaps allowed)
	Technology Appraisal-Based Credit Guarantee for Investment	To guarantee the acquisition of convertible bonds (CBs) or bonds with warrants (BWs) of innovative SMBs by banks and investment companies partnered with the KTFC.	- SMBs leading technological innovation; - SMBs possessing advanced technology and recommended by partnered institutions.	- Bond issuance: non-public (private) issuance of bonds of at least KRW 50 million in value upon issuance. - Guarantee coverage and fee: 30% (5% for capital gains), 50% (10% for capital gains), 70% (20% for capital gains).
	Kibo A+ Members Program	To enhance the future values of Kibo A+ Member Businesses by providing them with premium guarantee services.	- SMBs already receiving the Technology Appraisal-Based Credit Guarantee support and that have received high-level scores on the technology evaluation; - SMBs less than five years old that have received Grade A or above on the technology evaluation; - SMBs more than five years old that have received Grade A or above on the technology evaluation and Grade BB or above on the financial evaluation.	- Differentiated guarantee support is provided to member business: easing the guarantee limitation of KRW 3billion (technology-intensive business: KRW 5billion, export related fund(e.g. trade finance): KRW 7billion) - Additional 0.2% discount on guarantee fee (minimum guarantee fee of 0.5% for AAA-graded businesses). - 30% discount on technology appraisal fee
	Entrepreneurship Training Agency Support	To foster tenant businesses at business incubation centers promoting R&D and commercialization.	- SMBs already receiving the Technology Appraisal-Based Credit Guarantee support; - Preference for SMBs leading technological innovation.	- Up to KRW 100 million per business. - Within limit set by Technology Appraisal-Based Credit Guarantee. - 85% of fixed partial credit guarantee for innovative SMBs less than five years old.
	Special Credit Guarantee for Future Star Enterprises	To support technology SMBs in the take-off phase whose advanced technology/business plan is expected to increase sales dramatically.	SMBs in the take-off phase that: - were founded three to seven years ago; - have received Grade BBB or above on the technology evaluation and Grade BB or above on the financial evaluation (financial evaluation not required for businesses less than five years old); - are expected to achieve an increase in sales of at least 20% in the following term.	- Subject loans: loans necessary to purchase more raw materials, hire more people, increase operations, relocate worksites, and acquire and expand facilities in anticipation of increasing demand. - 0.3% discount on guarantee fee.
Investment	Guarantee-backed Investment	To directly invest part of the guarantee fund in innovation-leading SMBs that apply for both credit guarantee and investment.	SMBs founded and run by people with specialized knowledge, including professors, researchers, and engineers.	- Limits: up to KRW 1 billion (KRW 3 billion) per business, KRW 5 billion (KRW 7 billion) for guarantee and investment combined, and KRW 3 billion (KRW 5 billion) for related businesses. *Figures in parentheses are special limits.

Sources: KCGF (www.kodit.co.kr), KTFC (www.kibo.or.kr), Korean Venture Capital Association (KVCA, www.kvca.or.kr), SBC (www.sbc.or.kr), and Venture-In (www.venturein.or.kr)

The KCGF administers diverse credit guarantee programs with varying purposes and target beneficiaries. As <Table II-4> shows, the recipients of these programs include innovative startups, young entrepreneurs, and entrepreneurs-in-the-making, among others. In other words, the KCGF provides credit guarantees for SMBs in all phases of the growth cycle. The KTFC similarly provides diverse credit guarantee programs, as shown in <Table II-5>, and also offers guarantees for all phases of the growth cycle, including startup, development, and commercialization.

B. Government financing programs of the SMBA

Specifically put in charge of administering government support for SMBs, the SMBA, by far, handles the most diverse types and the greatest number of government financing programs for SMBs in Korea. It handles two main types of government financing programs: direct loans from the SBC and indirect loans from other financial institutions and government authorities. The SBC is the sole source of the SMBA's direct loans.

As of the end of 2012, the SMBA had provided a total of KRW 14.8 trillion through government financing programs for a total of approximately 85,000 businesses. In response to the global financial crisis, the amount of loans offered by the SMBA grew dramatically in 2009, but soon returned to normal levels. As of 2014, the SMBA was tasked with administering a total of KRW 3.82 trillion in government financing programs for SMBs. As <Table II-7> shows, these programs include loans for startups, support for businesses seeking new growth, and support for small businesses. These three programs will require KRW 1.3 trillion, KRW 0.835 trillion, and KRW 0.915 trillion, respectively.

〈Table II-6〉 **SMBA's Financing Programs for SMBs**

(Units: KRW 100 million, number of businesses)

	2008	2009	2010	2011	2012	2013
Loans	31,530	58,555	33,355	34,016	36,508	33,500
Supported businesses	15,441	59,698	18,094	23,580	28,334	–

Source: SMBA

〈Table II-7〉 **SMBA's Plan for Government Financing for SMBs, 2014**

	For startups	For the commercialization of developed technologies	For new growth	For emergency working capital	For business change	Mixed (loans + investments)	For small businesses
Objective	To foster and increase the number of startups.	To promote the commercialization of developed technologies.	To help SMBs enhance competitiveness.	To provide emergency financial relief.	To support major changes in business structure and trade.	To provide both loans and investments where necessary.	To boost small businesses' management stability.
Budget	KRW 1.3 tn.	KRW 350 bn.	KRW 835 bn.	KRW 100 bn.	KRW 170 bn.	KRW 150 bn.	KRW 915 bn.
Targets	SMBs less than 7 years old; entrepreneurs-in-the-making; entrepreneurs trying to open new businesses; young entrepreneurs under the age of 39 who have been running businesses for less than 3 years.	SMBs in possession of advanced technology (except those having received government support at least twice over the last 3 years).	SMBs less than 7 years old (except those having received government support at least twice over the last 3 years).	SMBs (except those having received government support at least twice over the last 3 years).	Businesses whose plans for business change have been approved and/or that have been designated as recipients of trade adjustment support.	Profit-sharing and growth-sharing businesses (expected to reach a certain level of revenue or likely to have IPO soon).	Small business owners
Scope	Facility and operation loans	Facility and operation loans	Facility and operation loans	Loans for emergency management relief and exports	Facility and operation loans	Facility and operation loans	Loans for management improvement, facilities, and operation
Limits	KRW 500 mn./yr. for operation or new startup; KRW 100 mn./yr. for young entrepreneurship	KRW 2 bn./yr. (up to KRW 500 mn./yr. for operation)	Different for individual businesses	KRW 500 mn./yr. (up to KRW 1 bn. over 3 years)	Different for individual businesses	KRW 2 bn./yr. (up to KRW 500 mn./yr. for operation), or up to maximum loan amounts available for individual businesses.	KRW 70 mn. for management improvement; KRW 500 mn. for facility/operation loans.
Interest rate	0.15% below standard interest rate	0.15% below standard interest rate	0.4% onto standard interest rate	0.9% onto standard interest rate	0.15% below standard interest rate	Fixed interest + gains-contingent interest, with CBs to be acquired.	+0.4% onto standard interest rate
Loan type	Direct or indirect	Direct	Direct or indirect	Direct	Direct	Direct	Direct or indirect

Notes: 1) According to the SMBA's standard on government loans, the maximum loan amount an individual business may receive is KRW 4.5 billion (or KRW 5 billion for SMBs in regions outside Seoul-Gyeonggi) or 150 percent of the business' revenue. In exceptional cases, however, a business may receive up to KRW 7 billion in loans

2) The standard interest rate is updated quarterly according to the SMB Promotion Bonds Procurement Rate

Source: SMBA Announcement 2014-4.

〈Table II-8〉 **SMBA's Government Financing Programs for SMBs in Different Phases**

(Units: KRW 1 million, %)

Phase	Program	2009		2010		2011		2012		2013		2014	
		Total	%	Total	%	Total	%	Total	%	Total	%	Budget	%
Startups	Loans for startups	1,150,000	26	1,180,000	39	1,400,000	48	1,390,000	45	1,529,969	44	1,300,000	45
Early and growing	Mixed (loans + investments)	–	–	–	–	–	–	150,000	5	170,000	5	150,000	5
Mature and growing	Loans for commercialization of developed technologies	288,000	7	158,000	5	257,999	9	308,000	10	330,000	10	350,000	12
	Loans for new growth	1,329,999	30	1,259,999	42	861,949	30	855,000	27	935,000	27	835,000	29
	Emergency working capital	1,500,000	34	270,000	9	240,000	8	250,000	8	315,000	9	100,000	3
	Subtotal	3,117,999	71	1,687,999	56	1,359,948	47	1,413,000	45	1,580,000	46	1,285,000	44
Mature and returning	Loans for business change	147,500	3	147,500	5	147,500	5	165,000	5	170,000	5	170,000	6
Total		4,415,499	100	3,015,499	100	2,907,448	100	3,118,000	100	3,449,969	100	2,905,000	100

Source: SBC (www.sbc.or.kr)

Additionally, KRW 0.77 trillion is to be spent on other programs, such as support for the commercialization of developed technologies, emergency working capital, support for business change, and mixed financial support combining loans and investments.

The composition and respective shares of the diverse government financing programs at the SMBA have been changing over time. Whereas the loans for startups made up 26 percent of all government loans provided in 2009, that share has increased steadily, reaching 45 percent by 2014. In the meantime, loans for mature businesses seeking new growth have seen their share decline from 71 percent in 2009 to 44 percent in 2014. This shows that the Korean government has been increasing its support for early-stage businesses, while reducing its support for more mature businesses, which have greater access to private-sector finance.

C. KOFC

The government financing programs available via the KOFC include on-lending programs that provide indirect loans, via financial intermediaries, for businesses with low credit ratings and the credit risk sharing program. The KOFC also provides indirect investment for SMBs with high technological and growth potential, but which struggle with capital shortages.

1) On-lending

On-lending involves providing indirect loans for SMBs with growth potential via financial intermediaries, such as private-sector banks. The KOFC provides these financial intermediaries with funds for loans, which the intermediaries then provide as loans to the businesses of their choice. Eligible for the on-lending program are SMBs that meet the following criteria: (1) SMBs with credit ratings ranging from Grade 6 to 11 on the 15-grade scale of the Financial Supervisory Service (FSS)'s Standard Business Credit Rating System; (2) SMBs that were established at least three years before applying for the loans; and (3) SMBs that have each generated at least KRW 1 billion in annual sales the previous business year.

〈Table II-9〉 **On-lending Conditions**

	SMBs	Medium-sized enterprises
Facility loans	KRW 100 mn. to KRW 5 bn.	KRW 100 mn. to KRW 25 bn.
Operation loans	KRW 100 mn. to KRW 2.5 bn.	KRW 100 mn. to KRW 10 bn.
Max. per business	KRW 10 bn.	KRW 50 bn.

Note: Businesses recognized as engaged in "Green" or "New Growth Engine" industries may receive up to two or three times the maximum amount
Source: KOFC (http://kofc.or.kr/kofc/business/medium+02.jsp)

Through its credit risk sharing program, the KOFC also shares risks with financial intermediaries in the private sector so as to provide greater amounts of capital support for SMBs with technological and growth potential that struggle with low credit ratings. Financial intermediaries pay loan transaction fees and provide up to 50 to 60 percent of the indirect loans applied for by such SMBs. The KOFC handles up to 50 percent of the required facility and operation loans, and up to 60 percent of the required loans for SMBs outside the Seoul-Gyeonggi area, SMBs in the New Growth Engine Industries, SMBs in the Green Industries, and job-creating SMBs. These divided-risk loans are available for SMBs that were founded at least three years before applying for the loans and that generated between KRW 1 billion and KRW 60 billion in sales the previous business year. Since the KOFC's foundation in 2009, the amount of financial support provided via the on-lending program has increased dramatically, from KRW 434.4 billion in 2009 to KRW 4.4717 trillion by 2011.

〈Table II-10〉 **On-lending Loans**

(Unit: KRW 100 million)

	2009	2010	2011	September 2012
Facility loans	1,333	15,600	23,569	15,085
Operation loans	972	16,411	19,137	20,234
Total	4,314	34,021	44,717	37,331

Sources: KOFC, re-quoted in IFS (2013), p. 6.

2) Indirect investment

The KOFC also makes indirect investment, via the Startup Investment Funds and other private equity funds (PEFs), in an effort to foster SMBs and the New Growth Engine Industries. As of September 2013, the KOFC had invested a total of KRW 851.7 billion (out of the total contracted amount of KRW 1.593 trillion) in 48 investment funds, including 18 Startup Investment Funds, as part of its policy on fostering creative and technologically advanced startups. As for the New Growth Engine Industries, the corporation invested a total of KRW 1.6334 trillion (out of the total contracted amount of KRW 2.5919 trillion) in 30 investment funds, including the 27 PEFs.

As of March 2013, the cumulative total of indirect investment made by the KOFC amounted to KRW 8.49 trillion, including investments for 39 Startup Investment Funds and 30 PEFs. Moreover, the KOFC has invested KRW 2 trillion, out of the contracted amount of KRW 3.6169 trillion, in 451 businesses.

3) Growth Ladder Fund

Acknowledging the excessively loan-centered, risk-avoidant structure of government financing programs for SMBs in Korea as well as the need to foster and support more prospective startups and technology businesses, the FSC launched the Growth Ladder Fund in August 2013. The Fund aspires to fill the gaps in the government financing market for Korea's SMBs, making more risk-taking and aggressive investment in early-stage and small businesses that investment companies have traditionally avoided.

The Fund will draw upon contributions and investments from the KOFC, Korea Development Bank (KDB), IBK, the Banks Foundation for Young Entrepreneurs, and other private-sector investors. As shown in Table II-11, the FSC plans to raise a total of KRW 2 trillion in 2013, including KRW 600 billion from government and public sources, with the remaining KRW 1.4 trillion coming from the private sector. The plan also envisions raising a total of KRW 6 trillion, including KRW 1.85 trillion from government and public sources and KRW 4.15 trillion from the private sector.

The Fund will provide loans and investments according to a predefined investment portfolio that includes a balanced number of SMBs in different phases of the growth cycle (i.e., startup, growing, and returning). As the Korean government and the Banks Foundation for Young Entrepreneurs share medium and high risks, private-sector investors are to handle low-risk businesses only.

Today, the sub-level funds of the Growth Ladder Fund include the Startup Fund, the Secondary Fund (for businesses ready to return investment), the Corporate Rehabilitation Fund, and the M&A, IP, and KONEX Stimulation Funds.

〈Table II-11〉 **Annual Contributions to the Growth Ladder Fund (Year 1: KRW 0.6 trillion, KRW 1.85 trillion in total over three years)**

(Unit: KRW 100 million)

Source	KOFC	KDB	IBK	Banks Foundation	Total
2013	2,500	2,000	500	1,000	6,000
2014	2,500	2,000	500	1,500	6,500
2015	2,500	2,000	500	1,000	6,000
Subtotal	7,500	6,000	1,500	3,500	18,500

Source: FSC (2013), p. 1.

<Table II-12> summarizes the government financing programs that the KOFC provides for SMBs in different phases of the growth cycle. As the table shows, the corporation invests in SMBs in all phases in addition to administering a fund for supporting the expansion of Korean SMBs abroad.

〈Table II-12〉 **KOFC's Government Financing Programs**

Type	Program		Objectives	Targets	Included benefits
Invest-ment	Policy funds	Growth Ladder Fund	– To finance creative and innovative SMBs; – To promote the risk-taking nature of policy funds and induce greater private-sector investment; – To develop a financing environment consisting of diverse assets; – To provide mixed financial support based on institutional partnerships.	Creative and innovative startups and SMBs struggling with financial shortages and businesses in areas/industries prone to market failure (different sub-level funds cater to different businesses).	– Different sub-level funds invested in different businesses. – Different support programs for different phases in the growth cycle (Startup Fund for early-phase businesses, Corporate Rehabilitation and Secondary Funds for struggling mature SMBs, and matching grants for growing SMBs).
		Future Pioneering Fund	To establish a virtuous cycle of helping startups and mature SMBs, thereby leading to reinvestment and expansion.	– Startups: less than 3 years old. – Mature/later-stage businesses: medium-sized businesses with global clienteles.	Investment limits: – KRW 200 billion for startups. – KRW 400 billion for mature/later-stage businesses.
	Early startups	Young Entrepreneurs Fund	To solve the youth unemployment problem by fostering young enterprises.	New and early startups founded by owners aged 39 or younger.	– Catering to different phases in the growth cycle: different amounts and benefits for SMBs in different phases. – KOFC raises funds using its own investments, while fund management companies review candidate SMBs and make investment decisions. – Indirect means of providing financial assistance.
		Patent Commer-ciali zation Fund	To stimulate knowledge-based financing and promote commercialization of patented technology.	SMBs based on inventions, special-purpose vehicles (SPVs) focusing on patent investments, SMBs that have done technology transfers with universities or public research institutes, and SMBs recognized by accredited technology appraisers as holders of patented technologies.	

〈Table II-12〉 **Continued**

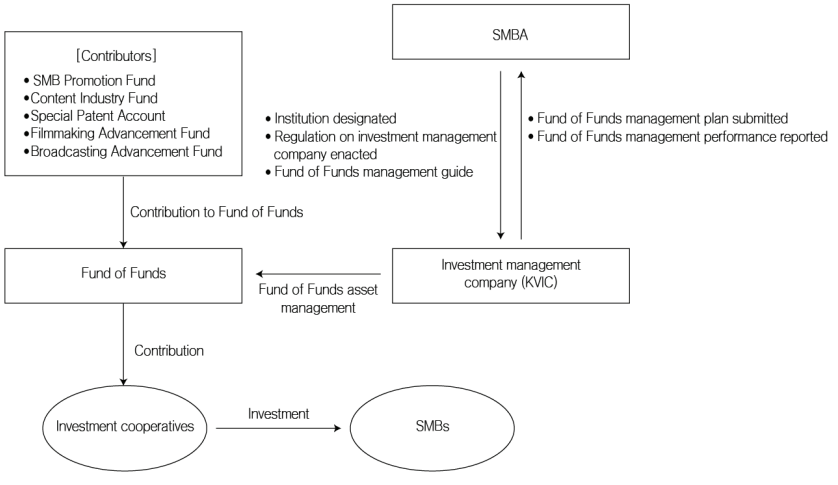
Type	Program		Objectives	Targets	Included benefits
Invest-men	Growing startups	Public Venture Startup Fund	To support the growth of SMBs and technology businesses.	SMBs and technology businesses with growth potential.	
		Parts and Manufacturing Cooperative	To enhance the competitiveness of Korean parts and materials industries and promote the specialization and expansion of related businesses by encouraging M&As with overseas businesses.	SMBs specializing in parts and materials or that have formed M&As or partnerships with Japanese parts and materials manufacturers.	
	Growing and mature SMBs	Job Creation Fund	To help create jobs by investing in SMBs with significant job-creation potential.	SMBs with high growth potential, located in R&D clusters, commercializing transferred technologies / patents, high growth records, and/or innovative technology.	
	Mature and returning	Secondary Fund	To encourage investment companies interest in SMBs.	Investment companies struggling to collect their investments from SMBs.	
	New Growth Engine Fostering Fund for SMBs		To support the growth of businesses in high-risk New Growth Engine and Green Industries.	Businesses in New Growth Engine Industries, high-tech and alternative energy industries, sustainable growth industries, and otherwise recognized by the FSC.	Financing provided from each industry s fund.
	Globalization Platform Fund		To encourage SMBs to seek partnerships, M&As, and other opportunities abroad.	SMBs intent on expanding abroad.	Supports Korean SMBs intent on going and expanding abroad.
Invest-ment and loans	KOFC Frontier Champ Program		To help SMBs possessing superior technology and ideas grow into large, global companies.	SMBs in Green, New Growth Engine, and Sustainable Industries.	- Lower interest rates and preferential loans, investments, etc. - Loans: up to KRW 30 bn. in facility loans over 20 years, or KRW 10 bn. in operation loans over 3 years). - Investments: up to KRW 30 bn. for facility acquisition or KRW 10 bn. for operation.
Loans	New Growth Industry Support Group Loans		The Group identifies and provides intensive and distinct forms of financial support for SMBs in highly prospective industries.	SMBs in industries with significant economic ripple effects in terms of growth potential, job creation, and SMB expansion.	- Facility or operation loans. - SMBs: lower interest rates, up to 20bp (basis point). - Larger businesses: lower interest rates, up to 10 bp.

