Do Governmental Financial Institutions Help Startups Grow?
Evidence from Japan[*]

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Abstract

We find that governmental financial institutions in Japan tend to lend money to disadvantaged small businesses owned by entrepreneurs, who are without enough personal assets, or firms that have limited credit availability to procure loans from private financial institutions. We also find that firms, which borrow from GFIs, grow faster than firms, which borrow from private lenders, after the eighth year since loans are made. These findings together suggest that GFIs have contributed to the long run growth of small firms that private lenders are reluctant to make loans to.

Keywords: governmental financial institutions, startup finances
JEL classification:

1. Introduction

The recent reforms of Japanese public support for small business finances place an emphasis on downsizing of governmental financial institutions' direct lending. Has GFIs' direct lending to small businesses at a startup stage, which are the most opaque to lenders, become ineffective and lost its role? Many small business owners still consider GFIs as trustworthy financial partners that provide loans stably when they need them. Such stable relationships between GFIs and small firms may be possible because GFIs are publicly owned and subsidized. Private financial institutions may be under pressures to compete with GFIs. Are GFIs really competing with private institutions in startup finances? Using the unique survey data on startups in Japan conducted by the Small and Medium Enterprise Agency of the Japanese Government, we seek answers for these very important political questions.

Public support for small business finance in Japan is characterized as the presence of the credit guarantee system with perfect default coverage and GFIs that conduct direct lending at the fixed interest rate, which is sometimes below the market rate.

Taking an overview of public support systems elsewhere, credit guarantee is the most widely employed system. Credit guarantee systems in all the industrialized countries other than Japan, however, are based on the partial default coverage (60 percent to 80 percent on average) in order to avoid a moral hazard problem by lending institutions except in the case of special guarantees such as guarantees for startups .

Besides, in Japan, the GFIs' direct lending is seen in France (Banque CEPME), Canada (Business Development Bank of Canada), and Finland (Finnvera). Unlike in Japan, in these countries, however, GFI's lending activities are strictly restricted. Such

restrictions include 1) loans must be in principle parts of syndicate loans involved by private banks and 2) lending interest rates must be above the market rates. In these countries, organizational reforms aim at streamlining GFIs' businesses. In France and Finland, governmental financial institutions are merged with credit guarantee institutions, and GFIs' lending roles are greatly reduced. In Canada, the federal government obliged the GFI for SMEs to pay dividend to the government, when the institution expanded its target to larger firms.

Many startups depend on peer finances such as loans from family members or friends. Thus, the need for public supports in startup and venture finances is widely recognized. There has been, however, little consensus on the best form of public support for small business finances. Basic principles that appeared to be shared by most industrialized countries' governments are twofold, 1) public financial programs must avoid competition with private lenders, and 2) public supports must be efficient. As the British government's report titled "Modernizing the Government's Use of Loans" released in 2002 proposed, the execution of the policies must follow three steps; 1) aims and objectives of a policy are set, 2) a need for a government intervention is justified (whether a market fails and whether a government intervention yields distributional effects are examined), and 3) the form of public support is chosen (the most effective form is chosen based on a cost and benefit analysis of every alternatives). An ex-post evaluation of a policy has been increasingly on demand.

Increased fiscal burdens due primarily to the Japan's aging population and the international trend of reforms of the public involvements in small business finances ignited the national debate on an internationally unique system of public financial support for small

businesses in Japan.   How the Japanese public support system for small business finances should be became employed as an agenda at the Council on Economic and Fiscal Policy that is under the direct administration of the Prime Minister Junichiro Koizumi.   The "Basic Policy on the Reform of Policy-based Finance" released on November 2005 concluded the discussions.   According to the "Basic Policy", present eight GFIs will be either privatized, merged to an existing government non-financial institution or merged to a new single policy-based government financial institution.   A new GFI's direct loans will be greatly downsized and partial credit guarantees, loan securitization, and debt finances will replace the void.

In this paper, we analyze the roles of governmental financial institutions in small business finances using micro data on startups in Japan.   First, we characterize types of firms that borrow from GFIs soon after startup.   Then, appropriately controlling for firms' self selection into borrowing from GFIs, we examine whether firms that borrow from GFIs grow faster than firms that do not.

We find that GFIs tend to lend to financially disadvantaged small firms such as firms owned by asset poor entrepreneurs, or firms that likely have hard time borrowing from private financial institutions.   This evidence suggests that GFIs are not competing for "cream" firms with private lenders.   We then find that GFI borrowers start to grow faster than borrowers of private lenders in about the eighth year since loans are made.   These findings together suggest that GFIs have played significant roles of lending to the startups that private lenders are reluctant to lend to, and of helping these small businesses achieve the long run growth.

The paper is organized as follows; Section 2 reviews the relevant literatures.   Section

3 is an introduction to governmental financial institutions that specialize on small and medium enterprises in Japan. Section 4 reports and discusses empirical results. Section 5 is the conclusion.

2. Literature Review: Startup Finances and the Effectiveness of Funding from Governmental Financial Institutions in Startup Finances

2.1. Characteristics of Startup Finances

If requests of collateral, use of advanced risk evaluation methods, and establishing close relationships reduce risks of lending to small firms to the degree that private financiers can bear, small business finances would be completed in the private financial sector. [1,2,3] As Berger and Udell (1998) discuss, however, new startups are the most informational opaque firms, to which external finances are rarely available. They find that American startups depend on internal funds or borrowing from entrepreneurs' relatives and friends. Carpenter and Petersen (2002) find that, in the US, financing startups or venture firms by debts are more difficult than financing other types of small firms.

What characterize startup finances? What are startups that are constrained to borrowing? A need to seek a loan from a public institution arises when a startup is unable to borrow from private creditors. In other words, governmental financial institutions are allowed to operate when they complement financial institutions. Empirical results shared

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[1] According to theories of Bester (1985) and Boot et. al. (1991), collateral can be a signal to tell a lender whether the firm has low risk or high risk,   as well as an effective device to avoid the moral hazard problem.

[2] According to the model of Jappelli and Pagano (1993), creditors' sharing of information on credit applicants expands their credit availability when there are serious adverse selection problems in the loan applications.

[3] Berger and Udell (1995, 2002) examine the role of bank-firm relationships in small business finances.

by Coleman (1998), Michaels et. al. (1998), Fluck et. al, and Cassar (2004) who all examine roles of public support in startup finances are summarized in the following four points.

First, the firm's dependence on borrowing from (private) banks rises in the firm's size at the time of starting the firm. This is because a unit transaction cost generally decreases when a borrowing firm is larger (in total asset and in the number of employees), and lending to small firms is less cost efficient.

Second, the firm's dependence on debt financing including borrowing from (private) banks rises in the firm's internal funds or collateral value at the time of start up. This is because a lender is exposed to fewer risks, when lending to a firm with affluent internal funds and/or higher collateral value.

Third, the firm's organizational type at the time of startup influences the startup financing. Firms that were founded independently more likely face liquidity constraints than subsidiary firms. This is because independent startups cannot expect credits from related firms. Incorporation as a limited liability company improves credibility of a firm and allows the firm to borrow from a bank more at ease.

Fourth, the entrepreneurs' motivation for startup and their ambition for the firm's growth influence the startup financing. Entrepreneurs, who are ambitious for their firms' growth, are likely to have a vision for the firms' future growth and solid business plans. Firms started by such entrepreneurs are promising to creditors.[4]

Lastly but not the least important, the entrepreneurs' characteristics such as gender, age, education, work experiences, and business experiences influence startup financing.

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[4] Storey (1994) points out that a startup founded by an entrepreneur with positive motivations for starting a firm is likely to succeed. Positive motivations include solid understanding of the best timing to enter the market and lust for money.