Notes: 1) The SMBA Fund of Funds (KVIC) and KOFC each contributed KRW 100 billion to the Future Pioneering Fund
2) The Parts and Materials Cooperative, the Job Creation Fund, and the Secondary Fund no longer receive applications for new investments
Sources: Growth Ladder Fund (www.glfkorea.or.kr), KVIC (www.k-vic.co.kr), KOFC (www.kofc.or.kr) and Venture-In (www.venturein.or.kr)

D. KVIC

1) Fund of Funds

The Fund of Funds refers to a fund that is specifically raised, by drawing upon fiscal sources and other various governmental funds, in order for investment management companies to administer and invest in various SMBs.



Source: SMBA (2013)

In order to develop and provide a stable source of investment financing by establishing a virtuous cycle of investment and reinvestment, the Korean government set up the Fund of Funds, with contributions from the Ministry of Culture, Sports, and Tourism (MCST), the Korea Intellectual Property Office (KIPO), KASMI, and the KVIC, raising KRW 1.4791 trillion by the end of 2012. The KVIC has been managing and administering investments from the Fund of Funds since 2005.

〈Table II-13〉 **Fund of Funds: Contributions**

(Unit: KRW 100 million)

		2005	2006	2007	2008	2009	2010	2011	2012	2013
SBC Ministry of Employment (MOEL)	SMB Promotion Account	1,707	1,100	900	800	2,850	100	345	725	9,421
MCST	Culture Account	–	500	100	–	1,200	–	520	400	3,620
KIPO	Patent Account	–	550	550	–	330	–	–	–	1,430
Korean Film Council (KOFIC)	Cinema Account	–	–	–	–	–	110	60	50	220
Korea Communications Commission (KCC)	KCC	–	–	–	–	–	100	–	–	100
Total		1,707	2,150	1,550	800	4,380	310	925	1,175	14,791

Source: KVIC, re-quoted in BAI (2014), p. 54.

The Fund of Funds invests in investment cooperatives and investment companies that specialize in investing in startups and other SMBs. As of July 2013, 153 startup investment funds and 90 KVIC funds had been created with the help of the Fund of Funds, together managing a total amount of KRW 7.3012 trillion.

〈Table II-14〉 **Investment Funds Created by the Fund of Funds**

(Unit: KRW 100 million)

Fund type		2005–2011		2012		2013 (as of July)		Total	
		Number	Amount	Number	Amount	Number	Amount	Number	Amount
Startup investment funds		129	24,142	21	2,358	3	600	153	27,100
KVIC funds		80	37,747	9	3,960	1	160	90	41,867
SMB funds	PEFs for corporate restructuring	5	–	–	–	–	–	5	900
	Investment funds for new technologies	9	–	–	–	–	–	9	1,325
	PEFs	4	–	–	–	–		4	1,820
Total		227	65,934	30	6,318	4	760	261	73,012

Source: KVIC, re-quoted in BAI (2014), p. 54.

2) Job Creation Fund

The Job Creation Fund was created as one of the KVIC's investment fund cooperatives with capital contributions from the KOFC, seeking to foster SMBs with high growth potential and, by implication, job creation potential. The Fund invests indirectly in SMBs via individual partnership funds, which also draw upon contributions from institutional private-sector investors, such as pension funds.

〈Table II-15〉 **Job Creation Fund Today**

	JCF I	JCF II
Amount of capital from Fund of Funds	KRW 120 billion	KRW 107 billion
Number of partnership funds	8	8
Amount of capital administered by partnership funds	KRW 253.5 billion	KRW 167 billion

Source: KVIC

3) Future Pioneering Fund

In May 2013, the Ministry of Strategy and Finance (MSF), the Ministry of Science, ICT, and Future Planning (MSIP), the FSC, and the SMBA, together, announced their plan to set up the Future Pioneering Fund. The purpose of the fund is to establish a virtuous cycle of financing for early-phase and technology SMBs, thereby promoting entrepreneurship, business growth, investment, and reinvestment. The Korean government thus released the Guideline on the Creation of the Future Pioneering Fund as one of the core tasks of its policy on establishing a virtuous cycle of investment in startups and technology businesses, and recruited willing contributors and investors. The resulting Future Pioneering Fund was created by drawing upon KRW 400 billion contributed by large corporations, first-generation technology startups, leading technology businesses, and pension funds, as well as upon KRW 200 billion from government agencies.

The Fund invests in SMBs in the early/startup phase as well as in SMBs in the growing/later phase. Early startups younger than three years old that are finding it difficult to attract investment from private investment companies can, together, receive up to KRW 200 billion, while their more mature, later-phase counterparts can receive up to KRW 400 billion. In addition to the KRW 200 billion set aside for startups less than three years old, leading technology companies, such as Neowiz, Daou Technology Incorporated, and NHN, have set up the Sprout-Stage Business Fund, amounting to over KRW 100 billion, to provide financial assistance for and share their expertise with struggling startups. To compensate for the relatively higher level of risk inherent in early startups, the Fund will pay three percent of the returns it generates to private-sector investors on a preferential basis. Large corporations will help mature and later-phase SMBs struggling to become larger and more established companies with the KRW 400 billion specifically set aside for their benefit.

In particular, the Fund will focus on investing in businesses in the high-tech and pro-convergence industries, such as information and mobile technologies, healthcare, medical equipment and devices, and other industries favoring mergers and acquisitions (M&As) abroad. Furthermore, sub-level funds may be created to accommodate the investment needs and preferences of private-sector investors, such as leading technology companies.

Ⅲ

Evaluation of Government Financing for SMBs

1 Inefficient distribution of resources

1) Meager effect

The established literature to date holds the consensus that the current system of government financing programs in Korea has little beneficial impact on the management performance of SMBs. Gwak et al. (2004), for instance, has argued that there is no significant positive correlation between government financing and performance improvement. While the authors acknowledge that the absence of such correlation may be more a result of the idiosyncrasies of the SMBs receiving government support and the changes in the macroeconomic environment facing KOSDAQ-listed businesses, they also point out that such absence may reflect the failure, on the part of the Korean government and financial institutions, to follow thorough criteria when selecting the SMBs to receive support or following up with them afterward. Kim (2004) does provide limited empirical evidence on how government financing may be helpful, especially for early-stage SMBs. However, Kim's argument is that government financing, if it must be provided, is better directed toward earlier-stage businesses than later-stage ones, and not that government financing must be maintained at all costs for SMBs in all phases of the growth cycle.

2) Repercussions of credit guarantees in general

Shin and Park (2010) provide empirical evidence that the government's credit guarantee programs in fact harm the profitability and growth prospects of businesses. More specifically, they demonstrate that credit guarantees bear a negative correlation to the return on asset (ROA) and return on sales (ROS) rates of SMBs at a significance level of one percent. The ROA and ROS rates were used as measures of profitability. Credit guarantees, moreover, also bear a negative correlation, at a significance level of one percent, to the growth rate of sales (GRS) and the growth rate of value-added (GRV), which are two measures of growth potential. In their analysis of how the changes in the absolute amounts of credit guarantees, resulting from business cycle stabilization policies, affect SMBs, the authors find that the negative effect of credit guarantees grew all the stronger in response to absolute increases in the amount of credit guarantees, but that the effect of such guarantees became positive when the amount of credit guarantees decreased. Interestingly, while the absolute amount of credit guarantees was generally inversely related to the financial performance of businesses, the duration of credit guarantees bore a positive correlation to both the growth potential and operating profit ratios. Finally, credit guarantees were found to be most effective with respect to prospective service enterprises.

The conclusion on the effect of credit guarantees on the profitability of SMBs remains ambiguous, particularly when endogeneity is taken into account. Ahn, Woo, and Jeong (2011) begin their analysis of the effect of credit guarantees on the financial performance of SMBs with the assumption that technological credit guarantees are endogenous, i.e., built into business structures by the choice of business owners. If we assume technological guarantees to be exogenous, the profitability of benefitting businesses begins to fall below that of businesses not benefitting as such. Once we begin to consider endogeneity explicitly, however, the statistical significance may decrease a little and results may vary along different performance indicators, but the effect of credit guarantees becomes positive when profitability is achieved. As for business stability, however, technological guarantees serve to significantly undermine the stability of benefitting businesses, without showing any evidence of possible improvement.

3) Need to concentrate government financing on innovative and early-stage SMBs

Some studies do show that government financing may be best directed toward innovative and early-stage SMBs. Kang and Jeong (2006), for instance, has shown that the increased scale of government loans in the aftermath of the Asian Financial Crisis played a central role in enhancing the profitability and growth potential of innovative SMBs in Korea. In particular, the effect was more prominent with respect to innovative SMBs that were relatively younger. Government financing, including loans and reduced interest rates, for SMBs without innovative technologies was not as effective. The authors also argue that expanding the pool of available loans would be more helpful for innovative SMBs than lowering interest rates, and that the amounts of financial support should vary according to the business sizes concerned. Cho and Yang (2008) distinguishes the effects of government financing between the primary effect (of direct grants) and the secondary effect (on the improvement of the management performance of the supported businesses). For early-stage businesses, the primary effect was 1.3 times greater than that of mature businesses. Furthermore, the smaller and younger the business is, the greater the secondary effect.

Other analyses of different types of government financing programs also conclude that government support is best concentrated on early-stage SMBs. The Dongguk University Industrial-Academic Cooperation Group (2011) divides government financing into diverse categories, such as funds for early-stage businesses, funds for new growth, emergency working funds, and funds for business change, and measured their effects using indicators of profitability, growth potential, and stability. Government financing programs for early-stage businesses were particularly effective at improving profitability, i.e., the net operating profit rate on total assets, but not as effective in terms of growth potential and stability. Financing programs for New Growth Engine businesses improved all the indicators with statistical significance, but were most effective in terms of mid- to long-term profitability. Emergency working capital was particularly helpful with respect to profitability and growth potential, and its effect grew even stronger when the survival prospects of the businesses were

taken into account. Funds for business change, on the other hand, failed to show any statistically significant effects.

4) Failure to spot investment opportunities in prospective early-stage SMBs[5),6)]

Using their specialized knowledge of technology and management, startup investment companies are believed to pursue high returns by investing in relatively high-risk startup businesses. The expertise of these investment companies, as manifested in a series of reviews carried out to identify candidate businesses and collect returns, therefore serves as a direct indicator of the likelihood of their success. However, the absence of specialized training in startup investment and the dearth of experience and expertise prevent startup investment companies in Korea from spotting and investing in prospective early-stage SMBs. These investors tend to be rather passive in the face of high-risk, high-return investment opportunities.

According to the KVCA (2014) and its analysis of startup investment companies, investment companies in Korea tend to prefer investing in SMBs that are relatively older. Only 16.7 percent of startup investments go toward startups younger than three years old in Korea, which is far lower than the 31.8 percent in America (Lee, 2014). In other words, startup investment companies in Korea prefer to reinvest their returns in old businesses rather than finding and fostering new ones. They thus fail to fulfill their original purpose of identifying and fostering startups with great growth potential.

5) Increasing conservatism in SMB investment[7),8)]

In his analysis of SMBs newly certified as innovative technology businesses each year, Kim (2011) shows that the number of such certified businesses has been on a steady rise since 2003, while the number of businesses

5) Lee (2003)
6) Heo (2009)
7) Kim (2012)
8) Kim (2011)

able to take out new loans on the basis of their certification has been steadily decreasing since the late 2000s. In other words, investment companies now prefer to invest in larger, more stable later-stage SMBs than early-stage ones. This growing conservative streak in SMB investment has been especially noticeable since the collapse of the IT bubble in 2001, and is expected to undermine and discourage entrepreneurship in Korea in the long run by making it difficult for risk-taking entrepreneurs to find and acquire the financial resources they need.

6) Absence of far-sightedness

According to the empirical analysis by Son and Heo (2012), investment companies now tend more and more to invest in businesses with greater asset values, while R&D records and financial performance are consequently regarded with less importance. In other words, investors in Korea fixate on the tangible and short-term values of businesses rather than envisioning intangible and long-term results. SMBs with active R&D records and improving financial performance are, in fact, very likely to succeed. However, startup investment companies in Korea tend to underestimate the importance of these factors and concentrate their investments on businesses irrespective of these considerations. The empirical analysis indicates that much of the startup investment industry in Korea is excessively focused on near-sighted appraisals of tangible values.

2 Absence of an effective governance structure[9]

1) Lack of diversity in contracts: technology financing credit guarantees[10]

We may understand the term “technology financing” as encompassing all forms of financial support for the process of technological innovation, from

9) The problem of governance encompasses both the structure of the current government financing programs and the governance of businesses themselves. The former, however, is the more serious problem as it could engender and feed inefficient distribution of resources

10) Lim et al. (2013)

R&D and startup to commercialization. Credit guarantees, by far, make up the most prevalent form of technology financing in Korea. From 2000 to 2012, the aggregate amount of technology financing maintained an annual growth rate of 3.2 percent every year, but suddenly peaked at 15.6 percent in 2013, reaching a total of KRW 26 trillion (Roh, 2014). Of this, KRW 19.4 trillion (74.6 percent) was spent on providing credit guarantees.

Credit guarantees, however, are instruments fundamentally limited in their ability to aid technology startups, which are, by their very nature, high-risk and high-return. Innumerable technology startups are created every year. The vast majority of them fails, but a few go on to achieve remarkable successes.

We therefore need new and more diverse ways of financing these high-risk, high-return technology startups that allow us to compensate for the losses of the majority with the gains of the minority. Credit guarantees, however, fail to provide such upside incentives and merely provide downside guarantees, thus encouraging the growing conservatism in SMB financing and discouraging risk-taking investment decisions that may compromise financial stability.

Israel adopted the Inbal program, akin to credit guarantees in Korea today, but the program ultimately floundered. The main reason behind its failure was that the program was inherently unable to accommodate the high-risk, high-return nature of technology startups. Instead, the Israeli government introduced the Yozma program, which focuses on providing incentives for success.

2) Lack of thorough follow-up

Jeong (2001) argues that the key function of startup investment companies is to simultaneously compensate for the asymmetry of information and solve the principal-agent problem so as to enable innovative technology businesses to overcome their financial difficulties. Therefore, in order to allow these businesses to attract increasing amounts of investment, the government needs to introduce monitoring and regulation systems that minimize the risk of moral hazard.

Lee (2011) notes that the startup investment market in Korea tends to provide only one-off investments of large sums of money and refuses to monitor and follow up with the management practices of invested businesses after the

fact. Investment companies in the United States and elsewhere, however, make phase-by-phase investment decisions based on careful monitoring and follow-up to determine whether invested businesses are fulfilling the goals and targets set out in their plans and whether the business owners are acting in good faith. The Korean practice of one-off investments is in no way good for risk management purposes. Phase-by-phase investment, on the other hand, helps investors minimize the risks inherent in market changes, technological trends, and the idiosyncrasies of entrepreneurs. It is indeed curious why the startup investment market in Korea refuses to establish and implement a system of thorough monitoring following investment.

Moreover, in Korea, there is also a dearth of measures intended to provide assistance for startups and SMBs lacking management skills and resources. The United States, on the other hand, provides advice and consultation via diverse channels on such varied subjects as management strategies, budget preparations, staffing, and information gathering. McCathery and Vermeulen (2010) has demonstrated in case studies that, in addition to financing, assistance in project application and R&D processes, networking, and M&A and help with technology commercialization are necessary to ensure the successful growth of the invested businesses. Startup investment has a short history in Korea, and there are few seasoned experts in the field. Therefore, investment companies almost never intervene in the management practices of the businesses in which they invest. According to the Korea Venture Business Association (2013), 82.2 percent of businesses participating in a poll on startup investment answered that investors play "few roles other than making the financial investment," and only 17.8 percent answered that investors "play certain roles in their management."

With accumulating experience and knowledge, the startup investment market in Korea will need to consider and adopt more advanced investment systems and practices in the future.

3) Lack of guarantee for returns

Park (2013) points out that the biggest problem facing the startup investment market in Korea is the conspicuous absence of secondary markets serving to ensure returns on investment. These secondary markets of IPOs,

M&As, and other financial means accompanying startup or angel investment markets are crucial to ensuring the advancement and growth of the startup investment markets in general.

As of March 2014, 75 percent of American startup investment companies collected back their investments via M&As, while only 0.9 percent of their Korean counterparts did the same (Lee, 2014). As it takes upwards of 10 years for SMBs in Korea to progress from their opening to their respective IPOs on the KOSDAQ market, angel and startup investors are forced to make long-term investments. That is why we need to develop and foster a secondary market that enables these investors to collect returns before IPOs on the KOSDAQ.

Given the high level of premiums attached to management rights and the negative perception of M&As as hostile takeovers in Korea, it is extremely difficult to develop and promote M&As and other secondary means to investment, making it nearly impossible for angel and startup investors to collect back their investments via M&As (Gu, 2007). In Korea, angel and startup investors tend to invest in SMBs by acquiring and trading business equity shares, without directly affecting entrepreneurs or their businesses. These transactions, in turn, serve to block exchanges of sufficient information on the businesses being invested in.

3 Governmental meddling and redundancy

A. Government-led outward growth of the investment market

In Korea, SMB- and investment-related laws and programs have been developed and adopted by the government, which is in stark contrast to the United States, where startup investment has evolved spontaneously and voluntarily according to the supply and demand balance. In Korea, the government has almost single-handedly determined the supply and distribution of startup investment funds. One result of this is that the number of startups has been steadily growing since 2003, causing a noticeable quantitative growth in the scale of investment made in those businesses, reaching well above KRW

1 trillion each year since 2010 (Kim, 2014). The government and the public sector are major startup investors in Korea. According to the KVCA's analysis of different types of startup investors in Korea (2013), the government and related agencies accounted for 44 percent of all startup investment in the country, with little to no participation from banks, insurance companies, pension funds, and institutional investors on the financial market (KB Financial Group Management Research Institute, 2014). The incumbent Park Geun-hye administration's plan for startups, which is part of its creative economy strategy, provides a good example of how extensive the government's influence is in this regard. Since the announcement of the plan, the amount of startup investment in Korea has grown to KRW 1.3845 trillion, a 12.3 percent increase from the previous year,[11] while the number of newly created startups in the first quarter of 2014 reached an unprecedented high. Nevertheless, exports from startups have been in steady decline,[12] and the returns on investment and reinvestment remain far less frequent than desired.[13]

Heo (2009) points out the following problems with the rapid outward growth of startup investment in Korea under the government's patronage. First, governmental intervention makes it impossible for startup investment to occur according to market principles, while breeding moral hazard in each step of the investment process. The result is a culture of inefficiency throughout the entire national economy. Second, excessive and unnecessary confusion persists in the market, as Korean law limits the range of businesses in which startup investment companies and new technology financing companies may invest and places different requirements on different types of investment companies. Korean law divides startup investment companies into two types: one, startup investment companies to be registered with the SMBA according to the Support for Small and Medium Enterprise Establishment Act, and the other, new technology financing companies to be registered with the FSS according to the Specialized

11) *Money Today,* January 21, 2014.

12) The MSIP and the Korea International Trade Association (KITA) announced that Korean technology SMBs, together, exported goods worth a total of USD 15.247 billion last year, a 13.9 percent reduction from the USD 17.77 billion of the previous year (*Yonhap News*, May 22, 2014)

13) *Asia Economics*, May 23, 2014.

Credit Finance Business Act. The two types differ little and share much in common, particularly the fact that they both focus on investing in young, prospective businesses intent on commercializing new and innovative technologies. However, the difference in the authorities to which they are required to report and the different channels of financing they are permitted to use may cause unnecessary gaps between the two types of companies in terms of competitiveness, thus distorting the investment market (Lee, 2003). Third, governmental leadership has also sapped private investment companies of their ability to survive and grow. Although the scale of startup investment has been growing at an astonishing pace over the last decade, much of this growth reflects increases in direct government financing rather than any substantial growth in private and voluntary startup investment funds.

Son (2013) argues that government financing programs that contradict the market should be abolished, while new programs may be introduced for businesses prone to market failure. He criticizes that the majority of government financing programs persists in Korea due to bureaucratic inertia rather than any proven efficiency. Although the Korean government has had to play a leading role in policymaking, finance, and the growth of the real economy, the Korean economy has grown and advanced so much over the last few decades that it is now capable of handling its own growth and restructuring. Policymakers, therefore, need to adjust and tailor their financing programs accordingly.

B. Excessive supply of government financing

Son (2013) also points out that the rate of increase in government financing has slowed down somewhat in recent years, but that it still remains well above the rate of increase in the nominal GDP. Likewise, the share of government financing in the nominal GDP continues to grow. This means that the supply of government financing has been increasing more rapidly than the growth of Korea's real economy. If we use the rate of increase in the nominal GDP as the guideline for deciding the rates of increase in any fiscal project, the rate of increase in government financing will decrease even further. We may solve this excessive supply problem by eliminating overlapping or redundant programs from various government financing agencies.

C. Long-term access to the Venture Company Certification Program and long-term decline in SMB growth[14)]

The Korean government launched the Venture Company Certification Program (VCCP) in 1998, certifying SMBs receiving venture capital and startup investment support as "venture companies." Once thus certified, SMBs gain access to a wide range of privileges and benefits, including assistance with business openings, tax exemptions, financing, human resources, worksite locations, patent processing, marketing, and others.[15)] According to Kim (2011), SMBs certified as "venture companies" use the benefits afforded by the program for four years on average. Considering that it takes three to five years for a typical to startup to reach a phase of stability, the duration of access to the benefits of the VCCP is not surprising. Nevertheless, Kim (2011) also shows that there are over 1,300 companies that remain on the list of venture companies for over a decade, thus suggesting that the program may also encourage a certain degree of complacency in businesses.[16)] The diverse and numerous privileges available under the program may in fact induce businesses to maintain their venture company status, even going so far as paying additional costs of certification. This, in turn, may compromise their growth prospects in the long run. Therefore, policymakers need to revisit and determine whether the VCCP is actually serving as an obstacle to the growth of SMBs in Korea.

D. Overlapping and redundancy of government financing programs

According to Son (2013), the current government financing structure in Korea has become what it is today by adding, haphazardly, individual programs to an overarching frame that was established a long time ago in Korea's decade of development. The structure is thus resistant to new policy objectives and changes, and the presence of overlapping programs in multiple departments

14) Kim (2011)

15) Venture-In, www.venturein.or.kr.

16) Refers to venture companies and R&D businesses that were registered in the early days of the VCCP

hardly abates the problem, particularly as the lack of interdepartmental communication and coordination perpetuates the redundancy of government tasks and support. Furthermore, these programs tend to concentrate their support on well-performing businesses and, therefore, serve to perpetuate inefficiency.

4 Quantitative analysis of government financing programs for SMBs

A. Opinion poll sampling

We performed an opinion poll, asking participants to assess the current status and effectiveness of the Korean government's financing programs for SMBs. Conducted by an external survey agency named Ipsos Korea, the opinion poll surveyed a total of 428 businesses,[17] including 82 recipients of startup investment; 236 recipients of technology appraisal-based credit guarantees; 30 recipients of technology appraisal-based loans; 65 businesses specializing in R&D; and 15 venture companies that have generated over KRW 100 billion in sales.

〈Table III-1〉 **Distribution of SMBs by Type of Government Financing Received**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Total	428	82 (19.16%)	236 (55.14%)	30 (7.01%)	65 (15.19%)	15 (3.50%)

Note: For the specific definition of each group, see https://www.venturein.or.kr/venturein/petition/C13000.jsp.

17) The subjects of the analysis are SMBs that have, in a broad sense, benefitted from government financing, whether directly or indirectly

B. Basic statistics

<Table III-2> shows the distribution of the 428 surveyed businesses by year of foundation.

The majority of surveyed SMBs were founded in 2000 and afterward, with the number established in 2000 being the greatest at 49. The number of businesses founded each year after 2000 remained consistently above 15, before dropping suddenly to four in 2013.

<Table III-2> shows the distribution of SMBs in different phases of the growth cycle. The biggest group by far is that of mature businesses, making up 36.58 percent of all surveyed companies, followed by the advanced-growing businesses, whose market is expanding and sales have begun to grow noticeably, at 33.25 percent; and the early-growing businesses, which have launched their products and services on the market and begun to generate sales, at 24.47 percent. Others groups include startups, which are still developing their products and services, at 4.51 percent, and declining businesses, whose sales have begun to plummet and whose growth has stalled, at 1.19 percent. Now, early-growing businesses attracted the most startup investment at 38.75 percent, followed by advanced-growing, mature, startup, and declining businesses, in descending order, at 31.25 percent, 18.75 percent, 11.25 percent, and zero percent, respectively. Technical appraisal-based credit guarantees, on the other hand, favored advanced-growing businesses most, at 37.93 percent, and mature businesses almost equally, at 37.50 percent. Early-growing, startup, and declining businesses followed in the order of preference, claiming 20.26 percent, 3.02 percent, and 1.29 percent, respectively, of technology appraisal-based credit guarantees. However, 40.00 percent of technology appraisal-based loans went to mature businesses and another 36.6 percent to advanced-growing businesses, with the remaining 23.33 percent concentrated in early-growing businesses and almost no loans showing for both startup and declining businesses. Almost half (46.88 percent) of all R&D support went to mature businesses, and 26.56 percent, 21.88 percent, 3.13 percent, and 1.56 percent, respectively, to early-growing, advanced-growing, startup, and declining businesses, respectively. Mature businesses made up the vast majority of support recipients for venture companies with sales over KRW 100 billion, at 66.67 percent, while the rest of the

〈Table III-2〉 **Distribution of SMBs by Year of Foundation**

Year	Total	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Total	428	82	236	30	65	15
1965	1(0.23%)	0(0.00%)	0(0.00%)	0(0.00%)	0 (0.00%)	1 (6.67%)
1976	2(0.47%)	0(0.00%)	0(0.00%)	0(0.00%)	1 (1.54%)	1 (6.67%)
1977	2(0.47%)	0(0.00%)	0(0.00%)	0(0.00%)	0 (0.00%)	2 (13.33%)
1979	1(0.23%)	0(0.00%)	1(0.42%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1981	1(0.23%)	0(0.00%)	1(0.42%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1985	1(0.23%)	0(0.00%)	0(0.00%)	0(0.00%)	0 (0.00%)	1 (6.67%)
1987	2(0.47%)	1(1.22%)	1(0.42%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1988	1(0.23%)	1(1.22%)	0(0.00%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1989	2(0.47%)	1(1.22%)	1(0.42%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1990	3(0.70%)	1(1.22%)	1(0.42%)	0(0.00%)	1 (1.54%)	0 (0.00%)
1991	3(0.70%)	1(1.22%)	1(0.42%)	1(3.33%)	0 (0.00%)	0 (0.00%)
1992	2(0.47%)	1(1.22%)	0(0.00%)	0(0.00%)	0 (0.00%)	1 (6.67%)
1993	1(0.23%)	0(0.00%)	1(0.42%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1994	6(1.40%)	1(1.22%)	3(1.27%)	0(0.00%)	1 (1.54%)	1 (6.67%)
1995	11(2.57%)	3(3.66%)	7(2.97%)	0(0.00%)	0 (0.00%)	1 (6.67%)
1996	4(0.93%)	1(1.22%)	3(1.27%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1997	6(1.40%)	3(3.66%)	3(1.27%)	0(0.00%)	0 (0.00%)	0 (0.00%)
1998	17(3.97%)	2(2.44%)	5(2.12%)	1(3.33%)	7 (10.77%)	2 (13.33%)
1999	17(3.97%)	3(3.66%)	8(3.39%)	1(3.33%)	5 (7.69%)	0 (0.00%)
2000	49(11.45%)	16(19.51%)	20(8.47%)	1(3.33%)	11 (16.92%)	1 (6.67%)
2001	34(7.94%)	5(6.10%)	18(7.63%)	1(3.33%)	9 (13.85%)	1 (6.67%)
2002	29(6.78%)	6(7.32%)	18(7.63%)	2(6.67%)	3 (4.62%)	0 (0.00%)
2003	16(3.74%)	3(3.66%)	8(3.39%)	2(6.67%)	2 (3.08%)	1 (6.67%)
2004	25(5.84%)	5(6.10%)	16(6.78%)	0(0.00%)	4 (6.15%)	0 (0.00%)
2005	32(7.48%)	3(3.66%)	25(10.59%)	0(0.00%)	4 (6.15%)	0 (0.00%)
2006	22(5.14%)	4(4.88%)	13(5.51%)	3(10.00%)	2 (3.08%)	0 (0.00%)
2007	31(7.24%)	1(1.22%)	22(9.32%)	6(20.00%)	2 (3.08%)	0 (0.00%)
2008	19(4.44%)	4(4.88%)	10(4.24%)	3(10.00%)	2 (3.08%)	0 (0.00%)
2009	21(4.91%)	1(1.22%)	15(6.36%)	1(3.33%)	3 (4.62%)	1 (6.67%)
2010	24(5.61%)	3(3.66%)	15(6.36%)	1(3.33%)	4 (6.15%)	1 (6.67%)
2011	16(3.74%)	4(4.88%)	8(3.39%)	3(10.00%)	1 (1.54%)	0 (0.00%)
2012	23(5.37%)	7(8.54%)	9(3.81%)	4(13.33%)	3 (4.62%)	0 (0.00%)
2013	4(0.93%)	1(1.22%)	3(1.27%)	0(0.00%)	0 (0.00%)	0 (0.00%)

businesses—startup, early-growing, and declining ones—each claimed 6.67 percent, except advanced-growing businesses with 13.33 percent. While declining businesses made up a greater share of support recipients among the companies generating over KRW 100 billion, mature businesses made up the overwhelming majority of recipients. In other words, the share of mature businesses as recipients increases as we move from startup investment to technology appraisal-based credit guarantees, and onward to technology appraisal-based loans, R&D support, and support for venture companies with sales over KRW 100 billion.

As Table III-4 shows, 44.71 percent of the surveyed businesses arranged their production so that they manufactured only some components of their products and outsourced the rest. However, businesses that manufacture all their products also make up a sizable minority with 36.47 percent, while non-manufacturing businesses made up 11.53 percent and all-outsourcing ones, 7.29 percent. More specifically, 58 percent of businesses receiving startup investment support manufactured all their products; 31 percent, part manufacturing and part outsourcing; 6.17 percent, non-manufacturing; and 4.94

〈Table III-3〉 **Distribution of SMBs by Growth Phase**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Startup	19 (4.51%)	9 (11.25%)	7 (3.02%)	0 (0%)	2 (3.13%)	1 (6.67%)
Early / growing	103 (24.47%)	31 (38.75%)	47 (20.26%)	7 (23.33%)	17 (26.56%)	1 (6.67%)
Advanced / growing	140 (33.25%)	25(31.25%)	88 (37.93%)	11 (36.67%)	14 (21.88%)	2 (13.33%)
Mature	154 (36.58%)	15 (18.75%)	87 (37.50%)	12 (40.00%)	30 (46.88%)	10 (66.67%)
Declining	5 (1.19%)	0 (0%)	3 (1.29%)	0 (0%)	1 (1.56%)	1 (6.67%)
Total	421	80	232	30	64	15

〈Table III-4〉 **Manufacturing vs. Non-manufacturing**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal –based loans	R&D	Sales over KRW 100 bn.
All manufacturing	155 (36.47%)	47 (58.02%)	73 (31.20%)	14 (46.67%)	17 (26.15%)	4 (26.67%)
Part manufacturing, part outsourcing	190 (44.71%)	25 (30.86%)	114 (48.72%)	10 (33.33%)	33 (50.77%)	8 (53.33%)
All outsourcing	31 (7.29%)	4(4.94%)	18 (7.69%)	3 (10%)	3 (4.62%)	3 (20%)
Non–manufacturing	49 (11.53%)	5 (6.17%)	29 (12.39%)	3 (10%)	12 (18.46%)	0 (0%)
Total	425	81	234	30	65	15

percent, outsourcing all of their products. Of the businesses with technology appraisal-based credit guarantees, 49 percent were part-manufacturing, part-outsourcing companies; 31 percent, all-manufacturing; 12 percent, non-manufacturing; and 7.69 percent, all outsourcing. Furthermore, of the businesses with technology appraisal-based loans, 47 percent were all-manufacturing companies; 33 percent, part-manufacturing and part-outsourcing; 10 percent, all outsourcing; and 10 percent, non-manufacturing. Of the majority of businesses receiving R&D support, 51 percent, were part-manufacturing and part-outsourcing companies, while 26 percent, 18 percent, and 5 percent were all-manufacturing, non-manufacturing, and all-outsourcing companies, respectively. Finally, 53 percent of all businesses receiving support for venture companies with sales over KRW 100 billion were part-manufacturing and part-outsourcing firms, and none were non-manufacturing companies. Four of these businesses (27 percent) were all-manufacturing companies and three (20 percent) were all-outsourcing.

Direct exporters refer to businesses that export finished products abroad, while indirect exporters are those that export either parts or intermediate goods for processing abroad. There are also businesses that export finished products and intermediate goods alike, and others that rely solely on the domestic market

without exporting anything. As Table III-5 indicates, 172, or 40.47 percent, of the 425 surveyed companies were non-exporting businesses, followed by direct exporters, mixed exporters, and indirect exporters, making up 32 percent, 16 percent, and 11 percent of all surveyed companies, respectively. More specifically, 53 percent of businesses receiving startup investment support were direct exporters, followed by non-exporting ones (21 percent), indirect exporters (19 percent), and mixed exporters (seven percent). Of businesses receiving technology appraisal-based credit guarantees, 118 of the total of 234, or 50.43 percent, were non-exporting businesses, followed by direct exporters (24 ercent), mixed exporters (17 percent), and indirect exporters (eight percent).Of businesses with technology appraisal-based loans, direct exporters, non-exporters, indirect exporters, and mixed exporters made up 30, 30, 20, and 20 percent, respectively. Non-exporters, direct exporters, mixed exporters, and indirect exporters made up 42 percent, 38 percent, 11 percent, and eight percent of businesses receiving R&D support. Finally, among venture companies with sales over KRW 100 billion, mixed exporters made up 11 of 15 businesses, or 73 percent, followed by direct exporters (13 percent), indirect exporters (6.67 percent), and non-exporters (6.67 percent).

〈Table III-5〉 **Exporting vs. Non-exporting**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Direct exporters	136 (32%)	43 (53.09%)	57 (24.36%)	9 (30%)	25 (38.46%)	2 (13.33%)
Indirect exporters	45 (10.59%)	15 (18.52%)	18 (7.69%)	6 (20%)	5 (7.69%)	1 (6.67%)
Mixed exporters	70 (16.47%)	6 (7.41%)	40 (17.09%)	6 (20%)	7 (10.77%)	11 (73.33%)
Non–exporting businesses	172 (40.47%)	17 (20.99%)	118 (50.43%)	9 (30%)	27 (41.54%)	1 (6.67%)
Total	425	81	234	30	65	15

〈Table III-6〉 **Locations of Headquarters, Main Factories, or Research Labs (multiple answers allowed)**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Venture Promotion Zones	19 (4.30%)	3 (3.80%)	13 (5.24%)	0 (0%)	3 (4.41%)	0 (0%)
Techno Parks	93 (21.04%)	8 (10.13%)	71 (28.63%)	3 (9.38%)	11 (16.18%)	0 (0%)
Business Incubation Centers	5 (1.13%)	2 (2.53%)	0 (0%)	2 (6.25%)	1 (1.47%)	0 (0%)
Venture Clusters	7 (1.58%)	4 (5.06%)	1 (0.4%)	1 (3.13%)	1 (1.47%)	0 (0%)
Corporate Collaboration Zones	4 (0.90%)	0 (0%)	2 (0.81%)	0 (0%)	2 (2.94%)	0 (0%)
New Technology Innovation Zones	2 (0.45%)	1 (1.27%)	1 (0.40%)	0 (0%)	0 (0%)	0 (0%)
Apartment–type factories	112 (25.34%)	18 (22.78%)	74 (29.84%)	4 (12.5%)	15 (22.06%)	1 (6.67%)
National and local industrial clusters	74 (16.74%)	15 (18.99%)	33 (13.31%)	9 (28.13%)	12 (17.65%)	5 (33.33%)
Other	126 (28.51%)	28 (35.44%)	53 (21.37%)	13 (40.63%)	23 (33.82%)	9 (60%)
Total	442	79	248	32	68	15

A sizable minority of all the surveyed businesses—126 out of 442, or 28.51 percent—were located in either other areas <Table III-6>. The second-largest group was that of apartment-type factories, at 25.34 percent, followed by 21 percent located in so-called “techno parks.” There were no significant differences in the numbers of businesses located in business incubation centers, venture-promoting facilities, Corporate Collaboration Zones, and New Technology Startup Clusters. Let us now take a look at the location distribution of each type of business. The largest group—28 businesses, or 35 percent—of businesses

receiving startup investment support was located in regions classified as "Other." Another 18 businesses, or 23 percent, were apartment-type factories, while 15 were located in national and local industrial clusters and eight in techno parks. There was no business of this category located in a Corporate Collaboration Zone. Next, 74, or 29.84 percent, of businesses receiving technology appraisal-based credit guarantees were apartment-type factories, while another 71, or 28.63 percent, were located in techno parks. There were also 53 of these businesses located in national or local industrial clusters, but none were found in business incubation centers. Of the businesses with technology appraisal-based loans, 13, or 40.63 percent, were located in regions classified as "Other," while nine, or 28.13 percent, were found in national or local industrial clusters. There was no significant difference in the numbers of these businesses located elsewhere, and none of these businesses were found in either Corporate Collaboration Zones or New Technology Startup Clusters. Of the businesses receiving R&D support, 23, or 33.82 percent, were located in regions classified as "Other," while 15 were apartment-type factories; 12 were located in national or local industrial clusters; and 11 were in techno parks. None were found in New Technology Startup Clusters. Of the venture companies with sales over KRW 100 billion, nine out of 15, or 60 percent, were located in "Other" regions, while five, or 33 percent, were found in national or local industrial clusters, and one, or 6.67 percent, was an apartment-type factory. None of these businesses were found in any of the other locations types, such as the Venture Promotion Zones, techno parks, business incubation centers, venture cluster facilities, Corporate Collaboration Zones, or New Technology Startup Clusters. Aside from the exception of businesses with technology appraisal-based credit guarantees, businesses of all categories were most likely found at locations classified as "Other."

〈Table III-7〉 **Financial Characteristics**

As of the end of 2012								
		Capital	Liabilities	Assets	Sales	Operating income	Financial expenses	Net term income
Overall	Avg.	691,368.7	804,375.1	1,495,744	1,699,367	90,323.86	27,890.12	58,891.49
	SD	2,558,179	2,149,351	4,528,784	5,528,671	432,007.6	71,603.02	362,141.1
	Min.	−878,355	436.2	874.3	0	−717,653	0	−1,515,095
	Max.	41,751,374	26,248,721	68,000,095	87,825,980	6,650,151	685,496.6	5,191,526
Startup investment	Avg.	930,464.1	1,207,118	2,137,582	2,052,844	137,363.4	49,729.05	90,091.64
	SD	1,437,944	1,750,344	2,824,710	3,245,272	452,903.1	75,539.51	458,575.3
	Min.	−56,744.6	1,101.1	874.3	0	−493,847	0	−989,337
	Max.	7,903,167	7,342,092	11,950,043	14,963,663	3,093,402	351,478	3,262,944
Technology appraisal-based credit guarantees	Avg.	277,670.1	348,742.1	626,412.2	694,018.1	38,211.46	10,991.53	27,569.09
	SD	738,833.7	583,627.4	1,178,377	1,020,574	102,364.8	19,319.25	94,822.32
	Min.	−54,500	436.2	12,106.6	0	−300,803	0	−332,828
	Max.	6,975,309	5,880,764	9,248,657	6,631,827	814,586.5	212,478.6	894,700.6
Technology appraisal-based loans	Avg.	119,607	206,886.8	326,493.8	431,297.6	31,871.81	6,732,929	27,384.26
	SD	107,852.7	164,543	229,349.2	397,703.8	74,573.92	5,774,837	66,887.78
	Min.	−10,888.4	5,250	4,718.8	0	−44,912.4	0	−48,546.1
	Max.	527,583.2	740,710.4	955,571.9	1,679,533	362,872.3	19,864.6	330,606.4
R&D	Avg.	438,574.6	323,781.2	762,355.8	727,167.5	41,980.14	8,426.396	35,095.31
	SD	683,251	679,295.5	1,315,976	1,573,788	183,980.2	21,457.61	148,118
	Min.	5,430.6	1,278	14,347.4	6,918.6	−298,499	0	−317,003
	Max.	3,621,505	4,213,030	7,834,535	8,831,861	1,039,777	149,133.9	661,151.3
Sales over KRW 100 bn.	Avg.	7,857,663	8,666,765	16,524,428	21,407,290	941,317.1	287,850.7	528,756.2
	SD	10,459,218	6,171,011	16,196,204	19,106,366	1,773,345	166,712	1,469,600
	Min.	−878,355	1,717,197	2,290,822	10,591,560	−717,653	25,969.8	−1,515,095
	Max.	41,751,374	26,248,721	68,000,095	87,825,980	6,650,151	685,496.6	5,191,526

The balance sheets of the surveyed businesses, as of the end of 2012, show that each of these businesses, on average, held KRW 6.9 billion in capital, KRW 8.0 billion in liabilities, and KRW 14.9 billion in assets. Their statements of gains and losses also show that average sales, operating income, financial expenses, and net-term income for each business, on average, were KRW 16.9 billion, KRW 0.9 billion, KRW 0.27 billion, and KRW 0.588 billion, respectively. More specifically, businesses receiving startup investment support held KRW 9.3 billion in capital, KRW 12 billion in liabilities, and KRW 21.3 billion in assets each, on average. Their average sales amounted to KRW 20.5 billion; operating income, to KRW 1.3 billion; financial expenses, to KRW 0.49 billion; and net term income, to KRW 0.9 billion. Businesses with technology appraisal-based credit guarantees, on average, held KRW 2.7 billion in capital, KRW 3.4 billion in liabilities, and KRW 6.2 billion in assets each. And their average sales amounted to KRW 6.9 billion; operating income, to KRW 0.38 billion; financial expenses, to KRW 0.1 billion; and net term income, to KRW 0.27 billion. Businesses that have received technology appraisal-based loans, on average, held KRW 1.19 billion in capital, KRW 2.0 billion in liabilities, and KRW 3.2 billion in assets each. Their average sales amounted to KRW 4.3 billion; operating income, to KRW 0.31 billion; financial expenses, to KRW 0.06733 billion; and net term income to KRW 0.27 billion. Businesses receiving R&D support, on average, held KRW 4.3 billion in capital, KRW 3.2 billion in liabilities, and KRW 7.6 billion in assets each. Their average sales amounted to KRW 7.2 billion; operating income, to KRW 0.41 billion; financial expenses, to KRW 0.08426 billion; and net term income, to KRW 0.35 billion. Venture companies with sales over KRW 100 billion, on average, held KRW 78.5 billion in capital, KRW 86.6 billion in liabilities, and KRW 165.2 billion in assets each. Their average sales amounted to KRW 214 billion; operating income, to KRW 9.4 billion; financial expenses, to KRW 2.8 billion; and net term income, to KRW 5.2 billion.