Especially, education and work/business experiences of the entrepreneur, which are measures of the entrepreneur's human capital, strongly influence their firms' capital structure and financing patterns. Generally, young and inexperienced entrepreneurs find it hard to borrow from (private) banks.

Do firms that are likely to be denied access to private credits borrow from public financial institutions? According to Kutsuna (2005), Japanese startups borrow from governmental financial institutions if they are run by an entrepreneur with little pre-startup income, and/or by a young and inexperienced entrepreneur. He also finds that firms started independently are more likely to borrow from GFIs than subsidiary firms.

2.2. The Effectiveness of Governmental Financial Institutions in Startup Finances

It is difficult to assess the effectiveness of government credit programs. It is even harder to evaluate the effectiveness of a large amount of government direct loan programs, which are rare in industrialized countries.

Various types of government involvements in credit markets have been theoretically analyzed (Gale (1990 a, b), Innes (1991), Williamson (1994) and Li (1998)). By far, though, Mitsui (2000) is the only work that shows the effectiveness of government direct lending in a firm's startup. Extending the model of Innes (1991) that assumes a three stage pure strategy game under asymmetric information, Mitsui (2002) shows that in the market, where firms with great expectation on profit and great variability of profitability and firms with small expectation on profit and small variability of profitability coexist, and where it is hard to distinguish the former group from the latter group, lending by governmental financial institutions that are not more advanced in monitoring firms can

improve the allocation of funds under certain circumstances.   A key assumption in Mitsui's model is that a governmental financial institution keeps its operation even when it incurs an accounting loss.[5, 6]

A few works have attempted to empirically evaluate the effectiveness of the government's involvements in credit markets.[7]

Using the German data, Pfeiffer and Reize (2000) analyze effects of subsidies to startups by the formerly unemployed on the firm's survival and the employment growth in the firm, and find that there is no effect of the subsidies in West Germany, but that the subsidies contribute *negatively* to firm survival and have no effect on employment growth in East Germany.   Eaxmining the effectiveness of subsidies to the youth for starting up firms, Battistin, et. al (2001) find that, for the first four years, firms with government subsidies are more likely to fail than firms without.

Using the matching estimation, Crepon and Duguet (2003) group French firms into four, 1) firms that neither borrow from banks nor receive government startup support (subsidies), 2) firms that do not borrow from banks but that receive government support, 3) firms that borrow from banks but that do not receive government support, and 4) firms that borrow from banks and receive government support, and compare firm survival across four groups.[8]   They find that government support raises the probability of firm survival, and

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[5] Mitsui (2000) assumes that governmental financial institutions less   emphasize collecting repayments than   private institutions.   He also assumes that the amount of government loans has to be equal to the equilibrium amount of borrowing by less profitable firms under perfect information. Assumptions in Mitsui's model are based on practices of governmental financial institutions in Japan.
[6] Nemoto (2005) summarize theoretical analyses involving public financial programs.
[7] Performance evaluations of public support programs on research and development are widely carried out.   Measures for the performance of R&D include increased investment and employment.   See Wawllsten (2000) and Ali-Yrkko (2005) for empirical analyses on this issue.
[8] Using the matching regression, we   can compare the likelihood of firm survival rate between one firm and another firm with almost the same attributes, except for the way of their financing .

that the group of firms that borrow from banks and receive government support are most likely to survive.   This result implies that government support encourages private banks to lend to startups.

Almus (2001) examines the effect of startup assistance of DtA (Deutsche Ausgleichsbank), a German state owned bank, on the six year employment growth after startup, using a simultaneous equation method to control the firms' self selection into a loan from DtA.[9]   He assembles the data of firms that borrowed from a DtA's within two years from startup and firms that did not and finds that employment of firms with a DtA's loan, on average, grow faster than firms without by 7 percent point during the first six years of their operation.

Yasuda (2004, 2005) is the first attempt to examine the effectiveness of GFI loans in Japan using the firm level micro data.   Using micro data from a survey on startups conducted by the Small and Medium Enterprise Agency, he finds that firms that borrow from governmental financial institutions obtain a larger startup fund, which allows them for employment growth.

3. Overview of Governmental Financial Institutions in Japan

National Life Finance Corporation (NLFC), Japan Finance Corporation for Small and Medium Enterprises (JASME), and the Central Cooperative Bank for Commerce and Industry (Shokochukin Bank) are the three governmental financial institutions (GFIs) aimed at small and medium enterprises that currently operate in Japan.[10]   The share of

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[9] KfW (German Bank for Reconstruction) acquired DtA on January 2003.
[10] In Okinawa prefecture where branches of NLFC and JASME are absent, the Okinawa Development

three governmental financial institutions in the outstanding loans to SMEs declined in the 1980s and had been around 8 to 9 percent since the 1990s, but rose slightly toward the end of fiscal year 2003, as the government decided to raise the GFIs' lending budget to offset the negative effect of the bank credit crunch. The current share of GFIs is 9.5 percent (the outstanding balance is 24.3 trillion yen), and its presence is modest relative to the private banking sector. The role of GFIs in the SME finances, however, is not small as their loans are allocated to firms that are likely to have limited access to external finances.

Each of three GFIs provides unique lending programs and services to a different customer base. Direct lending programs to SMEs are summarized below.

The major program of the National Life Finance Corporation is to term loans to small/micro businesses that are hard to obtain loans from private financial institutions. The outstanding balance of loans to SMEs stands at 7.8 trillion yen as of March 2005. The NLFC meets a number of demands for small amounts of funds, though the maximum loan amount for one SME is set at 4.8 million yen.[11] Indeed, the NLFC lends to a large number of small businesses (about 1,330,000 businesses), and its outstanding loan per business is just about 5.9 million yen. In contrast, the average loan amount per business from domestic banks is 79.0 million yen, and that from shinkin banks is 32.3 million yen. The NFLC is specialized on considerably small financial needs compared with private financial institutions. 87.3 percent of the NLFC's customers employ less than nine persons. Furthermore, 47.5 percent of its customers are self-employed. 90.7 percent of its loans are not collateralized. The NLFC also has emphasized on startup finances. In these days, in each year the NLFC lends to about 28,000 startups, or roughly twenty percent

Finance Corporation provide loans for SMEs similar to those under NLFC and JASME elsewhere. Some SMEs borrow from other GFIs such as the Agriculture Forestry and Fisheries Finance Corporation
[11] Some programs by the NLFC set the maximum loan amount greater than 48 million yen.

of all startups in Japan.   The NLFC takes advantage of accumulated expertise on financing startups or financing small businesses shortly after the startup, and has a role of assessing financial validity of business plans when they examine the loans.

The balance of outstanding loans of the Japan Finance Corporation for Small and Medium Enterprises (JASME) stands at 7.0 trillion yen as of March 2005.   The JASME lends to businesses larger than the NLFC's customers do.   The loans are up to 480 million yen, within which the credit line for funds for working capital is 240 million yen.[12]   49.3 percent of the balance of outstanding loans is lent to manufacturers, and 51.6 percent of loans are for equipment purchases.   84.8 percent of new loans made in FY 2005 are under special programs   for the safety net purposes, loans for management reforms and loans to support regional startups.   The JASME, which actively supported new businesses, launched the special lending program to promote new businesses with growth opportunities including venture firms, and 440 loans under this program were made in FY 2004.[13]   The JASME has a large role in lending to relatively large startups or to growing firms that need a certain scale of equipment investment.   The JASME lends with   fixed interest rate and long maturity. 67.1 percent of the JASME's loans have the maturity longer than 5 years, and 186 percent of them have the maturity longer than 10 years.   This portfolio casts sharp contrast comparing with loans by private financial institutions that rarely lend for a long maturity and/or at a fixed interest rate (19.9 percent of loans are with longer maturity than 5 years, and 12.6 percent are with fixed rate).   The JASME complements private financial institutions by stably supplying long-term loans.