〈Table III-8〉 **Financial Characteristics**

As of the end of 2013								
		Capital	Liabilities	Assets	Sales	Operating income	Financial expenses	Net term income
Overall	Avg.	799,692.3	952,604	1,752,296	1,947,002	91,232.04	27,892.83	50,251.47
	SD	2,766,505	2,382,314	4,897,559	6,151,922	390,317.4	68,446.89	361,979.9
	Min.	−1,320,180	1,423.9	5,901.1	0	−1,478,944	0	−1,880,466
	Max.	42,139,277	26,335,175	68,474,452	96,486,272	4,646,511	670,430.9	3,791,971
Startup investment	Avg.	1,192,955	1496,486	2,689,441	2,616,591	151,105.1	51,031.48	52,424.87
	SD	1,908,915	2272,161	3,624,818	4,055,502	682,669.2	78,138.08	615,989.9
	Min.	−798,601	1423.9	5,901.1	0	−784,265	0	−1,500,385
	Max.	8,379,512	11,583,811	14,619,510	18,196,325	4,646,511	3,843,92.4	3,791,971
Technology appraisal–based credit guarantees	Avg.	333,444.4	418,923.7	752,368.1	779,847.3	49,298.85	11,595.5	37,365.81
	SD	932,114.9	703,832.2	1,465,551	1,133,901	158,220.4	20,505.86	144,702.2
	Min.	−68,300	7,200	8,807.4	0	−331,026	0	−355,358
	Max.	1,038,6835	6,827,306	13,914,068	8,255,501	1,871,980	210,552.2	1,811,831
Technology appraisal–based loans	Avg.	157,230.6	302,109.7	459,340.3	590,887.7	43,388.11	8,471.614	36,895.16
	SD	156,375.3	323,831.3	451,139.9	566,635.2	75,126.74	6,614.461	59,971
	Min.	12,044.6	29,000.9	75,841.8	33,946.3	−13,082.5	681.5	−16,912.7
	Max.	811,974.2	1,507,298	2,319,272	2,458,013	356,851.1	28,690.5	284,391
R&D	Avg.	542,189.1	497,147.7	1,039,337	868,736.1	52,862.31	11,265.82	14,051.61
	SD	878,029.8	883,634.1	1,669,371	1,695,746	179,794	20,806.59	280,280.5
	Min.	10,068.5	2,314	20,997.9	9,826	−209,932	0	−1,400,611
	Max.	4,251,033	4,183,052	8,434,085	10,065,067	951,058.6	83,060.5	776,981.7
Sales over KRW 100 bn.	Avg.	7,944,254	8,963,702	16,907,957	21,949,222	642,426.7	248,887.9	356,752.9
	SD	10,619,791	6,444,173	16,420,433	21,275,467	982,646.6	167,220.3	1,012,307
	Min.	−1,320,180	1,145,349	1,639,417	10,940,165	−1,478,944	17,326.6	−1,880,466
	Max.	42,139,277	26,335,175	68,474,452	96,486,272	2,034,336	670,430.9	1,729,571

As <Table III-9> shows, as of the end of 2013, the surveyed businesses, on average, each held KRW 8.0 billion in capital, KRW 9.5 billion in liabilities, and KRW 17.5 billion in assets. Their average sales amounted to KRW 19.4 billion; operating income, to KRW 0.91 billion; financial expenses, to KRW 0.27 billion; and net term income to KRW 0.5 billion. More specifically, businesses receiving startup investment support, on average, each held KRW 11.9 billion in capital, KRW 14.9 billion in liabilities, and KRW 26.8 billion in assets. Their average sales amounted to KRW 26.1 billion; operating income, to KRW 1.5 billion; financial expenses, to KRW 0.51 billion; and net term income, to KRW 0.52 billion. Businesses with technology appraisal-based credit guarantees, on average, each held KRW 3.3 billion in capital, KRW 4.1 billion in liabilities, and KRW 7.5 billion in assets. Their average sales amounted to KRW 7.8 billion; operating income, to KRW 0.5 billion; financial expenses, to KRW 0.11 billion; and net term income, to KRW 0.37 billion. Businesses that have received technology appraisal-based loans, on average, each held KRW 1.5 billion in capital, KRW 3.0 billion in liabilities, and KRW 4.5 billion in assets. Their average sales amounted to KRW 5.9 billion; operating income, to KRW 0.43 billion; financial expenses, to KRW 0.08472 billion; and net term income, to KRW 0.36 billion. Businesses receiving R&D support, on average, each held KRW 5.4 billion in capital, KRW 4.9 billion in liabilities, and KRW 10.3 billion in assets. Their average operating income amounted to KRW 0.52 billion; financial expenses, to KRW 0.11 billion; and net term income, to KRW 0.14 billion. Finally, venture companies with sales over KRW 100 billion, on average, each held KRW 80 billion in capital, KRW 89 billion in liabilities, and KRW 169 billion in assets. Their average sales amounted to KRW 219.4 billion; operating income, to KRW 6.4 billion; financial expenses, to KRW 2.4 billion; and net term income, to KRW 3.5 billion.

As <Table III-9> shows, the average total number of employees per surveyed business, as of the end of 2012, was 47.3, of which 9.7, or 31 percent, were R&D-related employees on average. More specifically, businesses receiving startup investment support, on average, hired 71.2 employees in total each, about 24 more than the overall average. Of these, 11.8, or 34 percent, were R&D-related employees. Businesses with technology appraisal-based credit guarantees, on average, each hired 29.3 employees in total, 6.4, or 31 percent, of which were

〈Table III-9〉 **Employment Statistics**

As of the end of 2012				
		Total number of employees	Number of R&D employees	R&D staff ratio (%)
Overall	Avg.	47.3717	9.734536	31.58731
	SD	94.72239	27.11892	25.20726
	Min.	2	0	0
	Max.	1203	476	100
Startup investment	Avg.	71.22667	11.88235	34.37011
	SD	84.48614	15.73359	27.75623
	Min.	2	0	0
	Max.	391	78	100
Technology appraisal-based credit guarantees	Avg.	29.36207	6.486842	31.08874
	SD	36.23741	7.702325	25.62144
	Min.	2	0	0
	Max.	384	62	100
Technology appraisal-based loans	Avg.	19.06667	3.275862	23.8037
	SD	14.25369	5.250147	25.0085
	Min.	2	0	0
	Max.	57	28	80
R&D	Avg.	30.36923	10.93846	37.87167
	SD	32.18626	15.72009	19.13813
	Min.	4	0	0
	Max.	175	100	86
Sales over KRW 100 bn.	Avg.	336.9333	59.06667	12.96667
	SD	317.3901	120.0396	17.379
	Min.	32	0	0
	Max.	1203	476	67.9

〈Table III-10〉 **Employment Statistics**

As of the end of 2013				
		Total number of employees	Number of R&D employees	R&D staff ratio (%)
Overall	Avg.	49.04796	10.2803	31.82642
	SD	91.31029	27.37928	24.49283
	Min.	2	0	0
	Max.	975	469	100
Startup investment	Avg.	77.31944	14.41176	35.65408
	SD	96.11639	21.07337	26.68662
	Min.	3	0	0
	Max.	520	111	88.88889
Technology appraisal–based credit guarantees	Avg.	30.74153	6.800847	31.68608
	SD	39.62426	8.40001	25.0615
	Min.	2	0	0
	Max.	451	72	100
Technology appraisal–based loans	Avg.	22.62069	3.931034	21.188
	SD	16.9588	5.502798	22.00716
	Min.	4	0	0
	Max.	78	30	77
R&D	Avg.	31.66154	11.12308	36.68852
	SD	36.13226	17.45217	19.07094
	Min.	4	0	0
	Max.	185	110	85
Sales ove KRW 100 bn.	Avg.	327.8	59.6	13.18
	SD	268.5741	118.1844	16.75292
	Min.	30	0	0
	Max.	975	469	63.7

R&D-related employees. Businesses that have received technology appraisal-based loans, on average, each hired 19 employees in total, of which 3.2, or 23 percent, were R&D-related employees. Businesses receiving R&D support, on average, each hired 30.3 employees, of which 10.9, or 37 percent, were R&D-related employees. Finally, venture companies with sales over KRW 100 billion, on average, each hired 336.9 employees, 59, or 12.9 percent, of which were R&D-related employees.

As <Table III-10> shows, as of the end of 2013, all the surveyed businesses, on average, each hired 49 employees, of which 10.2, or 31 percent, were R&D-related employees. Specifically, businesses receiving startup investment support, on average, each hired 77.3 employees, of which 14.4, or 35 percent, were R&D-related employees. Businesses with technology appraisal-based credit guarantees, on average, each hired 30.7 employees, 6.8, or 31.6 percent, of which were R&D-related employees. Businesses that have received technology appraisal-based loans, on average, each hired 31.6 employees, 11.1, or 36.6 percent, of which were R&D-related employees. And finally, venture companies with sales over KRW 100 billion, on average, each hired 327.8 employees, 59.6, or 13.18 percent, of which were R&D-related employees.

C. Statistical analysis

1) Market status and business performance

<Table III-11> summarizes the growth of sales, employment, and operating income by business category. These three figures rose by 108 percent, 25 percent, and 221 percent, respectively, for businesses receiving startup investment support in 2013 alone. However, the figures merely reached eight percent, eight percent, and four percent, respectively, for businesses on credit guarantees and loans during the same period.

〈Table III-11〉 **Growth in Sales, Employment, and Operating Income by Business Category (2013)**

	Overall	Startup investment	Technology appraisal–based credit guarantees and loans	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Sales growth (%)	48% (365 businesses)	108%** (64 businesses)	8% (247 businesses)	36% (220 businesses)	60% (27 businesses)	27% (39 businesses)	3% (15 businesses)
Employment growth (%)	10% (411 businesses)	25%** (70 businesses)	8% (261 businesses)	4% (232 businesses)	36% (29 businesses)	2% (65 businesses)	4% (15 businesses)
Operating income growth (%)	47% (371 businesses)	221%*** (68 businesses)	4% (249 businesses)	–8% (222 businesses)	109% (27 businesses)	13% (39 businesses)	43% (15 businesses)

Note: The asterisks, *, **, and ***, indicate that the average figures for startup investment businesses and credit guarantee/loan businesses differ with significance levels of 10 percent, five percent, and one percent, respectively

〈Table III-12〉 **Growth in Sales, Employment, and Operating Income after Recent Investments, Credit Guarantees, or Loans (2013)**

	Overall	Recently invested	Recently given credit guarantees/loans
Sales growth (%)	27% (172 businesses)	49%* (33 businesses)	21% (139 businesses)
Employment growth (%)	11% (176 businesses)	6% (33 businesses)	12% (143 businesses)
Operating income growth (%)	135% (236 businesses)	454%* (35 businesses)	80% (201 businesses)

Note: The asterisks, *, **, and ***, indicate that the average figures for startup investment businesses and credit guarantee/loan businesses differ with significance levels of 10 percent, five percent, and one percent, respectively

As <Table III-12> shows, the sales, employment, and operating income of businesses that recently received investments grew by 49 percent, 6 percent, and 454 percent, respectively, in 2013. The sales, employment, and operating income of businesses that recently received credit guarantees or loans, on the other hand, managed to grow by 21 percent, 12 percent, and 80 percent, respectively, in the same year. This shows that investment made noticeably greater contributions to the growth of businesses' sales and operating income than did loans or credit guarantees.

As <Table III-13> shows, 27.45 percent of businesses receiving startup investment support were very optimistic about their prospects, as opposed to only 9.32 percent of businesses receiving technology appraisal-based credit guarantees and 10 percent of businesses with technology appraisal-based loans. If we convert these perceived future prospects of businesses using a five-point scale, with one indicating "very pessimistic" and five indicating "very optimistic," the average score of startup-investment companies is four, which is higher than the 3.72 of businesses receiving credit guarantees, with a significance level of one percent.

〈Table III-13〉 **Management Prospects by Business Category**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Very pessimistic	2 (0.50%)	0 (0.00%)	1 (0.42%)	0 (0.00%)	1 (1.54%)	0 (0.00%)
Pessimistic	17 (4.28%)	1 (1.96%)	12 (5.08%)	0 (0.00%)	2 (3.08%)	2 (13.33%)
Neither pessimistic nor optimistic	117 (29.47%)	12 (23.53%)	64 (27.12%)	8 (26.67%)	26 (40.00%)	7 (46.67%)
Optimistic	217 (54.66%)	24 (47.06%)	137 (58.05%)	19 (63.33%)	31 (47.69%)	6 (40.00%)
Very optimistic	44 (11.08%)	14 (27.45%)	22 (9.32%)	3 (10.00%)	5 (7.69%)	0 (0.00%)
Total	397	51	236	30	65	15

2) Ownership structure

<Table III-14> provides a summary of the variations in ownership structure by business category. Among all surveyed businesses, the founders held the greatest proportion of shares at 46.61 percent on average, followed by non-founder CEOs, at 13.14 percent; other employees, at 11.03 percent; individual investors, at 7.56 percent; CEOs' families and relatives, at 5.10 percent; founders' families and relatives, at 4.38 percent; others, at 4.20 percent; institutional investors, at 4.02 percent; and other companies, at 3.96 percent. More specifically, with respect to businesses receiving startup investment support, founders held 40.07 percent of shares on average; institutional investors, 17.36 percent; individual investors, 11.15 percent; other employees, 10.24 percent; other companies, 6.19 percent; others, 6.12 percent; founders' families and relatives, 4.23 percent; non-founder CEOs, 2.65 percent; and CEOs' families and relatives, 1.99 percent. A comparison of the average distribution of shareholder types to all surveyed businesses shows that institutional investors, including startup investors, hold a noticeably larger portion of shares issued by businesses receiving startup investment support. At businesses with technology appraisal-based credit guarantees, founders held 49.58 percent of shares on average; non-founder CEOs, 18.11 percent; other employees, 11.27 percent; CEOs' families and relatives, 5.47 percent; founders' families and relatives, 5.02 percent; individual investors, 4.93 percent; others, 2.59 percent; other companies, 2.06 percent; and institutional investors, 0.98 percent. Compared to the all-business average, founders hold significantly larger portions of shares in the case of these businesses than in other business categories. As for businesses with technology appraisal-based loans, founders held 54.98 percent of shares on average; non-founder CEOs, 12.77 percent; other employees, 10.45 percent, CEOs' families and relatives, 9.78 percent; individual investors, 6.14 percent; other companies, three percent; founders' families and relatives, 2.46 percent; others, 0.42 percent; and institutional investors, zero percent. As with companies receiving technology appraisal-based credit guarantees, founders of businesses with technology appraisal-based loans hold significantly larger proportions of shares than their counterparts in other business categories. Regarding businesses receiving R&D support, founders held 44.97 percent of shares on average; other

〈Table III-14〉 **Ownership structure**

		Founder	Non-founder CEO	Founder's family	CEO's family	Other employees	Institutional investors	Other companies	Individual investors	Others
Overall	Avg.	46.61	13.14	4.38	5.10	11.03	4.02	3.96	7.56	4.20
	SD	36.21	28.91	12.91	17.09	18.80	9.92	12.93	16.63	13.14
	Min.	0	0	0	0	0	0	0	0	0
	Max.	100	100	100	100	100	54	100	100	97.3
Startup investment	Avg.	40.07	2.65	4.23	1.99	10.24	17.36	6.19	11.15	6.12
	SD	24.74	9.55	9.58	6.43	12.13	14.19	16.08	14.94	14.33
	Min.	0	0	0	0	0	0	0	0	0
	Max.	100	57	55	31	40	54	100	56	70
Technology appraisal-based credit guarantees	Avg.	49.58	18.11	5.02	5.47	11.27	0.98	2.06	4.93	2.59
	SD	38.91	33.85	15.26	18.11	21.15	5.31	9.50	14.98	9.15
	Min.	0	0	0	0	0	0	0	0	0
	Max.	100	100	100	100	100	49	70	100	62
Technology appraisal-based loans	Avg.	54.98	12.77	2.46	9.78	10.45	0.00	3.00	6.14	0.42
	SD	42.37	28.72	7.24	28.32	16.79	0.00	11.49	14.65	1.87
	Min.	0	0	0	0	0	0	0	0	0
	Max.	100	100	30	100	50	0	50	60	10
R&D	Avg.	44.97	10.12	4.11	5.60	12.15	1.45	6.28	9.29	6.03
	SD	32.96	23.95	10.35	16.29	18.55	5.42	15.65	18.87	18.72
	Min.	0	0	0	0	0	0	0	0	0
	Max.	100	100	40	100	70	24	60	100	97
Sales over KRW 100 bn.	Avg.	25.27	4.80	0.09	4.14	7.79	0.27	13.73	25.06	18.84
	SD	34.52	11.26	0.36	11.45	14.29	1.03	22.12	27.40	26.84
	Min.	0	0	0	0	0	0	0	0	0
	Max.	99	34	1	41	48	4	77	83	80

employees, 12.15 percent; non-founder CEOs, 10.12 percent; individual investors, 9.29 percent; other companies, 6.28 percent; others, 6.03 percent; CEOs' families and relatives, 5.6 percent; founders' families and relatives, 4.11 percent; and institutional investors, 1.45 percent. As for venture companies with sales over KRW 100 billion, founders held 25.27 percent of shares on average; individual investors, 25.06 percent; others, 18.84 percent; other companies, 13.73 percent; other employees, 7.79 percent; non-founder CEOs, 4.8 percent; CEOs' families and relatives, 4.14 percent; institutional investors, 0.27 percent; and founders' families and relatives, 0.09 percent. Note that, in the case of these well-earning companies, founders hold far smaller proportions of shares than their counterparts in other business categories, while the shares of individual investors are much greater than the all-businesses average.