Unlike   the   100   percent   government   owned   NLFC   and   JASME,   the   Central

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[12]   Some programs by the JASME   set the credit line greater than 480 million yen.
[13]   Borrowers under the program are not restricted only to startups.

Cooperative Bank for Commerce and Industry (Shokochukin Bank) is owned partially (20 percents) by cooperatives.[14]   68.1 percent of the Shokochukin Bank's loans are term loans, though it provides short-term loans as well.   Loans are made for its member cooperatives and members of the cooperatives, and the credit limit per business is 2 billion yen for members of cooperatives.   The Shokochukin Bank can meet a larger financial need than two other GFIs.

4. Empirical Analysis

4.1. Data and Sample Selection

Data

The data used in this study are the micro data of the Survey of Corporate Financial Environments (SCFE) conducted by the Small and Medium Enterprise Agency of the Japanese Government in December 2003.   Survey questionnaires were sent to 15,000 firms randomly sampled from the Tokyo Shoko Research's database (TSR database), which include firms in all industries except for agriculture, forestry, fishery and public service, by industry, class based on the amount of equity and by class based on the number of employees.[15]   The response rate was 53.6 percent.[16]

The SCFE collect the data on firms and managers at four different points of time: 1)

[14] 27,451 cooperatives are members of the Shokochukin Bank as of March 2005.
[15] A caveat is that the TSR database is gravitated toward medium sized firms and includes fewer small firms than the population.   Firms that were founded recently but did not grow much are not included in the dataset.   Firms that went bankrupt are not of course included in the dataset, either.
[16] The SCFE conducted in December 2003 is the third round of the survey.   The first round of the SCFE was conducted in FY 2001.   The data of three waves (2001, 2002, and 2003) are currently available.   Rounds of the SCFE are used widely for studying small business finances in Japan.   Papers include Kano, Udell, Uchida and Watanabe (2006), Udell, Uchida and Watanabe (2006 a), Udell, Uchida and Watanabe (2006 b), Udell, Uchida and Yamori (2006) and Watanabe (2006).

before the time of startup, 2) at the time of startup, 3) a few years after startup (startup stage) and 4) at the time of survey (Table 2).

Regarding firms' borrowing from financial institutions at a startup stage (i.e. 3) described above), the SCFE asks when and to which types of financial institutions they made loan applications for the first time since the firm was established, and then ask them which types of financial institutions they succeeded in obtaining loans from.   Measures of firms' early stage borrowing are based on answers to those questions.   The SCFE additionally surveys whether firms used public credit guarantees for a borrowing at the startup stage.   On average, a firm borrows a loan when 2.41 years have passed since its startup.   For majority of firms, a loan is borrowed within a few years from the time when a firm is started.   42.8 percent of firms borrowed within one year after their startups, and 84.0 percent of them within three years respectively.[17]

Sample Selection

Firms that were established long time ago are dropped.   Firms remained in the sample are established some time from 1980 to 2003.   Subsidiary firms are also dropped so that only independently established firms are analyzed.   This is done so because a subsidiary firm often is financed through its parent who is less constrained to borrowing.

Next, the sample firms are grouped into eight subgroups based on whether the firm used governmental financial institutions, whether the firm used private financial institutions, and whether the firm used public credit guarantees, at the startup period (Table 3).[18]

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[17] The 2003 round of the SCFE does survey loans at the time of startup, but responses are few and unreliable.

[18] Private financial institutions include city banks, trust banks, former long-term and credit banks, regional banks, shinkin banks and credit cooperatives.

Among such eight groups of firms, we picked up the firms that used only private financial institutions and the firms that used only GFIs, so that we could make clearer comparison of the effects of loans from GFIs with those of loans from private financial institutions

Dependent and Independent Variables

Table 4 shows the summary statistics of variables used in the empirical analysis.

The dependent variable for the main regression equation for employment growth is the yearly geometric average of employment growth over the period from the firm's startup to present (2003). Borrowing from financial institutions is surveyed during the startup period. On average firms' borrowing from financial institutions took place 2.4 years after startup. Thus, employment growth is measured over a period starting before the firm's borrowing from financial institutions. Since the startup period is much shorter than the period from startup to present, this is unlikely to cause problems.

Besides a dummy variable that indicates whether a firm borrowed from governmental financial institutions during the startup period (GFI dummy), the following four groups of independent variables were used for employment growth regressions.

A dummy variable that indicates the founder's educational attainment (education dummy), a dummy variable that indicates the founder's previous business experiences (business experience dummy), and dummy variables that indicate the founder's work experiences (work experience dummies) constitute the first group. They are meant to capture the founder's pre startup attributes.

A logarithm of startup funds, the capital to asset ratio, a dummy variable that indicates whether the firm was established as a corporation (corporation dummy), and a dummy

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variable that indicates whether a founder owned properties are included (property owner dummy) constitute the second group.   They are meant to capture the firm's state at the time of startup.

A dummy variable that indicates whether the firm had certain business plans (business plan dummy), a dummy variable that indicates whether the firm received public awards (public awards dummy), a dummy variable that indicates whether the firm had deposits (deposits dummy), a dummy variable that indicates whether the firm was overcapitalized (overcapitalization dummy) and a dummy variable that indicates whether the firm earned a positive profit (positive profit dummy) constitute the third group.   They are meant to capture the firm's state during the startup period.

The fourth group is a set of control variables.   They include industry dummies, region dummies and dummy variables that indicate a five year window in which a firm is established.   The last set of variables is meant to control macroeconomic and financial environments in which a firm is established.

4.2. What Types of Startups Borrow from Governmental Financial Institutions?

The Model Specification

Before running employment growth regressions, it is important to know what types of startups borrow from governmental financial institutions.   If characteristics of startups that borrow from GFIs are systematically different from those of startups that borrow from private financial institutions, and if such differences in characteristics cause systematic differences between employment growth of GFIs and that of private financial institutions, then running the simple OLS regression for employment growth would result in biased

estimates of coefficients.   Examining characteristics of firms that borrow from GFIs allows us to select a set of instrumental variables for employment growth regressions.

A dependent variable is a GFI dummy that takes on a value of unity, if the firm borrowed only from governmental financial institutions at the startup period, and takes on a value of zero, if it only borrowed from private financial institutions.

Independent variables are variables that measure attributes of an entrepreneur who founds a firm, variables that measure the firm's characteristics, a dummy variable that indicate the industry that a firm belongs to, a dummy variable that indicate the region where a firm is located, and variables that capture macroeconomic environments in the period of the firm's startup.

As variables that measure characteristics of the firm's founder, an education dummy, a business experience dummy, and work experience dummies are used.   Since a startup by a more educated entrepreneur is more likely to survive, and since the experiences of relevant businesses or work experiences signal the entrepreneur's accumulated knowledge and skill on conducting a business, a startup by a more educated and/or more experienced entrepreneur is more likely to be able to borrow from private financial institutions. Therefore, we expect estimated coefficients of these dummy variables to be negative. Signs of a coefficient of a dummy variable that indicates the founder's work experience at large firms and that of a coefficient of a dummy variable that indicates his/her work experience at SMEs may be different if work experiences at large firms have a positive reputation to lenders.

As variables that measure the firm's characteristics, a logarithm of firm age, a logarithm of the number of employees at the time of startup, a logarithm of startup funds, a

business plan dummy, a property dummy, a deposits dummy, and a corporation dummy are included. Such variables that characterize the firm's startup are included, since GFI dummy is constructed based on the question of a firm's borrowing after startup not at the time of startup. Greater startup employment and startup funds likely send positive signals to private lenders, and have negative effects on a firm's choice of GFIs over private lenders. Likewise, if a concrete business plan is likely to compensate collateral, and to allow the firm to borrow from private lenders, the coefficient of a business plan dummy should be negative. The effect of a deposit dummy on GFI dummy is likely to be neutral, as the dummy just indicates whether the firm has deposits at the private financial institutions, and does not include the information of its volume. The coefficient of a corporation dummy is expected to be negative, because to establish a corporation is likely to signal greater credibility.[19]

We examine the sample of firms that includes independent firms without strong capital relationships with specific firms, and subsidiary firms. Also, we examine the smaller sample that includes only independent firms. For the former larger sample, we include a dummy variable that indicates whether the firm is a subsidiary firm (subsidiary firm dummy). Independent firms are generally riskier than subsidiary firms, and find it more difficult to borrow from private lenders.

In addition, regional dummies, industry dummies, and variables that control macroeconomic environments are included. As macroeconomic variables, we use either a logarithm of firm age or dummy variables that indicate the five-year period in which the firm was established. GFIs became more active in startup finance recently, when private

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[19] We do not include the internal funds to asset ratio, and we do not utilize an overcapitalization dummy and a positive profit dummy as independent variable, since including them causes a substantial decrease in the model fit.

financial institutions went through the financial turmoil in the late 1990s and the early 2000s. Hence, the coefficient of a logarithm of the firm's age is expected to be negative and the coefficient of a dummy variable that indicates that the firm was established in the late 1990s or in the early 2000s is expected to be positive. The coefficient of Hokkaido dummy may be positive since Hokkaido Takushoku Bank, a leading bank in that region failed in1997.

The Results

The regression for the firms' choice of lenders is estimated using the probit regression model. The estimation results are presented in Table 6. The regression is also run using the larger sample including subsidiary firms for a reference purpose.

The results are supportive of most of our predictions. Statistically significant opposite signs are found in estimated coefficients of a work experience dummy for large enterprises and a logarithm of the firm's age. The sign of the coefficient of a corporation dummy, though insignificant, is also opposite to the prediction. These results suggest that an infant firm chooses a private financial institution over a GFI when a firm is rich in startup assets or is able to offer collateral. A solid business plan does not matter much to private lenders.

The younger a firm is, the more likely the firm borrows from a GFI. This is not only because private financial institutions are less willing to lend to startups, but also probably because the special lending program was launched to mitigate the negative influences of the financial crisis on SMEs. Another fact supporting this view is that a coefficient of a dummy variable to indicate that a year of a firm's establishment is in the early 2000s is

positive and significant.

There are few industry dummies whose coefficients are significant.   Only exceptions are the positive coefficient of the dummy variable for the retail industry and the negative coefficient of the dummy variable for the real estate industry.   As expected, a coefficient of a Hokkaido dummy is positive and significant.   A coefficient of an Okinawa dummy is also positive and significant.

In summary, government financial institutions tend to lend to entrepreneurs who are asset poor, entrepreneurs who cannot afford to pledge collateral, and entrepreneurs with no prior business experiences.   GFIs seem to lend to firms in regions where private credit availability is limited and/or during the period when private credit availability is limited. As for firms during the startup period, GFIs and private financial institutions are complements, and do not seem to be in rivalry each other.

4.3. The Effect of Governmental Financial Institutions on Employment Growth

The Empirical Specification

Are loans from governmental financial institutions effective in helping startups grow faster?   To answer this important question, we examine whether a firm that borrows from a GFI achieves a higher employment growth relative to a firm that borrows from a private institution.   The key independent variable is, thus, a dummy variable that indicates whether the firm borrowed from GFIs or from private banks during the startup period.   We use a set of independent variables that are almost identical to the one used in estimating probit models for a firm's choice of lenders.   A public award dummy is added since winning a public award for a business idea would show a greater potential for the

entrepreneur in the long run.

Table 7 presents the OLS results of regressions for employment growth. The coefficient of a GFI dummy is insignificant, but negative. Except for those of control variables, coefficients of an education dummy, a logarithm of a firm's age, the number of employees at the time of startup, and the logarithm of startup funds are significant, and the signs are positive, negative, negative, and positive, respectively. These results are consistent with findings of Yasuda (2004).

A negative coefficient of a GFI dummy is opposite to our prediction that loans from GFIs, which are said to possess expertise at conducting unique and advanced loan examinations and hold management guidance for borrowing SMEs, have a positive influence on employment growth. How can we interpret this result? Based on the results of the former probit regressions, GFIs likely lend to firms that are poor on total assets and/or cannot afford to pledge collateral. Such firms are likely to have low growth potential. The negative coefficient likely captures intrinsic limited growth potential of GFI's borrowers rather than the GFIs' ineffectiveness in nurturing the firms' growth. Ultimately, GFIs are supposed to help finance firms that private banks are less willing to lend. GFIs' loans help such "disadvantaged" startups grow in a long run, while private banks "cream skim" firms that are destined to grow. Thus, running the OLS regression of employment growth would be biased due to private banks' "cream skimming", which would result in the situation that "poor performing" firms being forced to call a help to GFIs.

In order to correct biases resulting from endogeneity in a GFI dummy mentioned above, we run instrumental variable regressions. Instruments used for a GFI dummy are a

property ownership dummy and its interaction terms with industry and region dummies. A property ownership dummy is used as an instrument, since an entrepreneur who has her own property is able to offer personal assets as collateral for her business upon a private lender's request, whereas an asset poor entrepreneur likely seeks an uncollateralized loan from a GFI. An entrepreneur's personal property does influence her firm's long run performance through ease at which she is able to borrow, but is little relevant to the firm's performance later on. [20]

It is fair to say that GFI loans, whose maturities average longer than five years, achieve their objective, if borrowers get on the growth path at the completion of repayments. A negative coefficient of a GFI dummy may reflect that the share of relatively young firms, which are yet to be on the growth track, is high in our sample. To take the significant presence of young firms into account, we add an interaction term between a GFI dummy and a logarithm of firm age. The positive coefficient of this interaction term would support the effectiveness of GFIs' loans in the long run employment growth, even though the coefficient of a GFI dummy itself is negative.

Empirical Results

Table 8 shows the estimation results of regressions for employment growth.[21] The

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[20] An education dummy, a business experience dummy, a business plan dummy, a deposits dummy, a public award dummy, a positive profit dummy, a overcapitalization dummy and a corporation dummy are also added as instrumental variables.

[21] Regressions whose results are presented in Table 6 do not include an education dummy, a business experience dummy, a business plan dummy, a deposits dummy, a public award dummy, a positive profit dummy and a corporation dummy as independent variables. One might suspect that variables that represent an entrepreneur's attributes such as an education dummy, a business experience dummy, a business plan dummy and a public dummy variable influence her firm's long run growth not only indirectly through ease at which she borrows but also affect the long run growth directly, as these attributes characterize an entrepreneur's business potential. The results of a regression that includes such variables measuring an entrepreneur's attributes as independent variables remain qualitatively the

first column, the second column, and the third column display the results of the OLS regression, the instrumental variable regression without an interaction term between a GFI dummy and a logarithm of firm age, and the instrumental variable regression with the interaction term. The fourth column presents the results of the instrumental variable regression with the interaction term estimated on the sample of recent startups whose establish year is 1990 or later.

Both the coefficient of firm age and that of the number of employees at the time of startup are negative and statistically significant in any model. The estimated coefficient of a GFI dummy is negative in any model, but is significant only in columns three and four (the instrumental variable regressions with the interaction term between a GFI dummy and a logarithm of firm age). Likewise, the coefficient of the interaction term between a GFI dummy and a logarithm of firm age is positive and significant in columns three and four.

Various test results support the validity of instrumental variable regression results. First, F tests reject the null hypothesis that selected instrumental variables are endogenous and/or instrumental variables are not strongly correlated with endogenous variables. Second, Durbin-Wu-Hausman tests select the instrumental variable regression over the OLS regression. Irrelevance of a GFI dummy (and its interaction term with firm age) in OLS regressions is likely caused by an endogenous GFI dummy we addressed earlier.