3) Government financing

〈Table III-15〉 **Distribution of Government Financing by Business Category and Program Type**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Fund of Funds	44 (10.35%)	41 (50.62%)	1 (0.43%)	0 (0.00%)	2 (3.08%)	0 (0.00%)
Direct loans and credit guarantees	300 (70.59%)	15 (18.52%)	221 (94.44%)	25 (83.33%)	31 (47.69%)	8 (53.33%)
Indirect loans and credit guarantees via Fund of Funds	25 (5.88%)	16 (19.75%)	6 (2.56%)	1 (3.33%)	1 (1.54%)	1 (6.67%)
None	59 (13.88%)	10 (12.35%)	8 (3.42%)	4 (13.33%)	31 (47.69%)	6 (40.00%)
Total	425 (100.00%)	81 (100.00%)	234 (100.00%)	30 (100.00%)	65 (100.00%)	15 (100.00%)

<Table III-15> shows the distribution of government financing programs to the surveyed businesses by business category and financing program type. Of all the surveyed businesses, 300, or 70.5 percent, responded that they received government loans and credit guarantees only, without any government investment. In the meantime, 59, or 13.8 percent, answered that they had received no government financing support. On the other hand, 44, or 10.3 percent, of the businesses answered that they had received Fund of Funds investment, while only 25, or 5.8 percent, answered that they had received all types of government financing support. More specifically, 41, or 50.6 percent, of the businesses receiving startup investment support answered that they had received Fund of Funds investment only, while 16, or 19.7 percent, had received all types of government financing support. Also, 15, or 18.5 percent, of these businesses had received loans and/or credit guarantees only, while 10, or 12.3 percent, had received no government financing support whatsoever. As for businesses with technology appraisal-based credit guarantees, 221, or 94.4 percent, reported having received loans and/or credit guarantees only, while eight, or 3.4 percent, had received no government financing support of any type. Six, or 2.5 percent, of these businesses reported having received all types of government financing support. Only one of these businesses, 0.4 percent, answered that it had received Fund of Funds investment only. As for businesses receiving technology appraisal-based loans, 25, or 83.3 percent, had received loans and/or credit guarantees only, while four, or 13.3 percent, had received no government financing support whatsoever. Only one, or 3.3 percent, answered that it had received government financing support of all types, and none of these businesses reported having received any Fund of Funds investment. As for businesses receiving R&D support, 31, or 47.6 percent, reported having received loans and/or credit guarantees only, while another 31, or 47.6 percent, reported having received no government financing at all. Only two of these businesses—three percent—received Fund of Funds investment only, while one business—1.5 percent—had received government financing of all types. As for venture companies with sales over KRW 100 billion, none reported having received Fund of Funds investment only, while eight, or 53.3 percent, answered that they had received loans and/or credit guarantees only. Six, or 40 percent, of these companies reported that they had received no government financing at all, while

only one company, or 6.6 percent, answered that it had received government financing support of all types.

〈Table III-16〉 **Fund of Funds Investment (including Startup Investment) Distribution by Year**

Year of investment	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
2000	4	3	0	0	1	0
2001	3	3	0	0	0	0
2002	2	2	0	0	0	0
2003	2	1	0	0	0	1
2005	1	1	0	0	0	0
2006	3	3	0	0	0	0
2007	2	2	0	0	0	0
2008	6	5	0	0	1	0
2009	2	2	0	0	0	0
2010	5	4	1	0	0	0
2011	9	7	1	1	0	0
2012	16	13	2	0	1	0
2013	9	9	0	0	0	0
2014	4	2	2	0	0	0
Total	68	57	6	1	3	1

〈Table III-17〉 **Financial and Employment Status in the Year Preceding Government Investment**

Year of investment		Preceding year's balance sheet			Preceding year's statement of income and losses				Preceding year's employment		
		Capital	Liabilities	Assets	Sales	Operating income	Financial expenses	Net term income	Total employees	R&D employees	R&D employees' share (%)
2000	Avg.								9.00 (2)	5.50 (2)	75.00 (2)
	SD								7.07	2.12	35.36
	Min.								4	4	50
	Max.								14	7	100
2001	Avg.	90,700 (1)	46,700 (1)	137,400 (1)	606,800 (1)	63,900 (1)	1,400 (1)	47,300 (1)			
2002	Avg.	162,200 (1)	485,400 (1)	647,600 (1)	719,500 (1)	79,000 (1)	33,200 (1)	38,000 (1)	22 (2)	0 (1)	0 (1)
	SD								25.5		
	Min.								4	0	0
	Max.								40	0	0
2003	Avg.	19,900 (1)	135,700 (1)	155,600 (1)	21,500 (1)	−53,800 (1)	6,400 (1)	−65,500 (1)	104 (2)	8.5 (2)	37.5 (2)
	SD								132.9361	2.12132	45.96194
	Min.								10	7	5
	Max.								198	10	70
2005	Avg.	471,098 (1)	652,544 (1)	1,123,643 (1)	1,978,966 (1)	150,491 (1)	28,975 (1)	160,532 (1)	60 (1)	(0)	(0)
2006	Avg.	193,315 (3)	96,614 (3)	289,929 (3)	268,863 (3)	−5,230 (3)	9,921 (2)	−8,198 (3)	22 (2)	(0)	(0)
	SD	172,204	79,124	239,464	377,860	69,476	7,324	78,247	21		
	Min.	48,300	5,600	53,900	0	−81,700	4,742	−96,700	7	0	0
	Max.	383,645	149,043	532,687	700,890	54,009	15,100	51,805	36	0	0
2007	Avg.	77,437 (2)	104,054 (2)	181,491 (2)	175901 (2)	25,170 (2)	5,267 (2)	20,058 (2)	15 (2)	3 (1)	50 (1)
	SD	83,415	80,227	163,641	168,050	30,443	4,977	10,726	13		
	Min.	18,454	47,325	65,779	5,7072	3,643	1,748	12,473	6	3	50
	Max.	136,420	160,783	297,203	294,730	46,696	8,786	27,642	24	3	50
2008	Avg.	179,304 (6)	528,173 (6)	707,477 (6)	729,981 (6)	−2,749 (6)	17,923 (6)	−23,462 (6)	22 (5)	17 (2)	76 (2)
	SD	176,547	411,521	313,423	862,904	127,414	17,981	133,701	11	1	6
	Min.	−117,001	222,552	457,676	142,168	−252,239	5,426	−293,301	12	16	72
	Max.	427,690	115,3220	1,283,642	2,389,857	10,6128	49,679	65,887	40	18	80

〈Table III-7〉 **Continued**

Year of investment		Preceding year's balance sheet			Preceding year's statement of income and losses				Preceding year' s employment		
		Capital	Liabilities	Assets	Sales	Operating income	Financial expenses	Net term income	Total employees	R&D employees	R&D employees' share (%)
2009	Avg.	521,637 (2)	405,157 (2)	926,794 (2)	985,301 (2)	6,777 (2)	12,830 (2)	16,090 (2)	82 (2)	(0)	(0)
	SD	242,895	245,276	2,380	446,585	85,029	15,723	127,723	35		
	Min.	349,884	231,721	925,111	669,517	−53,348	1,712	−74,224	57		
	Max.	693,389	578,593	928,477	1,301,084	66,901	23,948	106,403	106		
2010	Avg.	147,424 (5)	230,206 (5)	377,630 (5)	266,650 (5)	11,959 (5)	11,453 (5)	10,160 (5)	17 (5)	(0)	(0)
	SD	156,753	261,724	314,203	288,974	110,419	16,283	121,739	13		
	Min.	20,307	3,167	72,476	12,000	−107,326	190	−148,336	5		
	Max.	409,982	633,459	759,714	622,743	193,909	38,907	193,381	35		
2011	Avg.	400,355 (9)	684,675 (9)	1,085,030 (9)	1,285,129 (9)	38,205 (9)	21,082 (9)	101,43 (9)	42 (9)	8 (6)	47 (5)
	SD	386,064	910,199	1,154,201	1,710,022	145,107	25,754	117,385	35	7	45
	Min.	34,870	29,153	111,667	5,769	−182,288	459	−163,102	12	0	0
	Max.	1,203,645	2,660,511	3,276,391	4,480,992	355,719	66,246	254,614	100	19	100
2012	Avg.	963,177.5 (12)	1,027,168 (12)	1,990,346 (12)	1,825,973 (12)	163,872.7 (12)	39,616.78 (12)	105,815.3 (12)	55.40 (15)	8.45 (11)	21.04 (10)
	SD	2,010,445	1,053,724	2,693,225	2,351,790	300,379.9	44,510.65	293,588.5	55.26	11.44	19.92
	Min.	5,266.2	10,484.5	15,847.6	677	−115,645	82	−275,426	2	0	0
	Max.	7,248,522	2,528,817	9,549,608	7,002,226	1,013,747	122,952.5	927,526.8	149	40	60
2013	Avg.	679,729 (8)	816,742.9 (8)	1,496,472 (8)	1,444,445 (8)	24,693.09 (8)	26,885.66 (8)	−32,840.4 (8)	53 (8)	10.2 (5)	58 (5)
	SD	800,468.6	1,223,138	1,948,165	2,285,350	160,304.3	45,612.78	135,134	53.33	8.67	34.71
	Min.	25,474.1	31,791	67,701.3	0	−162,539	0	−321,712	7	0	0
	Max.	2,004,628	3,534,262	5,370,902	6,443,010	359,028.7	134,441.9	130,402.6	126	20	87
2014	Avg.	7,1242.48 (4)	91,859.4 (4)	163,101.9 (4)	73,330.28 (4)	−29,856.1 (4)	1,603.425 (4)	−26,927 (4)	11.25 (4)	7 (4)	69.33333 (3)
	SD	79,306.6	91,007.18	168,919.6	54,129.1	48,445.03	1,738.78	49,148.91	3.59	5.83	33.86
	Min.	11,398.2	23,001.4	34,399.6	0	−100,777	0	−99,787.4	8	1	33
	Max.	188,043.1	219,665.4	407,708.5	117,386.5	8,686.3	3,292	4,925.2	16	12	100

〈Table III-18〉 **Financial and Employment Status in the Year Preceding Government Loans/Credit Guarantees**

Overall		Preceding year's balance sheet			Preceding year's statement of income and losses				Preceding year's employment		
		Capital	Liabilities	Assets	Sales	Operating income	Financial expenses	Net term income	Total employees	R&D employees	R&D employees' share (%)
2004	Avg.	−2,100 (1)	10,000 (1)	7,900 (1)	10,000 (1)	−3,200 (1)	0 (1)	−3,200 (1)	6 (1)	1 (1)	20 (1)
2005	Avg.	10,0800 (1)	59,700 (1)	160,500 (1)	467,500 (1)	20,300 (1)	2,300 (1)	18,100 (1)	50 (1)	10 (1)	20 (1)
2006	Avg.	18,748 (1)	36,257 (1)	55,004 (1)	92,960 (1)	7,705 (1)	794 (1)	8,536 (1)	20 (1)	3 (1)	25 (1)
2007	Avg.	85,188.25 (4)	261,114.5 (4)	346,302.8 (4)	816,616.5 (4)	16,731.75 (4)	7,178.5 (4)	13,149.25 (4)	24.33333 (3)	11.5 (2)	77.5 (2)
	SD	78,760.8	465,087.5	543,214	1,380,540	28,943.01	13,063.01	4,752,367	18.00926	9.192388	7.778175
	Min.	30,200	22,138	52,800	111,900	−16,216	0	8,000	6	5	72
	Max.	202,098	958,620	1,160,718	2,887,369	53,643	26,754	18,129	42	18	83
2008	Avg.	374,320.8 (8)	1,269,756 (8)	1,644,076 (8)	1,940,272 (8)	82,225.63 (8)	29,636.13 (8)	68,983.5 (8)	89.16667 (6)	2.4 (5)	40.42 (5)
	SD	706,179.8	2,177,005	2,853,161	3,786,251	137,590.7	75,535.58	112,457.5	161.5765	2.408319	47.31577
	Min.	4,600	0	4,600	400	−400	0	−400	1	0	0
	Max.	2,002,562	5,368,788	7,371,350	10,999,987	377,051	215,966	280,311	414	5	100
2009	Avg.	121,846.4 (20)	188,995.1 (20)	310,841.3 (20)	740,240.9 (20)	41,702.45 (20)	3,603.35 (20)	33,895.3 (20)	18.63158 (19)	7.545455 (11)	33.38889 (9)
	SD	244,601.5	262,923.5	489,775.8	1,289,221	57,980.59	3,336,661	48,434.6	14.91536	8.029491	17.4352
	Min.	−48,853	700	10,800	7,400	1,520	0	1,306	5	2	9
	Max.	1118,090	1,063,616	2,181,705	5,149,283	199,787	10,630	174,039	70	30	60
2010	Avg.	453,887.6 (21)	302,763.7 (21)	756,651.2 (21)	1,129,264 (21)	90,082 (21)	8,780.857 (21)	77,940.62 (21)	30.61905 (21)	5.357143 (14)	41.18462 (13)
	SD	1197,575	414,336.3	1,477,480	1,771,897	216,491.6	12,196.51	187,669.4	39.43409	3.774553	33.42758
	Min.	2,496	772	3,268	3,077	−10,700	0	122	2	0	0
	Max.	5607,147	1,603,815	6,815,953	7,371,237	1,001,526	50,815	859,836	160	13	100
2011	Avg.	203,761.1 (19)	754,060.2 (19)	957,821.1 (19)	1,418,828 (19)	54,605.32 (19)	43,302.58 (19)	77,476.53 (19)	34.21053 (19)	6.666667 (9)	26 (8)
	SD	410,753.9	1,787,420	1,767,898	3,455,565	169,109.1	134,656.5	204,673.9	39.54966	6.041523	13.24495
	Min.	−364,778	26,780	41,514	6,222	−53,800	492	−65,500	3	1	12
	Max.	1,654,722	7,927,982	7,563,203	15,366,254	732,869	594,124	821,067	167	20	50
2012	Avg.	432,606 (43)	844,988.1 (43)	1,277,594 (43)	1,432,066 (43)	65,946 (43)	33,644.21 (40)	44,525.26 (43)	53.90476 (42)	11.51724 (29)	41.53917 (24)
	SD	648,179.7	1,524,302	2,111,857	2,357,821	151,085.4	68,735.7	129,419.5	78.00526	14.55193	30.27062
	Min.	−12,389.9	15,401.9	15,350.9	10,900	−200,103	111.1	−264,078	4	0	0
	Max.	3,380,695	6,610,146	9,990,841	11,277,923	602,814.9	331,292.6	533,198.6	389	50	100
2013	Avg.	428,719.4 (92)	477,111 (92)	905,830.4 (92)	947,811.1 (92)	54,439.51 (92)	15,215.93 (92)	41,208.11 (92)	36.67391 (92)	9.146667 (75)	27.89449 (69)
	SD	1,155,446	994,157	2,080,696	2,175,798	182,798.6	32,881.7	156,544.5	52.31374	13.23865	22.47068
	Min.	−54,500	1,101.1	8,200	0	−298,499	0	−317,003	2	0	0
	Max.	6,890,109	6,183,641	11,950,043	17,014,540	1193,365	249,385.4	1,065,526	384	78	85
2014	Avg.	461,134.1 (97)	688,744.3 (97)	1,149,878 (97)	1,304,855 (97)	58,479.64 (97)	20,326.41 (97)	24,780.93 (97)	42.11224 (98)	7.236559 (93)	31.725 (68)
	SD	1,422,405	1,709,922	2,872,977	3,304,193	219,854.2	46,688.72	241,811.7	80.83136	12.28059	27.71598
	Min.	−3,900	2,314	19,893.9	0	−209,932	0	−1,400,611	3	0	0
	Max.	13,041,011	11,583,811	20,568,802	19,667,514	1840,770	250,735.3	1,729,571	520	100	100

〈Table III-19〉 **Recent Channels of Financing**

Recent channels of financing (%)							
		IPO	Startup /angel investment	Corporate bonds	Government financing	Private financing	Other
Overall	Avg.	1.10	3.76	1.33	34.20	50.61	8.98
	SD	10.09	17.07	10.52	39.78	42.04	25.37
	Min.	0	0	0	0	0	0
	Max.	100	100	100	100	100	100
Startup investment	Avg.	3.88	16.07	2.72	26.26	44.64	6.42
	SD	19.28	32.62	15.48	36.50	42.96	21.61
	Min.	0	0	0	0	0	0
	Max.	100	100	100	100	100	100
Technology appraisal–based credit guarantees	Avg.	0.00	0.67	0.59	37.59	52.96	8.18
	SD	0.00	7.10	7.02	40.10	41.20	24.48
	Min.	0	0	0	0	0	0
	Max.	0	100	100	100	100	100
Technology appraisal–based loans	Avg.	0.00	0.00	2.41	55.24	39.21	3.14
	SD	0.00	0.00	13.00	40.43	38.63	10.38
	Min.	0	0	0	0	0	0
	Max.	0	0	70	100	100	50
R&D	Avg.	1.64	2.46	0.00	29.85	46.30	19.75
	SD	12.80	14.22	0.00	40.22	43.34	36.11
	Min.	0	0	0	0	0	0
	Max.	100	100	0	100	100	100
Sales over KRW 100 bn.	Avg.	3.33	0.00	8.67	1.09	85.58	1.33
	SD	12.91	0.00	26.42	2.95	33.19	5.16
	Min.	0	0	0	0	0	0
	Max.	50	0	100	10	100	20

As <Table III-19> shows, when asked to pick the channels of financing they had relied on most recently, 50.61 percent of all surveyed businesses picked private financing; 34.20 percent, government financing; 8.98 percent, other; 3.76 percent, startup and angel investment; 1.33 percent, the issuance of corporate bonds; and 1.1 percent, IPOs. More specifically, 44.64 percent of businesses receiving startup investment support picked private financing; 26.26 percent, government financing; 16.07 percent, startup and angel investment; 6.42 percent, other; 3.88 percent, IPOs; and 2.72 percent, corporate bonds. Furthermore, 52.96 percent of businesses receiving technology appraisal-based credit guarantees picked private financing; 37.59 percent, government financing; 8.18 percent, other; 0.67 percent, startup and angel investment; 0.59 percent, corporate bonds; and none picked IPOs. On the other hand, 55.24 percent of businesses receiving technology appraisal-based loans picked government financing; 39.21 percent, private financing; 3.14 percent, other; 2.41 percent, corporate bonds; and none picked either startup/angel investment or IPOs. Next, 46.30 percent of businesses receiving R&D support chose private financing; 29.85 percent, government financing; 19.75 percent, other; 2.46 percent, startup and angel investment; 1.64 percent, IPOs; and none chose corporate bonds. By contrast, 85.58 percent of venture companies with sales over KRW 100 billion picked private financing; 8.67 percent, corporate bonds; 3.33 percent, IPOs; 1.33 percent, other; 1.09 percent, government financing; and none picked startup or angel investment.

When asked to choose the channels via which they plan or anticipate to secure the financial support they need in the future, 52.48 percent of all surveyed businesses chose private financing; 30.09 percent, government financing; 10.93 percent, other; 4.32 percent, startup and angel investment; 1.21 percent, IPOs; and 0.97 percent, corporate bonds. More specifically, 46.10 percent of businesses receiving startup investment support chose private financing; 26.05 percent, government financing; 12.81 percent, startup and angel investment; 9.40 percent, other; 4.03 percent, IPOs; and 1.61 percent, corporate bonds. Furthermore, 55.44 percent of businesses with technology appraisal-based credit guarantees chose private financing; 32.75 percent, government financing; 8.92 percent, other; 1.63 percent, startup and angel investment; 0.78 percent, corporate bonds; and 0.48 percent, IPOs. On the contrary, 53.86 percent of businesses with technology appraisal-based loans chose government financing;

〈Table III-20〉 **New Target Channels of Financing**

New target channels of financing (%)							
		IPO	Startup/angel investment	Corporate bonds	Government financing	Private financing	Other
Overall	Avg.	1.21	4.32	0.97	30.09	52.48	10.93
	SD	8.86	17.20	8.65	36.46	41.09	28.39
	Min.	0	0	0	0	0	0
	Max.	100	100	100	100	100	100
Startup investment	Avg.	4.03	12.81	1.61	26.05	46.10	9.40
	SD	17.32	27.57	12.70	35.94	43.26	26.62
	Min.	0	0	0	0	0	0
	Max.	100	100	100	100	100	100
Technology appraisal–based credit guarantees	Avg.	0.48	1.63	0.78	32.75	55.44	8.92
	SD	5.24	10.46	8.03	37.66	40.61	25.83
	Min.	0	0	0	0	0	0
	Max.	70	100	100	100	100	100
Technology appraisal–based loans	Avg.	0.00	4.55	0.00	53.86	39.77	1.82
	SD	0.00	21.32	0.00	32.73	33.04	5.88
	Min.	0	0	0	0	0	0
	Max.	0	100	0	100	100	20
R&D	Avg.	0.61	5.31	0.82	22.24	43.47	27.55
	SD	4.29	18.94	5.71	31.38	39.87	41.66
	Min.	0	0	0	0	0	0
	Max.	30	100	40	100	100	100
Sales over KRW 100 bn.	Avg.	2.86	0.00	2.86	1.43	91.43	1.43
	SD	10.69	0.00	10.69	5.35	26.85	5.35
	Min.	0	0	0	0	0	0
	Max.	40	0	40	20	100	20

39.77 percent, private financing; 4.55 percent, startup and angel investment; 1.82 percent, other; and none chose either IPOs or the issuance of corporate bonds. Concerning businesses receiving R&D support, 43.47 percent chose private financing; 27.55 percent, other; 22.24 percent, government financing; 5.31 percent, startup and angel investment; 0.82 percent, corporate bonds; and 0.61 percent, IPOs. Finally, 91.43 percent of venture companies with sales over KRW 100 billion chose private financing; 2.86 percent, corporate bonds and IPOs; and 1.43 percent, government financing and other. None of these companies picked startup or angel investment.