Our instrumental variable regression results suggest that employment of firms that borrowed from governmental financial institutions on average grows slower than firms that borrowed from private lenders earlier in the company history, but that the former start to grow faster than the latter as years progress. Figure 2 shows how faster or slower firms

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same. The results, however, are somewhat weaker as coefficients of a GFI dummy and its interaction term with firm age are statistically significant at the 10 percent level.

that borrow from GFIs, on average, grow than firms that borrow from private lenders as the firm ages. The point on the curve represents changes in the extent to which employment growth of firms that borrowed from GFIs faster than employment growth of firms that borrowed from private lenders over the length of the history of the companies. If the value is negative, firms that borrowed from GFIs grow slower than firms that borrowed from private lenders, and vice versa. According to Figure 2 A, firms that borrowed from GFIs start to outperform firms that borrowed from private lenders in their tenth to eleventh year. Taking into account the fact that on average firms were 2.4 years old when they borrowed from respective lenders, it takes on average about eight years for a GFI's loan to show growth effect relative to private lending. The results remain qualitatively the same when the sample is restricted to relatively young firms whose establishment year is 1990 or later (column four of Table 8 and Figure 2 B). These results support that GFIs' direct lending to young firms that were constrained to borrowing from private lenders have had a long run positive effect on employment growth.

5. Conclusion

In this paper, we analyzed roles played by governmental financial institutions in small business finances using micro data on startups in Japan. We found first that GFIs tend to lend to disadvantaged small businesses such as firms owned by an entrepreneur who is poor on personal assets and firms launched during the period when private credit availability is limited. This suggests that GFIs are not competing for "cream" firms with private lenders. We then found that firms that borrowed from GFIs, start to grow faster than firms that

borrowed from private lenders on average in the eighth year since the loans were made. These findings together suggest that GFIs have contributed to the long run growth of small firms that are declined loans from private lenders. Our findings reassure that direct lending by governmental financial institutions has played an important role in startup finances.

References

Ali-Yrkkö (2005), "Impact of Public R&D Financing on Employment," *ETLA Discussion papers*, No. 980, June.

Alumus, M (2001), "Evaluating the Impact of Public Start-up Assistance: Results from an Econometric Approach," *ZEW Discussion paper*, No.01-23, May.

Battistinnn, E., A. Gavosto and E. Rettore (2001) "Why do Subsidized Firms Survive Longer?: an Evaluation of a Program Promoting Youth Entrepreneurship in Italy," in Lechner, M. and F. Pfeiffer (eds.), *Econometric Evaluation of Labor Market Policies*, Physica, Heidelberg, pp.153-181.

Becker, S and A. Ichino (2002), "Estimation of Average Treatment Effects Based on Propensity Score," *Stata Journal*, 2(4), pp.358-377.

Berger, A.. and Udell, G. (1995), "Relationship Lending and Lines of Credit in Small Firm Finance," *Journal of Business* Vol.68. No.3, pp.351-381.

－ and － (1998), "The Economics of Small Business Finance: the Role of Private Equity and Debt Markets in the Financial Growth Cycle,"*Journal of Banking and Finance* 22, pp.613-673.

－ and － (2002), "Small Business Credit Availability and Relationship Lending: the Importance of Bank Organization Structure," *Economic Journal*, volume, 112 issue 477, February, pp.32-53.

Bester, H（1985）," Screening versus Rationing in Credit Markets with Imperfection Information," *American Economic Review*, 75, pp.850-855.

Boot, A., A. Thakor, and G. Udell（1991）," Credible Commitments, Contract Enforcement Problems and Banks," *Journal of Banking and Finance* 15, pp.605-632.

Carpenter, R. and B. Petersen（2002）," Capital Market Imperfections, High-Tech Investment, and New Equity Financing," *Economic Journal* 112,F34-F72.

Cassar, G (2004), "The Financing of Business Start-ups," *Journal of Business Venturing*, 19, pp.261-283.

Coleman, S (1998), "Access to Capital: a Comparison of Men and Women-owned Small Business," *Frontiers of Entrepreneurship Research,* Babson College, pp.152-164.

Crepon, B. and E. Duguet (2003), "Bank Loans, Start-up Subsidies and the Survival of the New Firms: an Econometric Analysis at the Entrepreneurship level," *EUREQua* 2003(77).

Fluck, Z., Holtz-Eakin, D. and H. Rosen (2000), "Where dose the Money come from?: the Financing of Small Entrepreneurship Enterprise," Working Paper, New York University.

Gale, W. (1990 a), "Federal Lending and the Markets for Credit," *Journal of Public Economics*, vol. 43 (2), July, pp. 177-193.

Gale, W. (1990 b), "Collateral, Rationing, and Government Intervention in Credit Markets," in Hubbard, G. ed., *Asymmetric Information, Corporate Finance, and Investment*, University of Chicago Press, pp 43-61.

Innes, R (1991), "Investment and Government Intervention in Credit Markets when There is Asymmetric Information," *Journal of Public Economics*, vol. 46 (3), December, pp. 347-381.

Kutsuna, Kenji (2005), "Procurement of Startup Funds", Kutsuna, Kenji and Takehiko Yasuda eds., *Startups in Japan*, Shiramomo Shobo, pp. 127 – 153 (in Japanese).

Jappelli, T. and M. Pagano (1993), "Information Sharing in Credit Markets," *Journal of Finance*, vol. 43 (5), December, pp.1693-1718.

Li, W (1998), "Government Loan, Guarantee, and Grant Programs: An Evaluation," *Economic Review*, Federal Reserve of Richmond, 84 (4), Fall, pp. 25-51.

Nemoto, Tadanobu (2005), "Theory and Practice of Policy Based Finances for Small and Medium Enterprises", *Journal of Commerce*, Chuo University, March, pp. 387-431 (in Japanese).

Michael, N., Chittenden, F. and P. Poutziouris(1997) Financial Policy and Capital Structure Choice in U.K., *Small Business Economics*. 9(2), pp.125-135.

Mitsui, Kiyoshi (2002), "Securitization and Venture Capital Markets: Roles of Finance and Governments", Matsuura, Katusmi and Yasuhiro Yonezawa, eds., "New Trends in Finance", Nihon Hyoronsha, pp. 187-210 (in Japanese).

Pfeiffer, F. and F. Reize(2000), Business Start-ups by the Unemployed: Econometric Analysis based on Firm Data, *Labor Economics*, Vol. 7, pp.629-663.

Storey, D. J(1994), *Understanding the Small Business Sector*. Thomson Learning.

Wallsten, S. J(2000), "The Effect of Government-Industry R&D Programs on Private R&D: the Case of the Small Business Innovation Research," *Rand Journal of Economics*, vol. 31, pp.82-100.

Williamson, S. (1994), "Do Informational Frictions Justify Federal Credit Programs?" Journal of Money, Credit and Banking, vol. 26 (3), August, pp. 523-554.

Yasuda, Takehiko (2004), "The Liquidity Constraint for a Startup, Motivations for Startup and Roles of Policy Based Finance," the RIETI Discussion Paper Seriese 04-J-032 (in Japanese).

Table 1. The Distribution of the Number of Employees at Startup for Sample Firms

The number of Employees	- 4	5 - 9	10 - 19	20 - 49	50 -	Mean
At the time of startup N=438	65.5	17.1	9.2	5.0	3.2	7.7
At the time of survey, Oct. 2003, N=443	19.9	25.7	23.9	19.4	11.1	22.3

Table 2. Information on Sample Firms Available at Life Stages

Time	1) before the time of startup	2) at the time of startup	3) a startup stage	4) at the time of survey
Definition/ distribution	Until startup	1980 - 2000	A few years after startup (average)	October, 2003
Major information	an entrepreneur's education an entrepreneur's prior experiences an entrepreneur's previous employer's firm size	a year of startup startup funds procurement of funds corporation/personal business employment an owner manager's assets susbsidiaries/independent	the number of years since startup financial institutions used business plans public awards deposits overcapitalization peofit/loss	the number of employees an industry a region financial transactions

Source: The Survey of Corporate Financial Environments (SCFE). Sources of tables and figures that appear below are the SCFE when without being noted.

Table 3. The Distribution of the Sample Firms' Finances at a Startup Stage
(N=1402)

	Loans from private institutions	Loans from governmental financial institutions	
		No	Yes
With a public credit guarantee	No	21	97
	Yes	346	14
Without a public credit guarantee	No	13	68
	Yes	728	115

Table 4. Description of Variables

Variable Name	Description	N	Min	Max	Mean	SD.
education DM	college grauate or higher = 1	430	0.00	1.00	0.48	0.0241
business experience DM	has related business experiences = 1	427	0.00	1.00	0.85	0.0174
log of startup funds (one million yen)		405	0.00	11.70	2.85	0.0888
the yearly geometric average of employment growth (startup - present)		387	-1.00	1.56	0.10	0.0111
the ratio of internal funds to total funds		312	0.02	1.00	0.73	0.0175
business plan DM	= 1 if the firm has business plans	409	0.00	1.00	0.59	0.0243
public award DM	= 1 if the firm received awards	392	0.00	1.00	0.07	0.0126
deposits DM	= 1 if the firm had deposits	410	0.00	1.00	0.62	0.0239
overcapitalization DM	= 1 if the firm was overcapitalized	362	0.00	1.00	0.84	0.0192
positive profit DM	= 1 if the firm had a positive profit	408	0.00	1.00	0.75	0.0213
corporation DM	= 1 if the firm was a corportation	437	0.00	1.00	0.90	0.0141
log of the number of employees		387	0.00	5.30	1.34	0.0569
property owner DM	=0 if an founder owned properties	428	0.00	1.00	0.66	0.0230
work experience DM1= 1 if the founder worked at large firms/government		431	0.00	1.00	0.22	0.0199
work experience DM2=1 if the founder worked at SMEs.		431	0.00	1.00	0.73	0.0214
work experience DM3=1 if the founder worked part time/had not worked		431	0.00	1.00	0.05	0.0106
the number of years from the time of startup to the first loan borrowed		430	0.00	20.00	2.41	0.1084
establishment year DM1	founded in 1980-84	443	0.00	1.00	0.15	0.0171
establishment year DM2	founded in 1985-89	443	0.00	1.00	0.13	0.0160
establishment year DM3	founded in 1990-94	443	0.00	1.00	0.28	0.0214
establishment year DM4	founded in 1995-99	443	0.00	1.00	0.34	0.0225
establishment year DM5	founded in 2000-03	443	0.00	1.00	0.10	0.0142
industry DM1	construction	435	0.00	1.00	0.40	0.0235
industry DM2	manufacturing	435	0.00	1.00	0.12	0.0157
industry DM3	information and communications	435	0.00	1.00	0.03	0.0088
industry DM4	transportation	435	0.00	1.00	0.03	0.0075
industry DM5	wholesale	435	0.00	1.00	0.14	0.0168
industry DM6	retail	435	0.00	1.00	0.06	0.0114
industry DM7	real estate	435	0.00	1.00	0.09	0.0137
industry DM8	restaurants	435	0.00	1.00	0.00	0.0023
industry DM9	services	435	0.00	1.00	0.09	0.0137
industry DM10	other	435	0.00	1.00	0.04	0.0093
region BDM1	Hokkaido	443	0.00	1.00	0.04	0.0091
region BDM2	Tohoku	443	0.00	1.00	0.12	0.0156
region BDM3	Kanto	443	0.00	1.00	0.35	0.0228
region BDM4	Chubu	443	0.00	1.00	0.08	0.0130
region BDM5	Kinki	443	0.00	1.00	0.14	0.0163
region BDM6	Chugoku	443	0.00	1.00	0.09	0.0133
region BDM7	Shikoku	443	0.00	1.00	0.08	0.0127
region BDM8	Kyushu	443	0.00	1.00	0.09	0.0138
region BDM9	Okinawa	443	0.00	1.00	0.01	0.0055

Table 5 Predicted Signs for Effects of Characteristics on the Firm' Choice of Lenders

Independent variables	Predicted signs
Education DM	-
Business experience DM	-
Work experience DM (large firms)	-
Work experience DM (SMEs)	+
Logarithm of the firm's age	±
Logarithm of the number of employees at the time of startup	-
Logarithm of startup funds	-
Business plan DM	-
Deposits DM	±
Property owner DM	-
Corporation DM	±
Subsidiary DM	-
Indusry DMs	±
Region DMs	±

Table 6 The Results of Probit Regressions for the Firm's Choice of Lenders

A dependent variable is a GFI dummy (a dummy variable that takes 1 if a firm borrows from governmental financial institutions).

Independent variable	Independent firms (n=465)			Independent and subsidiary firms (n=645)			Independent firms (n=465)		
	coefficient	std.	p value	coefficient	std.	p value	coefficient	std.	p value
Education DM	-0.434	0.225	0.054*	-0.437	0.201	0.030**	-0.447	0.232	0.055*
Business experience DM	-0.774	0.31	0.013**	-0.804	0.265	0.002***	-0.78	0.316	0.014**
Work experience DM (large firms)	6.103	1.097	0.000***	5.706	1.004	0.000***	6.219	0.944	0.000***
Work experience DM (SMEs)	6.586	1.083	0.000***	6.238	0.99	0.000***	6.664	0.917	0.000***
Logarithm of the firm's age	-0.372	0.211	0.078*	-0.442	0.192	0.021**			
Logarithm of the number of employees at the time of startup	-0.202	0.119	0.09*	-0.231	0.104	0.026**	-0.233	0.125	0.062*
Logarithm of startup funds	-0.153	0.079	0.053*	-0.054	0.072	0.453	-0.142	0.081	0.078*
Business plan DM	0.459	0.244	0.060*	0.145	0.207	0.482	0.553	0.257	0.031**
Deposits DM	-1.122	0.21	0.000***	-1.059	0.188	0.000***	-1.178	0.222	0.000***
Property owner DM	0.247	0.24	0.302	0.349	0.222	0.116	0.181	0.249	0.469
Corporation DM	0.065	0.411	0.874	0.132	0.411	0.749	0.099	0.426	0.816
Subsidiary DM				-0.506	0.251	0.044**			

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Table 6 continued.

Independent variable	Independent firms (n=465)			Independent and subsidiary firms (n=645)			Independent firms (n=465)		
	coefficient	std.	p value	coefficient	std.	p value	coefficient	std.	p value
Manufacturing	0.248	0.329	0.451	0.425	0.292	0.146	0.159	0.342	0.642
Information and communications	-1.113	0.825	0.177	-0.119	0.547	0.827	-1.402	0.867	0.106
Wholesale	0.426	0.306	0.164	0.443	0.271	0.102	0.362	0.318	0.256
Retail	0.582	0.427	0.172	0.809	0.394	0.040**	0.668	0.432	0.122
Real estate	-0.936	0.454	0.039**	-0.477	0.372	0.200	-0.996	0.460	0.030**
Services	-0.033	0.445	0.942	-0.103	0.414	0.804	0.019	0.457	0.966
Other	-0.011	0.621	0.986	-0.259	0.569	0.649	-0.149	0.631	0.814
Hokkaido	1.386	0.591	0.019**	1.028	0.532	0.053*	1.457	0.617	0.018**
Kanto	0.402	0.371	0.279	0.250	0.317	0.429	0.426	0.372	0.252
Chubu	-0.860	0.656	0.190	-0.332	0.480	0.488	-1.057	0.682	0.121
Kinki	0.460	0.426	0.280	0.153	0.358	0.670	0.492	0.430	0.252
Chugoku	-0.421	0.498	0.397	-0.619	0.450	0.169	-0.419	0.503	0.405
Shikoku	-0.565	0.570	0.321	-0.800	0.519	0.123	-0.605	0.572	0.290
Kyushu	0.618	0.430	0.151	0.478	0.375	0.203	0.619	0.434	0.154
Okinawa	1.754	0.756	0.020**	1.474	0.713	0.039**	2.107	0.782	0.007***
Established in 80-84							0.511	0.353	0.148
Established in 85-89							-0.335	0.438	0.445
Established in 90-94							0.426	0.289	0.141
Established in 2000-03							0.818	0.390	0.036**
Constant	-4.142	····	····	-4.374	····	····	-5.473	····	····
N	304			401			304		
Chi squared	103			117.55			108.53		
Degrees of freedom	27			27			30		
p value	0.000***			0.000***			.0000***		