<Table III-21> shows the distribution of surveyed businesses that have had experiences with angel investment. Of all surveyed businesses, 372, or 94.4 percent, answered that they had had no experiences with angel investment, and only 22, or 5.6 percent, answered that they had. More specifically, 37, or 72.54 percent, of the businesses receiving startup investment support answered that they had received no angel investment, while only 14, or 27.4 percent, had. As for businesses with technology appraisal-based credit guarantees, 228, or 97.9 percent, had received no angel investment, while only five, or 2.1 percent, had. Concerning businesses with technology appraisal-based loans, none had received angel investment. Of the businesses receiving R&D support, 62, or 95.4 percent, had not received angel investment, while a meager three, or 4.6 percent, had. Of the venture companies with sales over KRW 100 billion, none had received any angel investment.

〈Table III-21〉 **Experience with Angel Investment**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Yes	22 (5.58%)	14 (27.45%)	5 (2.15%)	0 (0.00%)	3 (4.62%)	0 (0.00%)
No	372 (94.42%)	37 (72.55%)	228 (97.85%)	30 (100.00%)	62 (95.38%)	15 (100.00%)
Total	394	51	233	30	65	15

〈Table III-22〉 **Experience with Startup Investment**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Have received investment	68 (15.89%)	57 (69.51%)	6 (2.54%)	1 (3.33%)	3 (4.62%)	1 (6.67%)
In negotiation for new investment	4 (0.93%)	3 (3.66%)	0 (0.00%)	0 (0.00%)	1 (1.54%)	0 (0.00%)
Have failed in negotiation for investment in the past	3 (0.70%)	0 (0.00%)	2 (0.85%)	0 (0.00%)	0 (0.00%)	1 (6.67%)
Have not received investment	353 (82.48%)	22 (26.83%)	228 (96.61%)	29 (96.67%)	61 (93.85%)	13 (86.67%)
Total	428	82	236	30	65	15

As <Table III-22> shows, 68, or 16 percent, of the surveyed businesses answered that they had experience with startup investment, including investment from investment cooperatives, while a vast majority of 353, or 82 percent, answered that they lacked such experience. Of these businesses, four were still in negotiation for investment at the time of the survey, while seven (1.6 percent) had attempted to receive such investment, with three ultimately failing. Of the 68 businesses that had received investment, 57 businesses, or 84 percent, were those receiving startup investment support. Of the 353 businesses lacking such experience with investment, 228, or 64.5 percent, were those with technology appraisal-based credit guarantees; 61, or 17.3 percent, were receiving R&D support; 29, or 8.2 percent, had technology appraisal-based loans; 22, or 6.2 percent, were receiving startup investment support; and 13, or 3.7 percent, were venture companies with sales over KRW 100 billion.

〈Table III-23〉 **Appropriateness of Prices at Which Startup Investors Acquired Shares of SMBs**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Appropriate	40 (93.02%)	30 (93.75%)	5 (83.33%)	1 (100.00%)	3 (100.00%)	1 (100.00%)
Not appropriate	3 (6.98%)	2 (6.25%)	1 (16.67%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
Total	43	32	6	1	3	1

〈Table III-24〉 **Discount Rates on the Prices of Stock Acquisition by Startup Investors**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Less than 10%	1 (33.33%)	1 (50.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
10% to 20%	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
20% to 30%	2 (66.67%)	1 (50.00%)	1 (100.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
40% to 50%	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
50% or more	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
Total	3	2	1	0 (00.00%)	0 (00.00%)	0 (00.00%)

Of the 43 businesses that had received startup investment in the form of shareholding, the vast majority (40 businesses, or 93 percent) answered that the prices at which investors acquired their shares were appropriate.

Of the three other businesses that answered that the prices at which investors acquired their shares were inappropriate or unfair, one had applied a discount rate of less than 10 percent, while the other two applied discount rates ranging between 20 and 30 percent.

4) Governance structure and follow-up with invested businesses

〈Table III-25〉 **Startup Investors' Involvement in the Management of Invested Businesses**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Involved (past or present)	57 (83.82%)	50 (87.72%)	4 (66.67%)	1 (100.00%)	2 (66.67%)	0 (0.00%)
Not involved (past or present)	11 (16.18%)	7 (12.28%)	2 (33.33%)	0 (0.00%)	1 (33.33%)	1 (100.00%)
Total	68	57	6	1	3	1

Of the 68 businesses that had received startup investment, 57 (83.8 percent) reported that their investors did become involved in their management. Of the 57 businesses that had experienced such involvement by investors in management, 50 (87.7 percent) were businesses receiving startup investment support, while seven out of the 11 businesses that had not experienced such investor involvement were also recipients of startup investment support.

Of the businesses that had experienced the involvement of startup investors in their management, nine said they received management advice, while eight had received help with supervision over their Boards of Directors. With respect to the remaining 10 forms of management involvement or help, however, few of the surveyed businesses had any experience. This dearth of involvement was especially manifest with respect to the introduction of specialized or professional staffers, such as those capable of providing legal counsel over IPR and patent matters.

〈Table III-26〉 **Forms of Startup Investor Involvement in Management**

Form of involvement	Yes/ no	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Management advice	Yes	9 (81.81%)	5 (71.43%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	No	2 (18.18%)	2 (28.57%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Total	11	7	2	0	1	1
Board of Directors supervision	Yes	8 (72.73%)	6 (85.71%)	0 (0.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	No	3 (27.27%)	1 (14.29%)	2 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Total	11	7	2	0	1	1
Marketing, sales, and export support	Yes	5 (45.45%)	4 (57.14%)	1 (50.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	6 (54.55%)	3 (42.86%)	1 (50.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	11	7	2	0	1	1
Mediation of joint R&D projects	Yes	4 (36.36%)	4 (57.14%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	7 (63.64%)	3 (42.86%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	11	7	2	0	1	1
Introduction of required technologies	Yes	5 (45.45%)	4 (57.14%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	6 (54.55%)	3 (42.86%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	11	7	2	0	1	1
Legal counsel on IPR and patent matters	Yes	1 (9.09%)	1 (14.29%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	10 (90.91%)	6 (85.71%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	11	7	2	0	1	1
Legal counsel on accounting and tax matters	Yes	5 (45.45%)	3 (42.86%)	1 (50.00%)	0 (0.00%)	0 (0.00%)	1 (100.00%)
	No	6 (54.55%)	4 (57.14%)	1 (50.00%)	0 (0.00%)	1 (100.00%)	0 (0.00%)
	Total	11	7	2	0	1	1
Introduction of banks/financial institutions	Yes	5 (45.45%)	2 (28.57%)	1 (50.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	No	6 (54.55%)	5 (71.43%)	1 (50.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Total	11	7	2	0	1	1
Introduction of specialized/ professional staff	Yes	1 (9.09%)	1 (14.29%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	10 (90.91%)	6 (85.71%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	11	7	2	0	1	1
Mid– to long–term strategy development	Yes	4 (57.14%)	3 (100.00%)	1 (50.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	3 (42.86%)	0 (0.00%)	1 (50.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	7	3	2	0	1	1
Alliance/ partnership with other businesses	Yes	4 (57.14%)	1 (33.33%)	1 (50.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	No	3 (42.86%)	2 (66.67%)	1 (50.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Total	7	3	2	0	1	1
Branding strategy	Yes	1 (14.29%)	1 (33.33%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	No	6 (85.71%)	2 (66.67%)	2 (100.00%)	0 (0.00%)	1 (100.00%)	1 (100.00%)
	Total	7	3	2	0	1	1

〈Table III-27〉 **Level of Effectiveness of Each Form of Involvement**

	Level of involvement (1 to 5)	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Management advice/ Board of Directors supervision	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	3	1	1	0	1	0
	4	4	2	1	0	0	1
	5	2	2	0	0	0	0
	Total	9	5	2	0	1	1
Marketing, sales, and export support/ Mediation of joint R&D projects	1	0	0	0	0	0	0
	2	1	0	0	0	1	0
	3	4	4	0	0	0	0
	4	2	1	0	0	0	1
	5	1	1	0	0	0	0
	Total	8	6	0	0	1	1
Introduction of required technologies/ Legal counsel on IPR and patent matters	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	1	1	0	0	0	0
	4	2	1	1	0	0	0
	5	2	2	0	0	0	0
	Total	5	4	1	0	0	0
Legal counsel on accounting and tax matters/ Introduction of banks/financial institutions	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	1	1	0	0	0	0
	4	3	3	0	0	0	0
	5	0	0	0	0	0	0
	Total	4	4	0	0	0	0
Introduction of specialized/ professional staff/ Mid– to long–term strategy development	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	4	3	0	0	0	1
	4	0	0	0	0	0	0
	5	1	1	0	0	0	0
	Total	5	4	0	0	0	1
Alliance/ partnership with other businesses/ Branding strategy	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	1	1	0	0	0	0
	Total	1	1	0	0	0	0
Management advice/ Board of Directors supervision	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	2	1	1	0	0	0
	4	2	1	0	0	0	1
	5	1	1	0	0	0	0
	Total	5	3	1	0	0	1

〈Table III-27〉 **Continued**

	Level of involvement (1 to 5)	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Marketing, sales, and export support/ Mediation of joint R&D projects	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	1	1	0	0	0	0
	4	4	1	1	0	1	1
	5	0	0	0	0	0	0
	Total	5	2	1	0	1	1
Introduction of required technologies/ Legal counsel on IPR and patent matters	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	1	1	0	0	0	0
	Total	1	1	0	0	0	0
Legal counsel on accounting and tax matters/ Introduction of banks/financial institutions	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	1	1	0	0	0	0
	4	2	1	1	0	0	0
	5	1	1	0	0	0	0
	Total	4	3	1	0	0	0
Introduction of specialized/ professional staff/ Mid– to long–term strategy development	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	1	0	0	0	0	1
	4	2	0	1	0	1	0
	5	1	1	0	0	0	0
	Total	4	1	1	0	1	1
Alliance/ partnership with other businesses	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	1	1	0	0	0	0
	Total	1	1	0	0	0	0

Of the 43 businesses that had received startup investment, a vast majority of 34 businesses, or 79.0 percent, said they had received the investments in lump sums. Of the nine remaining businesses (20.9 percent) with experiences of different forms or modes of startup investment, only four (9.3 percent) had experiences with the phase-by-phase form only.

〈Table III-28〉 **Forms of Startup Investment**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Lump sum	34 (79.07%)	28 (87.50%)	2 (33.33%)	1 (100.00%)	2 (66.67%)	1 (100.00%)
Phase by phase	4 (9.30%)	2 (6.25%)	2 (33.33%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Mixed	5 (11.63%)	2 (6.25%)	2 (33.33%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
Total	43	32	6	1	3	1

〈Table III-29〉 **Frequency of Required Submissions of Management Reports**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
None	3 (7.14%)	3 (9.38%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Every month	5 (11.90%)	3 (9.38%)	1 (16.67%)	0(0.00%)	1 (33.33%)	0 (0.00%)
Every 2 to 4 months	21 (50.00%)	20 (62.50%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (100.00%)
Every 5 to 6 months	5 (11.90%)	3 (9.38%)	2 (33.33%)	0(0.00%)	0 (0.00%)	0 (0.00%)
Every 7 to 11 months	3 (7.14%)	1 (3.13%)	1 (16.67%)	0(0.00%)	1 (33.33%)	0 (0.00%)
Every 12 months or longer	5 (11.90%)	2 (6.25%)	2 (33.33%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
Total	42	32	6	0	3	1

Of the 42 businesses with experiences of startup investment, a vast majority of 39 businesses, or 92.86 percent, had submitted at least one management report to their investor each. Of the report-submitting businesses, over a half (21, or 53.85 percent) submitted such reports every two to four months, while five submitted every month; another five, every five to six months;

〈Table III-30〉 **Frequency of Board Meetings Held in 2013**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
None	3 (6.98%)	2 (6.25%)	0 (0.00%)	1 (100.00%)	0 (0.00%)	0 (0.00%)
Once	9 (20.93%)	7 (21.88%)	2 (33.33%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Twice	8 (18.60%)	5 (15.63%)	2 (33.33%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
3 times	7 (16.28%)	5 (15.63%)	1 (16.67%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
4 times	5 (11.63%)	4(12.50%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (100.00%)
5 times or more	11 (25.58%)	9 (28.13%)	1 (16.67%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
Total	43	32	6	1	3	1

and another five, every year or so, while three submitted reports every seven to 11 months. Three businesses, or 8.8 percent, answered that there had been no such report submission requirements. Of the report-submitting businesses, 29 businesses, or 74.4 percent, were those receiving startup investment support. However, none of the businesses on technology appraisal-based loans submitted any such reports.

As <Table III-30> shows, 11 of the 43 responding businesses, or 25.58 percent, said that they held at least five board meetings in 2013 each, while nine (20.98 percent) held such meetings once each; eight (18.60 percent), twice; seven (16.28 percent), three times; five (11.63 percent), four times; and three (6.98 percent), none. Of the 32 businesses receiving startup investment support, nine (28.13 percent) held at least five board meetings in 2013 each; seven (21.88 percent), once; five (15.63 percent), twice; another five (15.63 percent), three times; four (12.50 percent), four times; and two (6.25 percent), none. However, only a very small number of businesses with technology appraisal-based credit guarantees had experiences with startup investment in the first place. Of these six

businesses, two (33.33 percent) held one board meeting each in 2013; another two (33.33 percent), twice; one (16.67 percent), three times; and another (16.67 percent), at least five times. Of the three businesses receiving R&D support which had startup investment experiences, one held at least five board meetings in 2013; another, three times; and the last one, twice. Finally, there was only one business with technology appraisal-based loans and one venture company with sales over KRW 100 billion. The former held no board meeting in 2013, while the latter held four such meetings.

As <Table III-31> shows, 13 (32.50 percent) of the 40 businesses that held board meetings in 2013, each had a board of directors consisting of three or fewer members, while 22 (55.00 percent) each had a board of four to five members, and five (12.50 percent) had a board of six to seven members. Of the 30 businesses receiving startup investment among those 40 businesses, 11 (36.67 percent) each had a board of three or fewer members; 17 (56.67 percent), a board of four to five members; and two (6.67 percent), a board of five to six members. Of the three businesses receiving R&D support, two (66.67 percent) had a board of four to five members, and the last had a board of six to seven members.

〈Table III-31〉 **Size of Board of Directors**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
3 or fewer	13 (32.50%)	11 (36.67%)	2 (33.33%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
4 to 5	22 (55.00%)	17 (56.67%)	2 (33.33%)	0 (0.00%)	2 (66.67%)	1 (100.00%)
6 to 7	5 (12.50%)	2 (6.67%)	2 (33.33%)	0 (0.00%)	1 (33.33%)	0 (0.00%)
7 to 8	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
9 or more	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	40	30	6	0	3	1

〈Table III-32〉 **Board of Directors Membership**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Founder	27 (29.67%)	20 (30.77%)	5 (35.71%)	0 (0.00%)	2 (22.22%)	0 (0.00%)
Family members	2 (2.20%)	1 (1.54%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (33.33%)
Directors	27 (29.67%)	20 (30.77%)	4 (28.57%)	0 (0.00%)	3 (33.33%)	0 (0.00%)
Startup investors	16 (17.58%)	11 (16.92%)	2 (14.29%)	0 (0.00%)	2 (22.22%)	1 (33.33%)
Shareholders	17 (18.68%)	11 (16.92%)	3 (21.43%)	0 (0.00%)	2 (22.22%)	1 (33.33%)
Other	2 (2.20%)	2 (3.08%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	91	65	14	0	9	3

When asked about the membership of their respective boards of directors (and given the freedom to choose more than one option), 27 (29.67 percent) of the businesses included their founders in their boards of directors; another 27 (29.67 percent), directors; 17 (18.68 percent), shareholders; 16 (17.58 percent), startup investors; two (2.20 percent), founders' family members; and another two (2.20 percent), other people.

When asked to pick the reasons for having made available, or planning to make available, stock options to their employees, 25 (29.41 percent) of the eligible businesses picked "To attract talented personnel" as the most important reason; 21 (24.71 percent), "To retain key personnel"; 34 (40.00 percent), "To boost morale and give added incentives"; and five (5.88 percent), "To improve business performance." More specifically, of the eligible businesses receiving startup investment support, seven (25.00 percent) picked "To attract talented personnel" as the most important reason; eight (28.57 percent), "To retain key personnel"; 12 (42.86 percent), "To boost morale and give added incentives"; and one (3.57 percent), "To improve business performance." Of the eligible

businesses with technology appraisal-based credit guarantees, 11 (32.35 percent) picked “To attract talented personnel” as the most important reason; seven (20.59 percent), “To retain key personnel”; 13 (38.24 percent), “To boost morale and give added incentives”; and three (8.82 percent), “To improve business performance.” Of the eligible businesses with technology appraisal-based loans, one (20.00 percent) picked “To attract talented personnel” as the most important reason; another (20.00 percent), “To retain key personnel”; two (40.00 percent), “To boost morale and give added incentives”; and the last (20.00 percent), “To

〈Table III-33〉 **Availability of Stock Options**

Past	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Available	32 (8.08%)	12 (23.53%)	6(2.55%)	2 (6.67%)	8 (12.31%)	4 (26.67%)
Unavailable	364 (91.92%)	39 (76.47%)	229 (97.45%)	28 (93.33%)	57 (87.69%)	11 (73.33%)
Total	396	51	235	30	65	15
Present	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Available	19 (4.81%)	8 (16.00%)	3 (1.28%)	2 (6.67%)	3 (4.62%)	3 (20.00%)
Unavailable	376 (95.19%)	42 (84.00%)	232 (98.72%)	28 (93.33%)	62 (95.38%)	12 (80.00%)
Total	395	50	235	30	65	15
Future	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
To be made available	75 (18.94%)	20 (40.00%)	33 (10.12%)	5 (16.67%)	13 (20.00%)	4 (26.67%)
Not to be made available	321 (81.06%)	30 (60.00%)	203 (86.02%)	25 (83.33%)	52 (80.00%)	11 (73.33%)
Total	396	50	236	30	65	15

improve business performance." Of the eligible businesses receiving R&D support, six (42.86 percent) picked "To attract talented personnel" as the most important reason; four (28.57 percent), "To retain key personnel"; another four (28.57 percent), "To boost morale and give added incentives"; and none picked "To improve business performance." Of the eligible venture companies with sales over KRW 100 billion, none picked "To attract talented personnel" as the most important reason; one (25.00 percent), "To retain key personnel"; three (75.00 percent), "To boost morale and give added incentives"; and none picked "To improve business performance." No business of any category picked "Other" as the most important reason for having made or making available stock options.

〈Table III-34〉 **Aim of Stock Options Use**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
To attract talented personnel	25 (29.41%)	7 (25.00%)	11 (32.35%)	1 (20.00%)	6 (42.86%)	0 (0.00%)
To retain key personnel	21 (24.71%)	8 (28.57%)	7 (20.59%)	1 (20.00%)	4 (28.57%)	1 (25.00%)
To boost morale and give added incentives	34 (40.00%)	12 (42.86%)	13 (38.24%)	2 (40.00%)	4 (28.57%)	3 (75.00%)
To improve business performance	5 (5.88%)	1 (3.57%)	3 (8.82%)	1 (20.00%)	0 (0.00%)	0 (0.00%)
Other	0 (0.00%)	0 (0.00%)	0 0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	85	28	34	5	14	4

〈Table III-35〉 **Reasons for Not Using Stock Options**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Lack of understanding / knowledge	129 (34.49%)	13 (29.55%)	74 (32.17%)	14 (50.00%)	24 (39.34%)	4 (36.36%)
Economic slump	44 (11.76%)	6 (13.64%)	26 (11.30%)	3 (10.71%)	8 (13.11%)	1 (9.09%)
Cumbersome accounting / tax process	4 (1.07%)	1 (2.27%)	3 (1.30%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Cumbersome administrative procedures	33 (8.82%)	6 (13.64%)	16 (6.96%)	1 (3.57%)	9 (14.75%)	1 (9.09%)
Risks of legal issues, including misappropriation and embezzlement	3 (0.80%)	1 (2.27%)	1 (0.43%)	0 (0.00%)	1 (1.64%)	0 (0.00%)
Lack of merit as a performance reward at unlisted businesses	152 (40.64%)	16 (36.36%)	106 (46.09%)	10 (35.71%)	16 (26.23%)	4 (36.36%)
Other	9 (2.41%)	1 (2.27%)	4 (1.74%)	0 (0.00%)	3 (4.92%)	1 (9.09%)
Total	374	44	230	28	61	11

When asked about the reasons for not using or making available stock options, 152 (40.64 percent) of the surveyed businesses responded with “lack of merit as a performance reward at unlisted businesses”; 129 (34.49 percent) with “lack of understanding/knowledge”; 44 (11.76 percent) with “economic slump”; 33 (8.82 percent) with “cumbersome administrative procedures”; nine (2.41 percent) with “other”; four (1.07 percent) with “cumbersome accounting/tax process”; and three (0.8 percent) with “risks of legal issues, including misappropriation and embezzlement.” More specifically, of the businesses receiving startup support, 16 (36.36 percent) answered with “lack of merit as a performance reward at unlisted businesses”; 13 (29.55 percent) with “lack of understanding/knowledge”; six (13.64 percent) with “economic slump”; six (13.64 percent) with “cumbersome administrative procedures”; one (2.27 percent)

with “cumbersome accounting/tax process”; another (2.27 percent) with “risks of legal issues, including misappropriation and embezzlement”; and yet another (2.27 percent) with “other.” Of businesses with technology appraisal-based credit guarantees, 106 (46.09 percent) answered “lack of merit as a performance reward at unlisted businesses”; 74 (32.17 percent), “lack of understanding/knowledge”; 26 (11.30 percent), “economic slump”; 16 (6.96 percent), “cumbersome administrative procedures”; four (1.74 percent), “other”; three (1.30 percent), “cumbersome accounting/tax process”; and one (0.43 percent), “risks of legal issues, including misappropriation and embezzlement.” Of businesses with technology appraisal-based loans, 14 (50.00 percent) answered “lack of understanding/knowledge”; 10 (35.71 percent), “lack of merit as a performance reward at unlisted businesses”; three (10.71 percent), “economic slump”; one (3.57 percent), “cumbersome administrative procedures.” None of these businesses indicated any of the other three reasons, i.e., “cumbersome accounting/tax procedures,” “risks of legal issues, including misappropriation and embezzlement,” or “other.” Of businesses receiving R&D support, 24 (39.34 percent) answered “lack of understanding/knowledge”; 16 (26.23 percent), “lack of merit as a performance reward at unlisted businesses”; nine (14.75 percent), “cumbersome administrative procedures”; eight (13.11 percent), “economic slump”; three (4.92 percent), “other”; one, “risks of legal issues, including misappropriation and embezzlement”; and none answered “cumbersome accounting/tax process.” Of the venture companies with sales over KRW 100 billion, four (36.36 percent) answered “lack of understanding/knowledge”; another four (36.36 percent), “lack of merit as a performance reward at unlisted businesses”; one (9.09 percent), “economic slump”; another (9.09 percent), “cumbersome administrative procedures”; and yet another (9.09 percent), “other.” None of these companies picked either “cumbersome accounting/tax process” or “risks of legal issues, including misappropriation and embezzlement.”

5) Collecting back investments

<Table III-37> shows whether the surveyed businesses were listed or planning to be listed on stock markets, such as the KOSDAQ. Of the 425 companies in total, 329, or 77.41 percent, had no plan to be listed anytime

〈Table III-36〉 **Stock Market Listing Years**

Listing year	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Overall	31	8	9	2	5	7
1989	1					1
1994	1					1
2001	4		1		2	1
2003	2		1			1
2004	1		1			
2005	1					1
2006	2	1			1	
2007	2				1	1
2008	3	1	1	1		
2009	3		2			1
2011	3	1	2			
2012	0	0				
2013	6	3	1	1	1	
2014	2	2				

soon, while 44 (10.35 percent) planned to be listed in two years. Of all the surveyed businesses, only 31 (7.29 percent) are currently listed, with four of them listed in 2001 and six in 2013. Less than three percent of all surveyed businesses—12 in total—are currently working on listing their shares on the stock market, and a meager three (0.71 percent) planned to be listed in one year. However, 39 of the businesses receiving startup investment support, or 48 percent, either had already been listed or were planning to be listed. In the meantime, only 30 (13 percent) of the businesses with technology appraisal-based credit guarantees and six (20 percent) with technology appraisal-based loans were similarly listed or planning to be listed. Of the 65 businesses receiving R&D support, an astounding 81.54 percent (53 in total) lacked any plans for being

listed on the stock market. On the contrary, seven of the 15 venture companies (47 percent) with sales over KRW 100 billion had already been listed, in the years ranging from 1989 to 2009.

〈Table III-37〉 **Future Plans for Stock Market Listing**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Currently listed	31 (7.29%)	8 (9.88%)	9 (3.85%)	2 (6.67%)	5 (7.69%)	7 (46.67%)
Currently working on it	12 (2.82%)	6 (7.41%)	4 (1.71%)	1 (3.33%)	1 (1.54%)	0 (0%)
To be listed in 1 year	3 (0.71%)	2 (2.47%)	1 (0.43%)	0 (0%)	0 (0%)	0 (0%)
To be listed in 2 years	44 (10.35%)	22 (27.16%)	15 (6.41%)	2 (6.67%)	4 (6.15%)	1 (6.67%)
Not planning on it yet	329 (77.41%)	42 (51.85%)	204 (87.18%)	24 (80%)	53 (81.54%)	6 (40%)
Total	425	81	234	30	65	15

〈Table III-38〉 **Experience with M&A**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Had merged / acquired another business	10 (13.51%)	7 (11.11%)	1 (16.67%)	0 (00.00%)	1 (33.33%)	1 (100.00%)
Been merged / acquired by another business	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)	0 (00.00%)
No experience at all	64 86.49%)	56 (88.89%)	5 (83.33%)	1 (100.00%)	2 (66.67%)	0 (00.00%)
Total	74	63	6	1	3	1

Of the 74 businesses that responded to our question regarding experience with M&A, 64 (86 percent) said they had no experience with M&A at all, while 10 (14 percent) answered that they had. None of these businesses had ever been merged and acquired by another business. More specifically, 59 of the 63 businesses receiving startup investment support (89 percent) had never experienced any M&A. The only business with technology appraisal-based credit guarantees that answered the relevant question indicated that it had never experienced M&A. Two of the three responding businesses receiving R&D support (66.67 percent) reported having experienced no M&A at all.

As Table III-39 shows, of the few businesses with M&A experience, four (40 percent) picked "to enter a new market" as their primary reason for engaging in M&A; three (30 percent), "to secure technology/personnel"; one (10 percent), "to achieve economy of scale"; another (10 percent), "to enlarge market share"; and still another (10 percent), "other." Securing technology/personnel and entering a new market were the most important reasons for M&A for businesses receiving startup investment support, chosen by two (33.33 percent) each. The remaining one (16.67 percent) chose "to achieve economy of scale" as the main reason. Entering a new market, enlarging the market share, and other purposes were the primary purposes of M&A for businesses with technology appraisal-based credit guarantees, businesses receiving R&D support, and venture companies with sales over KRW 100 billion, respectively.

There were only eight businesses that provided secondary reasons for M&A. Three (37.5 percent) indicated "to secure technology/personnel"; two (25 percent), "to achieve economy of scale"; another two (25 percent), "to enter a new market"; and one (12.5 percent), "to enlarge market share." Six of these eight businesses were those receiving startup investment support, four of which indicated "to secure technology/personnel" and "to enter a new market" as the secondary reasons for their M&A. The other two answered "to achieve economy of scale" and "to enlarge market share."

Table III-40 shows whether the surveyed businesses are planning to engage in M&A in the future. Of all surveyed businesses, 349 (83.10 percent) answered that they had no M&A plans at all; 57 (13.57 percent) held some interest, but lacked a specific plan; 10 (2.38 percent) were already

〈Table III-39〉 **Purposes of M&A**

Primary purpose	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
To achieve economy of scale	1 (10.00%)	1 (14.28%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To secure technology/personnel	3 (30.00%)	3 (42.86%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To enter a new market	4 (40.00%)	3 (42.86%)	1 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To enlarge market share	1 (10.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (100.00%)	0 (0.00%)
To restructure assets	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
For backdoor listing	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To procure much–needed liquidity/capital	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Other	1 (10.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (100.00%)
Total	10	7	1	0	1	1
Secondary purpose	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
To achieve economy of scale	2 (25.00%)	1 (16.67%)	0 (0.00%)	0 (0.00%)	1 (100%)	0 (0.00%)
To secure technology/personnel	3 (37.50%)	2 (33.33%)	1 (100%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To enter a new market	2 (25.00%)	2 (33.33%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To enlarge market share	1 (12.50%)	1 (16.67%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To restructure assets	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
For backdoor listing	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
To procure much–needed liquidity/capital	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Other	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	8	6	1	0	1	0

〈Table III-40〉 **Future Plans for M&A**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Not planning	349 (83.10%)	58 (72.50%)	205 (87.98%)	29 (96.67%)	51 (79.69%)	6 (46.15%)
Interested, but without a specific plan	57 (13.57%)	19 (23.75%)	20 (8.58%)	1 (3.33%)	13 (20.31%)	4 (30.77%)
With a specific plan	4 (0.95%)	1 (1.25%)	2 (0.86%)	0 (0.00%)	0 (0.00%)	1 (7.69%)
Currently working on it	10 (2.38%)	2 (2.50%)	6 (2.58%)	0 (0.00%)	0 (0.00%)	2 (15.38%)
Total	420	80	233	30	64	13

working on achieving M&A; and four (0.95 percent) had specific plans. The ratio of businesses not considering or planning M&A at all was the highest among businesses with technology appraisal-based loans (29, or 96.67 percent), followed by businesses with technology appraisal-based credit guarantees (205, or 87.98 percent), businesses receiving R&D support (51, or 79.69 percent), businesses receiving startup investment support (58, or 72.5 percent), and venture companies with sales of over KRW 100 billion (six, or 46.15 percent), in descending order. In the meantime, the ratio of businesses expressing an interest in M&A, but still without specific plans, was the highest among venture companies with sales over KRW 100 billion (four, or 30.77 percent), followed by businesses receiving startup investment support (19, or 23.75 percent), businesses receiving R&D support (13, or 20.31 percent), businesses with technology appraisal-based credit guarantees (20, or 8.58 percent), and businesses with technology appraisal-based loans (one, or 3.33 percent), in descending order. The ratio of businesses already working on achieving M&A was also the highest among venture companies with sales over KRW 100 billion (two, or 15.38 percent), followed by businesses with technology appraisal-based credit guarantees (six, or 2.58 percent), and businesses receiving startup investment support (two, or 2.50 percent), in descending order. The ratio of businesses with specific M&A plans was the highest among venture companies with sales

〈Table III-41〉 **Forms of M&A Currently Considered or Planned**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
M&A with high–tech or innovative SMB in same industry	8 (61.54%)	2 (66.67%)	5 (71.43%)	0 (0.00%)	0 (0.00%)	1 (33.33%)
M&A with high–tech or innovative SMB in another industry	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
M&A with larger or well–established company in same industry	1 (7.69%)	0 (0.00%)	1 (14.29%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
M&A with larger or well–established company in other industry	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
M&A with a foreign company	3 (23.08%)	1 (33.33%)	1 (14.29%)	0 (0.00%)	0 (0.00%)	1 (33.33%)
Other	1 (7.69%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (33.33%)
Total	13	3	7	0	0	3

over KRW 100 billion (one, or 7.69 percent), followed by businesses receiving startup investment support (one, or 1.25 percent), and businesses with technology appraisal-based credit guarantees (two, or 0.86 percent), in descending order.

When asked about which types or forms of M&A they were currently considering or planning, eight businesses (61.54 percent) answered M&A with high-tech/innovative SMBs in the same industry; three (23.08 percent) with foreign companies; one (7.69 percent) with a larger or well-established company in the same industry; another (7.69 percent) with “other” types of businesses; and none answered with a high-tech/innovative SMB in an industry different from their own. Of the businesses considering M&A with high-tech/innovative SMBs in the same industry, five (71.43 percent) had technology appraisal-based credit guarantees; two (66.67 percent) were receiving startup investment support; and one (33.33 percent) was a venture company with sales over KRW 100 billion.

The one business (14.29 percent) considering M&A with a larger or well-established company in the same industry was a recipient of technology appraisal-based credit guarantees. The three businesses considering M&As with foreign companies included one (33.33 percent) receiving startup investment support, another (33.33 percent) being a venture company with sales over KRW 100 billion, and one (14.29 percent) with technology appraisal-based credit guarantees. The business considering an "other" type of M&A was a venture company (33.33 percent) with sales over KRW 100 billion.

When asked whether they were considering selling out, 398 (92.99 percent) of the surveyed businesses answered that they were not considering selling out at all; 28 (6.54 percent) were considering it, but lacked a specific plan; two (0.47 percent) were already working on the sell-out process; and none were considering it with a specific plan. Of the businesses that answered they were not considering selling out at all, 30 (100 percent) were businesses with technology appraisal-based loans; 227 (96.19 percent) had technology appraisal-based credit guarantees; 72 (87.8 percent) were receiving startup investment support; 57 (87.69 percent) were receiving R&D support; and 12 (80 percent) were venture companies with sales over KRW 100 billion. Of the businesses that were considering selling out, but lacked specific plans, three

〈Table III-42〉 **Future Plans for Selling Out**

	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Not considering yet	398 (92.99%)	72 (87.80%)	227 (96.19%)	30 (100.00%)	57 (87.69%)	1 (80.00%)
Considering, but with no specific plan	28 (6.54%)	9 (10.98%)	8 (3.39%)	0 (0.00%)	8 (12.31%)	3 (20.00%)
Considering with a specific plan	0 (0.00%)	0 (0.00%)	0 (0.00%)	0(0.00%)	0 (0.00%)	0 (0.00%)
Currently working on it	2 (0.47%)	1 (1.22%)	1 (0.42%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	428	82	236	30	65	15

〈Table III-43〉 **What is Needed to Increase M&A among SMBs?**

Of primary importance	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Fostering M&A specialists and agencies	78 (18.80%)	11 (13.58%)	50 (22.32%)	2 (6.67%)	12 (18.46%)	3 (20.00%)
Establishing a reliable system of appraisal on business values	250 (60.24%)	49 (60.49%)	136 (60.71%)	22 (73.33%)	34 (52.31%)	9 (60.00%)
Simplifying the M&A process	35 (8.43%)	9 (11.11%)	19 (8.48%)	1 (3.33%)	5 (7.69%)	1 (6.67%)
Change of mindset among business owners	39 (9.40%)	6 (7.41%)	17 (7.59%)	4 (13.33%)	10 (15.38%)	2 (13.33%)
Change of perception among large corporations	11(2.65%)	4 (4.94%)	2 (0.89%)	1 (3.33%)	4 (6.15%)	0 (0.00%)
Other	2 (0.48%)	2 (2.47%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	415	81	224	30	65	15
Of secondary importance	Overall	Startup investment	Technology appraisal–based credit guarantees	Technology appraisal–based loans	R&D	Sales over KRW 100 bn.
Fostering M&A specialists and agencies	73 (22.26%)	16 (29.09%)	38 (20.88%)	8 (29.63%)	10 (19.23%)	1 (8.33%)
Establishing a reliable system of appraisal on business values	74 (22.56%)	16 (29.09%)	36 (19.78%)	4 (14.81%)	14 (26.92%)	4 (33.33%)
Simplifying the M&A process	85(25.91%)	9 (16.36%)	52 (28.57%)	5 (18.52%)	15 (28.85%)	4 (33.33%)
Change of mindset among business owners	65 (19.82%)	5 (9.09%)	41 (22.53%)	7 (25.93%)	10 (19.23%)	2 (16.67%)
Change of perception among large corporations	28 (8.54%)	7 (12.73%)	14 (7.69%)	3 (11.11%)	3 (5.77%)	1 (8.33%)
Other	3 (0.91%)	2 (3.64%)	1 (0.55%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	328	55	182	27	52	12

(20 percent) were venture companies with sales over KRW 100 billion; eight (12.31 percent) were businesses receiving R&D support; nine (10.98 percent) were receiving startup investment support; and eight (3.39 percent) had technology appraisal-based credit guarantees. Businesses already working on the sell-out process included a venture company (1.22 percent) with sales over KRW 100 billion and one business (0.42 percent) with technology appraisal-based credit guarantees.

When asked to identify the preconditions of primary importance to increasing and encouraging M&A among SMBs in Korea, 250 (60.24 percent) of the surveyed businesses pointed to the establishment of a reliable system of appraisal on business values; 78 (18.8 percent) to fostering M&A specialists and agencies; 39 (9.40 percent) to a change of mindset among business owners; 35 (8.43 percent) to simplifying the M&A process; 11 (2.65 percent) to a change of perception among large corporations; and two (0.48 percent) to other preconditions. More specifically, of the businesses that called for the establishment of a more reliable appraisal system as a matter of primary importance, 22 were businesses receiving R&D support (73.33 percent); 136 had technology appraisal-based credit guarantees (60.71 percent); 49 were receiving startup investment support (60.49 percent); nine had sales over KRW 100 billion (60.00 percent); and 34 had technology appraisal-based loans (52.31 percent). Of the businesses that indicated fostering M&A specialists and agencies as a matter of primary importance, 50 were those with technology appraisal-based credit guarantees (22.32 percent); three were venture companies with sales over KRW 100 billion (20.00 percent); 12 were receiving R&D support (18.46 percent); 11 were receiving startup investment support (13.58 percent); and two had technology appraisal-based loans (6.67 percent). Of the businesses that indicated a change of mindset among business owners as a matter of primary importance, 10 were businesses receiving R&D support (15.38 percent); four had technology appraisal-based loans (13.33 percent); two were venture companies with sales over KRW 100 billion (13.33 percent); 17 had technology appraisal-based credit guarantees (7.59 percent); and six were receiving startup investment support (7.41 percent). Of the businesses that pointed to the simplification of the M&A process, nine were businesses receiving startup investment support (11.11 percent); 19 had technology appraisal-based credit

guarantees (8.48 percent); five were receiving R&D support (7.69 percent); one was a venture company with sales over KRW 100 billion (6.67 percent); and the last one was a business with technology appraisal-based loans (3.33 percent). Finally, of the businesses that called for a change of perception among large corporations, four were businesses receiving R&D support (6.15 percent); another four were receiving startup investment support (4.94 percent); one was a business with a technology appraisal-based loan (3.33 percent); and two had technology appraisal-based credit guarantees (0.89 percent). There were also two businesses receiving startup investment support that picked "other" (0.89 percent).