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Table 7 The Regression Results for Employment Growth (OLS)

Independent variable	coefficient	std.	p value	coefficient	std.	p value
Education DM	0.076	0.023	0.001***	0.037	0.022	0.098
Business experience DM	0.020	0.031	0.511	0.060	0.031	0.054*
Work experience DM (large firms)	-0.062	0.061	0.309	-0.032	0.056	0.573
Work experience DM (SMEs)	-0.078	0.058	0.178	-0.016	0.055	0.763
Logarithm of the firm's age	-0.098	0.022	0.000***	-0.076	0.021	0.000***
Logarithm of the number of employees at the time of startup	-0.058	0.011	0.000***	-0.060	0.011	0.000***
Logarithm of startup funds	0.017	0.007	0.021**	0.009	0.007	0.211
Business plan DM	0.001	0.024	0.978	0.004	0.023	0.87
Public award DM	-0.003	0.047	0.943	0.012	0.045	0.784
Deposits DM	-0.001	0.024	0.96	0.009	0.022	0.674
Corporation DM	-0.011	0.042	0.789	-0.002	0.039	0.962
GFI DM	-0.020	0.030	0.502	-0.023	0.029	0.434

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Table 7 continued.

Independent variable	coefficient	std.	p value	coefficient	std.	p value
Manufacturing				0.062	0.035	0.078*
Information and communications				0.191	0.053	0.000***
Transportation				0.128	0.082	0.12
Wholesale				0.024	0.033	0.466
Retail				0.106	0.044	0.017**
Real estate				0.025	0.04	0.536
Restaurants				0.489	0.092	0.000***
Services				0.180	0.042	0.000***
Other				0.090	0.058	0.123
Hokkaido				-0.064	0.064	0.314
Kanto				-0.011	0.038	0.771
Chubu				0.003	0.051	0.958
Kinki				0.004	0.044	0.934
Chugoku				-0.023	0.046	0.627
Shikoku				-0.037	0.050	0.461
Kyushu				0.007	0.047	0.889
Okinawa				0.057	0.094	0.544
Constant	0.281	0.117	0.017**	0.187	0.114	0.103
N		304			302	
F value		4.36			4.01	
p value		0.000***			0.000***	
Degrees of freedom		0.126			0.2246	

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Table 8 The Regression Results for Employment Growth (Instrumental Variable Regressions)

Independent variable	OLS, independent firms			IV, independent firms, a			IV, independent firms, b			IV, independent firms, founded after 1990		
	coefficient	std.	p value	coefficient	std.	p value	coefficient	std.	p value	coefficient	std.	p value
GFI DM	-0.139	0.107	0.198	-0.062	0.051	0.226	-1.349	0.603	0.026**	-0.900	0.300	0.003***
GFI DM×logarithm of the firm's age	0.048	0.045	0.286				0.570	0.265	0.032**	0.389	0.136	0.005***
Logarithm of the firm's age	-0.124	0.023	0.000***	-0.077	0.023	0.001***	-0.235	0.080	0.004***	-0.181	0.060	0.003***
Logarithm of the number of employees at the time of startup	-0.059	0.009	0.000***	-0.062	0.010	0.000***	-0.061	0.012	0.000***	-0.067	0.012	0.000***
Manufacturing	0.09	0.033	0.007***	0.064	0.022	0.005***	0.030	0.040	0.451	0.071	0.033	0.031**
Information and communications	0.17	0.055	0.002***	0.196	0.047	0.000***	0.192	0.041	0.000***	0.209	0.048	0.000***
Transportation	0.149	0.072	0.039**	0.118	0.033	0.000***	0.162	0.060	0.008***	0.028	0.041	0.493
Wholesake	0.031	0.032	0.331	0.044	0.028	0.121	0.032	0.044	0.471	0.077	0.038	0.046**
Retail	0.100	0.042	0.017**	0.118	0.046	0.011**	0.078	0.056	0.162	0.118	0.057	0.038**
Real estate	-0.009	0.037	0.813	0.017	0.054	0.752	0.005	0.054	0.921	0.062	0.038	0.105
Restaurants	0.513	0.100	0.000***	0.713	0.265	0.008***	0.647	0.216	0.003***	0.971	0.250	0.000***
Services	0.190	0.037	0.000***	0.154	0.036	0.000***	0.137	0.045	0.003***	0.163	0.048	0.001***
Other	0.098	0.050	0.050**	0.068	0.037	0.069*	0.094	0.047	0.046**	0.045	0.056	0.430
Hokkaido	-0.022	0.060	0.720	-0.036	0.042	0.399	-0.098	0.085	0.249	-0.014	0.079	0.865
Kanto	0.021	0.035	0.554	0.014	0.026	0.601	-0.021	0.039	0.588	0.028	0.031	0.362
Chubu	-0.046	0.047	0.329	0.017	0.044	0.690	-0.015	0.056	0.782	0.001	0.073	0.985
Kinki	0.031	0.04	0.446	0.023	0.031	0.454	0.023	0.040	0.560	0.036	0.044	0.405
Chugoku	-0.028	0.044	0.525	-0.039	0.029	0.175	-0.059	0.042	0.157	-0.014	0.036	0.707
Shikoku	-0.050	0.049	0.303	-0.066	0.064	0.299	-0.095	0.076	0.214	-0.140	0.080	0.082*
Kyushu	-0.014	0.044	0.742	0.014	0.027	0.616	-0.004	0.042	0.923	0.016	0.034	0.639
Okinawa	0.066	0.085	0.437	0.079	0.043	0.066*	0.040	0.062	0.517	0.033	0.036	0.351
Constant	0.440	0.069	0.000***	0.334	0.073	0.000***	0.743	0.216	0.001***	0.561	0.155	0.000***
N	395			268			268			193		
F value	6.94			4.92			4.04			····		
p value	0.000***			0.000***			0.000***			····		
IVb) vs OLS（Hasuman test）						chi2(22)=45.55						

Notes: Standard errors are White's robust standard errors.

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Instrumental variables used are an education dummy, a business experience dummy, a business plan dummy, a deposits dummy, a public award dummy, a positive profit dummy, a corporation dummy, a property owner dummy, a logarithm of startup funds, industry dummies×a property owner dummy, region dummies×a property owner dummy

Table 9 F Statistics in the First Stage for IV, independent firms, b in Table 8.