When asked to choose other preconditions of secondary importance, 85 (25.91 percent) of all surveyed businesses chose the simplification of the M&A process; 74 (22.56 percent), the establishment of a reliable system of appraisal on business values; 73 (22.26 percent), fostering M&A specialists and agencies; 65 (19.82 percent), a change of mindset among business owners; 28 (8.54 percent), a change of perception among large corporations; and three (0.91 percent), other preconditions. More specifically, of the businesses that pointed to the simplification of the M&A process as a matter of secondary importance, four were venture companies with sales over KRW 100 billion (33.33 percent); 15 were receiving R&D support (28.85 percent); 52 had technology appraisal- based credit guarantees (28.57 percent); five had technology appraisal-based loans (18.52 percent); and nine were receiving startup investment support (16.36 percent). Of the businesses that indicated the establishment of a reliable appraisal system, four were venture companies with sales over KRW 100 billion (33.33 percent); 16 were receiving startup investment support (29.09 percent); 14 were receiving R&D support (26.92 percent); 36 had technology appraisal-based credit guarantees (19.78 percent); and four had technology appraisal-based loans (19.78 percent). Of the businesses that called for fostering M&A specialists and agencies as a matter of secondary importance, eight were businesses with technology appraisal-based loans (29.63 percent); 16 were receiving startup investment support (29.09 percent); 38 held technology appraisal-based credit guarantees (20.88 percent); 10 were receiving R&D support (19.23 percent); and one was a venture company with sales over KRW 100 billion (8.33 percent). Of the businesses that pointed to a change of mindset among business owners, seven were businesses with technology appraisal-based loans (25.93 percent); 41 had technology appraisal-based credit

guarantees (22.53 percent); 10 were receiving R&D support (19.23 percent); two were venture companies with sales over KRW 100 billion (16.67 percent); and five were businesses receiving startup investment support (9.09 percent). Of the businesses that indicated a change of perception among large corporations, seven were businesses receiving startup investment support (12.73 percent); three had technology appraisal-based loans (11.11 percent); one was a venture company with sales over KRW 100 billion (8.33 percent); 14 were businesses with technology appraisal-based credit guarantees (7.69 percent); and three were receiving R&D support (5.77 percent). The three companies that chose "other" included two receiving startup investment support (3.64 percent) and one with technology appraisal-based credit guarantees (0.55 percent).

D. Analysis of the effects of government financing for SMBs

We analyzed how the different types of government financing—investment, loans, and credit guarantees—affect the sales growth rates, operating income ratios, and employment statistics of SMBs. Our regression analysis included the 428 surveyed businesses that provided information on their financial and governance structures. Regarding the regression analysis model, we referred to the existing studies analyzing the performance of government financing (Cho and Yang, 2008; Dongguk University Industrial-Academic Cooperation Group, 2011; Shin and Park, 2010; Ahn, Woo, and Jeong, 2011), and applied the ordinary least squares (OLS) method.[18] Our analysis, however, is distinct from these studies in that it takes into account the additional variables of corporate governance structure. Table III-44 summarizes the findings of our regression analysis. The dependent variable used in this analysis is the sales growth rate of the surveyed businesses. Our analysis revealed that loan- and credit guarantee-type government financing were correlated with lower sales growth

18) Our empirical analysis admittedly carries a number of significant shortcomings. First, it does not provide a separate category for businesses that benefitted from both investment–type and loan–type government financing programs. Second, it does not solve the problem of endogeneity, such as the possible cases of poorly performing businesses that may have taken out government loans. The data from 2013 we have used in our analysis show continuity with the data on government financing from the years prior to 2013, but this in itself is not a complete solution to the problem

rates. No such statistically significant correlation was found with respect to investment-type financing.[19] When we considered the corporate governance structure variables, we found that the higher the startup investor's shareholding ratio, the lower their sales growth rate. We also found that the sales growth rates tended to grow with respect to recently opened businesses, early-growing businesses, exporting businesses, and businesses with high leverage ratios.

<Table III-45> summarizes the results of our regression analysis on how different types of government financing affect the operating income growth rates of SMBs. The dependent variable used here is the operating income growth rate of each surveyed business in 2013. We found no significant correlation between different types—investment or loan/credit guarantee—of government financing and operating income growth.[20] However, concerning governance structure, it was found that the higher the family members' shareholding ratio, the higher the operating income growth rate. The operating income growth rates also tended to be higher in recently established businesses.

Finally, <Table III-46> summarizes the findings of our regression analysis on how different types of government financing affect employment statistics of SMBs. The dependent variable used here is the employment growth rate (i.e., the rate of increase in the number of jobs) at each surveyed business. We found no significant correlation between the different types—investment or loan/credit guarantee—of government financing and the employment rate.[21] Nor did we find any significant correlations involving governance structure variables. In general, the employment growth rates tended to be higher in recently established, exporting, and highly leveraged businesses.

19) We attempted changing the dependent variable to the average annual sales growth rate, measured from the year immediately preceding the year of the latest loan or investment to the year 2013, but found no statistically significant correlations to different types of government financing

20) We attempted changing the dependent variable to the average annual operating income growth rate, measured from the year immediately preceding the year of the most recent loan or investment to the year 2013, but found no statistically significant correlations to the different types of government financing

21) We attempted changing the dependent variable to the average annual employment growth rate, measured from the year immediately preceding the year of the most recent loan or investment to the year 2013, but found no statistically significant correlations to the different types of government financing

〈Table III-44〉 **Regression Analysis of Sales Growth Rates in 2013**

	(1)	(2)	(3)	(4)
Financial profile				
Year of establishment	4.193*** (2.88)	5.291*** (2.72)	5.476*** (2.75)	5.442** 2.36
Growth phase	−46.150** (−2.35)	−36.561*** (−2.64)	−39.436*** (−2.64)	−37.883*** (−2.61)
Exporting/domestic	25.620 (0.99)	14.731 (0.65)	17.934 (0.74)	17.571 (0.71)
Assets (as of 2012)	−4.63e−07 (−0.33)	−2.97e−06* (−1.83)	−2.96e−06* (−1.86)	−2.67e−06 (−1.41)
Liabilities/capital (as of 2012)	9.687** (2.04)	9.509** (2.02)	9.517** (2.02)	9.423** (2.02)
Type of government financing				
Startup investment dummy (business category)		−18.75244 (−0.55)	25.507 (0.41)	35.339 (0.59)
Loan/credit guarantee dummy (business category)		−94.6703* (−1.84)	−101.132* (−1.86)	−95.824 (−1.49)
R&D dummy (business category)		−120.4506** (−2.16)	−124.032** (−2.17)	−117.322* (−1.78)
Governance structure				
Founder's shareholding ratio			.0627 (0.22)	.041 (0.15)
Non−founder CEO's shareholding ratio			.048 (0.18)	.035 (0.13)
Family's shareholding ratio			.770 (1.24)	.791 (1.21)
Startup investor's shareholding ratio			−2.698 (−1.33)	−2.549* (−1.95)
Frequency of management report submissions (inverse)				−9.394 (−0.35)
Frequency of board meetings				−16.719 (−0.89)
Board size				16.022 (0.25)
Constant	−8238.96*** (−2.84)	−10376.02*** (−2.70)	−10738.92*** (−2.73)	−10614.41*** (−2.28)
N	370	370	367	367
R−squared	0.2347	0.2459	0.2530	0.2542

Notes: 1) The "latest investment dummy" assigns the value of one (1) to each business that has received investment as the most recent form of government financing it has received, and the value of zero (0) to all other businesses. See section "B. Basic statistics" for the definitions of other variables
2) The asterisks, *, **, and ***, indicate significance levels of 10 percent, five percent, and one percent, respectively
3) The figures in the parentheses indicate t−values

〈Table III-45〉 **Regression Analysis on Operating Income Growth Rates in 2013**

	(1)	(2)	(3)	(4)
Financial profile				
Year of establishment	4.414* (1.88)	4.388* (1.93)	4.921** (2.20)	4.909** (2.11)
Growth phase	27.451 (1.66)	26.342 (1.61)	17.553 (1.40)	16.487 (1.27)
Exporting/domestic	26.429 0.86)	28.207 (0.86)	26.080 (0.88)	25.668 (0.86)
Assets (as of 2012)	−9.99e−07 (−0.95)	−1.35e−06 (−1.14)	−1.79e−06 (−1.38)	−1.79e−06 (−1.35)
Liabilities/capital (as of 2012)	−.555 (−1.46)	−.520 (−1.42)	−.262 (−0.71)	−.279 (−0.77)
Type of government financing				
Startup investment dummy (business category)		−25.564 (−0.58)	−71.419 (−1.38)	−66.780 (−1.27)
Loan/credit guarantee dummy (business category)		−13.409 (−0.31)	−68.606 (−1.43)	−69.183 (−1.38)
R&D dummy (business category)		−27.253 (−0.56)	−71.920 (−1.31)	−72.002 (−1.27)
Governance structure				
Founder's shareholding ratio			.186 (0.49)	.190 (0.49)
Non−founder CEO's shareholding ratio			.431 (0.83)	.441 (0.84)
Family's shareholding ratio			5.803** (2.09)	5.871* (2.10)
Startup investor's shareholding ratio			−.047 (−0.04)	.029 (0.02)
Frequency of management report submissions (inverse)				−9.016 (−0.62)
Frequency of board meetings				−30.578 (−1.38)
Board size				61.885 (1.16)
Constant	−8868.987* (−1.87)	−8798.068* (−1.92)	−9826.459** (−2.19)	−9736.374** (−2.08)
N	269	269	268	268
R−squared	0.0218	0.0225	0.1273	0.1306

Notes: 1) The "latest investment dummy" assigns the value of one (1) to each business that has received investment as the most recent form of government financing it has received, and the value of zero (0) to all other businesses. See section "B. Basic statistics" for the definitions of other variables
2) The asterisks, *, **, and ***, indicate significance levels of 10 percent, five percent, and one percent, respectively
3) The figures in the parentheses indicate t−values

〈Table III-46〉 **Regression Analysis on Employment Growth Rates in 2013**

	(1)	(2)	(3)	(4)
Financial profile				
Year of establishment	1.066*** (2.86)	1.208*** (2.79)	1.243*** (2.74)	1.186*** (2.43)
Growth phase	1.296 (0.37)	3.458 (0.70)	3.176 (0.69)	3.483 (0.71)
Exporting/domestic	10.585* (1.90)	8.534* (1.76)	9.744* (1.66)	9.615 (1.63)
Assets (as of 2012)	1.93e–07 (0.61)	–6.81e–08 (–0.23)	–1.55e–07 (–0.50)	–5.73e–08 (–0.18)
Liabilities/capital (as of 2012)	.441* (1.99)	.415* (1.73)	.425* (1.74)	.406 (1.60)
Type of government financing				
Startup investment dummy (business category)		9.808 (0.58)	23.560 (0.84)	25.898 (0.88)
Loan/credit guarantee dummy (business category)		–7.911 (–0.91)	–4.935 (–0.55)	–2.499 (– 0.29)
R&D dummy (business category)		–11.380 (–1.23)	–9.553 (–1.01)	–6.775 (–0.73)
Governance structure				
Founder's shareholding ratio			–.094 (–1.34)	–.096 (–1.35)
Non–founder CEO's shareholding ratio			–.057 (–0.99)	–.056 (–1.01)
Family's shareholding ratio			–.166 (–1.10)	–.158 (–1.06)
Startup investor's shareholding ratio			–.735 (–1.06)	–.811 (–1.45)
Frequency of management report submissions (inverse)				–2.886 (–0.77)
Frequency of board meetings				–4.784 (–1.39)
Board size				7.828 (1.30)
Constant	–2136.384*** (–2.85)	–2422.052*** (–2.76)	2487.402*** (–2.71)	–2356.838** (–2.38)
N	397	397	393	393
R–squared	0.0293	0.0440	0.0056	0.0587

Notes: 1) The "latest investment dummy" assigns the value of one (1) to each business that has received investment as the most recent form of government financing it has received, and the value of zero (0) to all other businesses. See section "B. Basic statistics" for the definitions of other variables
2) The asterisks, *, **, and ***, indicate significance levels of 10 percent, five percent, and one percent, respectively
3) The figures in the parentheses indicate t–values

Ⅳ

Summary and Implications

The loan-centered structure of government financing programs for SMBs and the still nascent state of the startup investment market in Korea are vulnerable to considerable risk of inviting inefficient allocations of financial resources and moral hazard on the part of businesses, thus increasing the inefficiency of the entire national economy. The current government financing programs for SMBs fail to provide incentives for active and long-term investment in high-risk, but prospective, businesses. Nor do they encourage or require banks and other private-sector investors to monitor and advise SMBs on management issues. Problems plague the entire process of financing, from the selection of businesses to receive support to the provision of support, modes of support, follow-up and monitoring, and collecting back the investment. Our quantitative analysis reveals the following facts and problems. First, businesses receiving startup investment support each hold considerably more assets (KRW 26.89 billion), sales (KRW 21.66 billion), and employees (77.3), on average, than do businesses that have received loans or credit guarantees (KRW 7.19 billion in assets, KRW 7.58 billion in sales, and 29.8 employees each on average). The average operating income of the former also amounts to KRW 1.51 billion each, more than triple the KRW 0.49 billion of the latter. We may interpret this result in two ways. First, it may indicate that much of the investment-type government financing is concentrated on businesses of larger sizes with greater operating income. Second, it may indicate that investment-type government financing is far more effective than loans or credit guarantees. Interpreted either way, the phenomenon presents a problem. For the former interpretation implies that government

financing in Korea is distributed inefficiently, while the latter implies that the government still insists on providing loans and credit guarantees for the majority of SMBs, when investment is clearly the more effective option. The same pattern is repeated with respect to the growth rates in the sales, employment, and operating income of SMBs in 2013 as well. Whereas the sales, number of jobs, and operating income at businesses receiving startup investment support grew by 108 percent, 25 percent, and 221 percent, respectively, in 2013, they managed to grow by only eight percent, eight percent, and four percent, respectively, at businesses with government loans and credit guarantees. The sales, employment, and operating income at businesses that have received investment as their most recent form of government financing increased by 49 percent, six percent, and 454 percent, respectively, by 2013, while growing by merely 21 percent, 12 percent, and 80 percent, respectively, at businesses whose most recent forms of government financing were loans or credit guarantees. In other words, businesses receiving investment-type support grew far more substantially (except in the area of employment) than businesses with government loans and credit guarantees.[22], [23]

Of the surveyed businesses, 84.12 percent had experiences with government financing. More importantly, 70.59 percent had experiences with government loans and credit guarantees only, indicating the excessively loan-centered structure of government financing for SMBs in Korea. Accordingly, Korean SMBs are forced to procure 34.2 percent of the capital they need in the forms of loans and credit guarantees, and only 3.76 percent in the form of investments. In the meantime, only 5.58 percent of Korean SMBs had any experience with angel investment, indicating the great difficulty these

22) There is a negative correlation between businesses' sales growth rates in 2013 and their receipt of government loans prior to 2013. No such correlation is found with respect to employment or operating income. We have also not found any statistically significant correlations showing government investment or an improved governance structure leading to better performance. Our hypothesis is thus only partially supported. Even so, our analysis is not free from the problem of endogeneity

23) One reason for the inadequacy of the findings of our regression analysis may be the fact that we have erred in selecting and specifying our analysis model. This is mainly because we did not have access to adequate amounts of financial and qualitative data on the performance of SMBs, and may also be because the data included in our analysis were not long-term panel data, in spite of the fact that the outcomes of loans and investments should be measured in the long run

businesses have securing sufficient financial resources in the early/startup phase. Only 17.52 percent of SMBs had experiences with startup investment. Regarding governance structure, only 57 of the 428 surveyed businesses had ever experienced startup investors' involvement in their management, and only 39 were required to submit management reports to their startup investors. This indicates that the majority of our SMBs rely on loans and credit guarantees. Also, the vast majority of the 39 businesses that held at least one board meeting each in 2013 were businesses receiving investment-type support. This is a serious issue, as it indicates that there is no effective mechanism for monitoring and checking SMBs when their founders possess 46.61 percent of shares, on average. Moreover, Korean SMBs rarely use stock options. Only 8.08 percent of the surveyed businesses had ever used stock options in the past, and only 4.81 percent make stock options available today. More tellingly, only 3.01 percent of businesses with government loans or credit guarantees had used stock options in the past, and only 1.89 percent today. Finally, 92.99 percent of all surveyed businesses reported that they were not considering selling out or other ways of ensuring returns for investors. This confirms the widely held belief that IPOs are the only channel via which investors are able to collect back their investment from SMBs in Korea. In particular, 96.62 percent of SMBs with government loans and credit guarantees showed no willingness to sell out, as opposed to the 87.80 percent of SMBs on investment-type support. Considering that 60.24 percent of these businesses called for the establishment of a more reliable system of appraisal on business values as the first precondition to increasing M&A among SMBs, there appears to be even a problem of mutual distrust between businesses and investors on the market today.

These findings carry the following policy implications. First, we need to transform our excessively loan- and credit-centered government financing into a more investment-centered one. Given the high-risk, high-return nature of most SMBs, equity-financing is more appropriate than debt-financing, as the American example shows. Second, we need to introduce competition into the process of screening and selecting businesses to receive government financing. In other words, the Korean government needs to become better at selecting and focusing on businesses that are likely to succeed in the global market amid increasing competition. The current financing system, however, hardly provides for

competition. As a result, businesses in Series A (early phase) enjoy an abundance of financial opportunities, while those in Series B (taking-off) struggle to find financial resources. Considering the necessity of government financing for SMBs in Korea, we may need to arrange different financing funds in a tournament-like, phase-by-phase model. Third, we need more effective incentives for government financing providers. The current evaluation and appraisal criteria that these providers (including the central government, various pension funds, and Fund of Funds administrators) use may cause distortions in the distribution of available financial resources by increasing the bankruptcy rate among businesses receiving support and encouraging investors to try to collect back their investments in the short term. Fourth, we need better systems and research programs to help the government find better candidates for their financing programs. Research programs need to develop more diverse models of investment decision-making, particularly given the asymmetry of information and the great emphasis on the need to interpret qualitative information in the case of SMBs. To this end, we may need to create incentives that can induce Corporate Venture Capital, the Yozma Fund, and other similar startup investment agencies abroad to participate in our financing programs. Specifically, we need to develop a new structure that delegates the task of selection to the private sector, provides effective incentives for greater private-sector participation, and also allows the government to intervene in case of market failures.

Governance structure can be broadly understood to encompass diverse modes of investment and financing contracts, post-investment follow-up, and even collecting back investments. We suggest the following as means of achieving innovation of the governance structure of government financing programs in Korea. First, we need to develop more channels of public-private partnership in order to overhaul the current governance structure. Consider the examples of the Public Corporate Venture Capital (PCVC), the Yozma Fund, and the Small Business Investment Companies (SBICs). The PCVC funds, in which the government participates directly, while leaving the private sector free to lead the process of decision-making regarding investment in new businesses, are designed to minimize the risks and side effects of private capital (e.g., excessive dependency on large corporations and the leakage of classified technology). These funds also help new businesses form and strengthen strategic

partnerships with large corporations and enable the government to reinforce its national innovation programs. The government's role in these funds is to provide appropriate incentives for all parties concerned and also coordinate their interests. The Yozma Fund is divided between the fund directly administered by the Israeli government and other funds administered as pools of private venture capital (PVC). Government officials join the boards of directors of these PVC funds so as to monitor and supervise them, exchange management knowhow, and provide information. The SBICs of the United States also provide a helpful model, as they combine both public and private funds. The US government introduced this program in the 1960s to provide assistance for SMBs that had difficulty procuring sufficient finance from private sources. We need to consider adopting a similar program, particularly as we try to compensate for the failures of the nascent investment market with government loans and credit guarantees. Next, we need to diversify the types of financing contracts so as to include capital investments in the form of convertible preferred shares, phase-by-phase investment arrangements, and syndicated investments. For instance, much of public financing for SMBs in the United States has taken the form of investment in convertible preferred shares. These shares, particularly in phase-by-phase investment arrangements, allow investors to strengthen their position in relation to the SMBs in which they invest should the latter fail to meet the predefined targets or goals of each phase, thereby preventing moral hazard on the part of the businesses being invested in. We need to adopt phase-by-phase investment arrangements as well. American investors prefer to use combinations of phase-by-phase and contingent investment arrangements, as pre-defining financial and non-financial conditions that are to be met by SMBs in each growth phase is crucial, given the significant asymmetry of information and the importance of carefully interpreting qualitative information characterizing these businesses. We may also encourage two or more investors to form a syndicate to invest in an SMB. The presence of multiple investors increases the thoroughness of due diligence and thereby helps minimize investment risks. SMBs may also be able to attract greater amounts of capital from these syndicates.

As for post-investment follow-up, we need to include key clauses in our investment agreements, such as the investor's right to replace executives and/or

limit rewards for executives, so as to better control the behaviour of business owners. Next, we need to find and design an investor reward system that is more responsive to the performance of invested businesses. The Korean government is the main investor in government financing programs, but it lacks the ability, incentive, time, and resources to perform proper monitoring and reviews. As such, the only solution is to provide stronger incentives for private startup investors, encouraging them to perform the necessary monitoring and supervision better. Third, we may need to require startup investors to join the boards of directors of the businesses in which they invest, as well as require SMBs to form boards of directors and admit startup investors as members thereof. Finally, we may need to dispatch private-sector specialists and experts to SMBs as auditors on behalf of the government financing programs. Consider the examples of the VIGO Accelerator Program in Finland and the High-Tech Grunderfonds (HTGF) of Germany.

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