Endogenous variable	GFI dummy only	GFI dummy and GFI dummy ×logarithm of the firm's age
F value	2.2	1.95
p value	0.0001***	0.0007***

***, ** and * indicate that a coefficient is statistically significant at 1 percent, 5 percent and 10 percent significance levels respectively

Figure 1. Trends in the Share of Governmental Financial Institutions in Loans to Small and Medium Enterprises
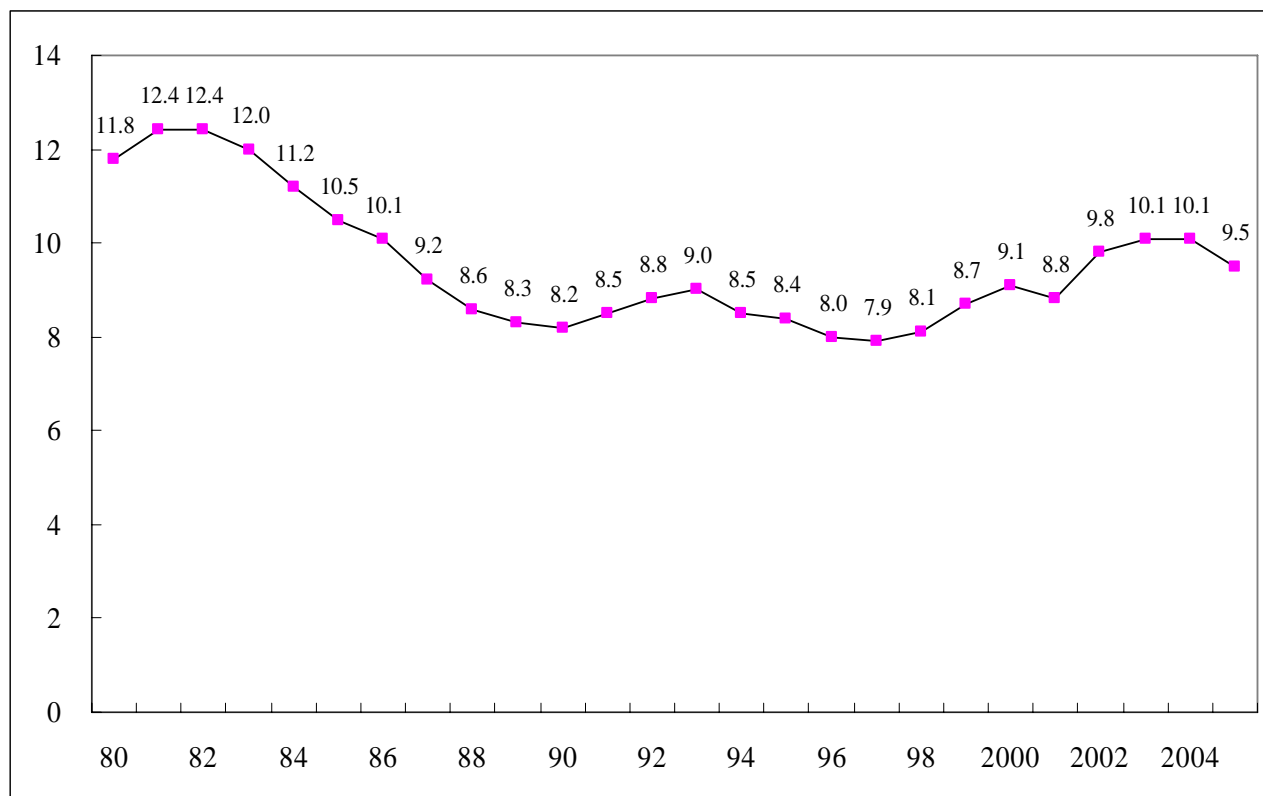

Source: "Financial and Economic Statistics Monthly", the Bank of Japan; individual reports of governmental financial institutions.

Note: The data are recorded at the fiscal year end.

Figure 2. How Faster or Slower Firms that Borrow from Governmental Financial Institutions, on Average, Grow than Firms that Borrow from Private Lenders over the Firm's Age?

A: The entire sample (firms founded in 1980-2003)

Firm's age
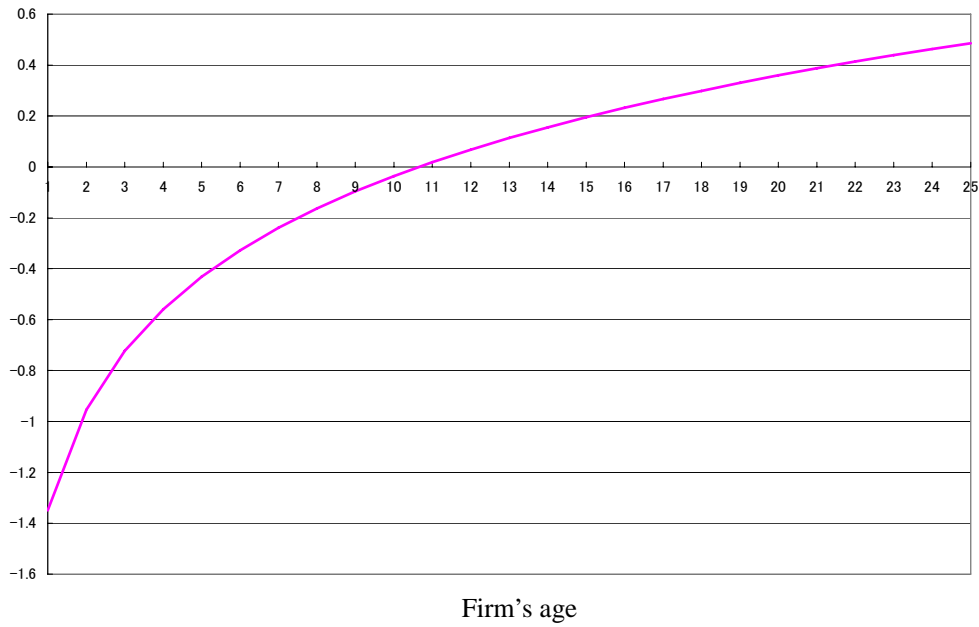
Note: The figure is based on the regression result in column 2 of Table 8.

B: The sample of young firms (firms founded in 1990-2003)

Firm's age
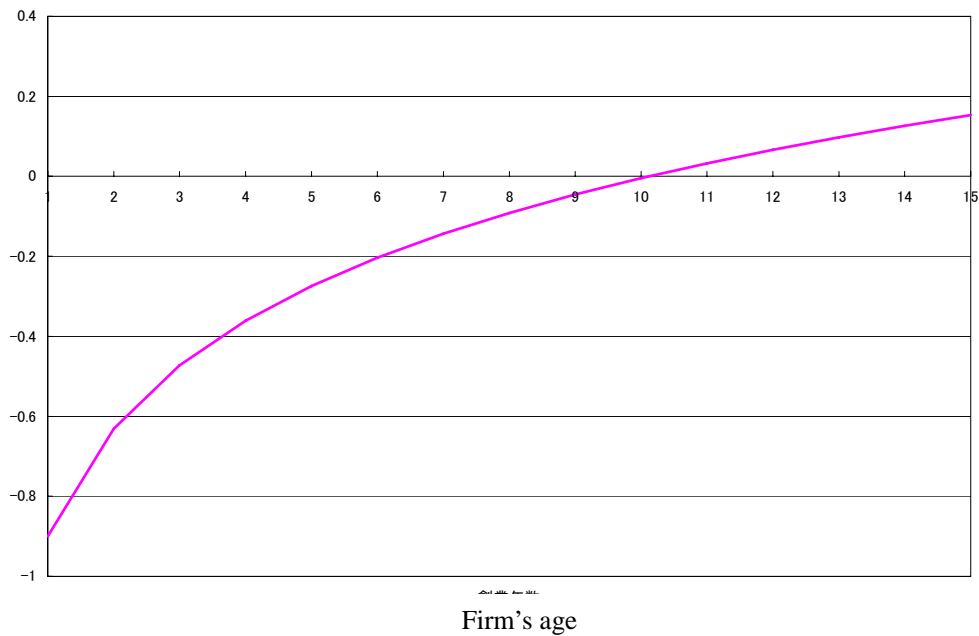
Note: The figure is based on the regression result in column 4 of Table 8.