Wesleyan Economic Working Papers

http://repec.wesleyan.edu/
N°: 2008-003

Crowding-Out Effects of a Government-Owned Depository Institution: Evidence from a Natural Experiment in Japan

Masami Imai

September 2008

WESLEYAN UNIVERSITY

Department of Economics
Public Affairs Center
238 Church Street
Middletown, CT 06459-007

Tel: (860) 685-2340
Fax: (860) 685-2301
http://www.wesleyan.edu/econ

Crowding-Out Effects of a Government-Owned Depository Institution: Evidence from a Natural Experiment in Japan*

Abstract

Beginning in 2000, Japan's government-owned postal saving system experienced a rapid outflow of funds as a large number of 10-year fixed-rate Postal Saving Certificates (PSCs) that had been purchased during the period of high interest rates in the early 1990s were maturing. This paper exploits this episode as a natural experiment to investigate the crowding-out effects of a government-owned depository institution on local economies. The panel data of 47 prefectures from 1995 to 2004 show that the prefectures where local funds were heavily invested in the postal saving system in the early 1990s tended to experience a larger shift of funds into private banks from the postal saving system in the early 2000s, suggesting that the exogenous maturing of PSCs was in part responsible for the observed shifts in the allocation of local funds. More importantly, the (instrumented) flow of local funds to private banks from the postal saving system has statistically robust and economically important positive effects on local output and on the number of small firms, but not on the number of large firms. These results provide empirical support for the view that a government-owned depository institution has crowding-out effects on local economies and, in particular, on small firms that rely on local banks in direct competition with government-owned depository institutions for local deposits.

JEL Classification Codes: E44, G21, G28

Key Words: Postal Saving system, Japan, Crowding-Out

Masami Imai
Assistant Professor of Economics
Wesleyan University
PAC 123
238 Church Street
Middletown, CT 06459-0007
860-685-2155
860-685-2301 (fax)
mimai@wesleyan.edu

* The author gratefully acknowledges financial support from the Henry R. Luce Foundation, the Mellon Foundation, Federal Deposit Insurance Corporation's Center for Financial Research, and research grants from Wesleyan University. The author is grateful to Richard Grossman and Yoshiaki Ogura for insightful comments, Yashan Zhou and Maiko Kondo for excellent research assistance. The author is responsible for all errors and omissions. Earlier drafts of this this paper were circulated with the title of "Real Effects of Finance: Evidence from a Natural Experiment in Japan."

1. Introduction

Do government-owned banks serve under-banked (or un-banked) savers who do not have access to the private provision of depository services, thereby raising untapped saving that would not otherwise have flowed into financial markets? Alternatively, does the presence of government-owned banks retard the growth of private banks and economies as they absorb funds that could be deployed more productively? These questions are of interest to policy-makers as a number of studies suggest that the development of financial markets is an important determinant of entrepreneurship and economic growth (e.g., King and Levine, 1993; Rajan and Zingales, 1998). Nonetheless, because the allocation of deposits between government-owned banks and private banks is endogenous to local financial and economic conditions, it is difficult to formulate appropriate empirical strategy to investigate these questions in a systematic fashion. This paper studies whether or not a government-owned depository institution has negative crowding-out effects on local economies by exploiting a unique event in Japan that resulted in a transparent instrumental variable that can be used to identify exogenous shift in the allocation of local funds between a government-owned depository institution and private banks.

In 1990, interest rates peaked, causing many Japanese savers to purchase Postal Saving Certificates (PSCs) issued by the local postal offices. PSCs resemble 10-year fixed-rate certificates of deposits (CDs) offered by private banks: PSCs offer virtually identical interest rates as CDs and, like CDs, are also protected by government guarantee up to 10,000,000 yen (approximately, 100,000 dollars).[1] The only difference, however, is that the holders of PSCs do not have to pay a penalty for early liquidation. Such an implicit "put option" gives depositors

[1] One could argue, however, that PSCs might be a little safer if depositors believe that (1) the postal saving system will never default, and (2) private banks fail with a positive probability and the actual payout of guaranteed deposits will cost them some time and resources (e.g., bureaucratic paper works to verify which accounts belong to who).

strong incentives to hold on to PSCs during the periods of declining interest rates until maturity while liquidating and re-investing them during the periods of rising interest rates.

After 1990, Japanese savers faced steadily declining interest rates, which eventually fell to zero percent in 2000. Predictably, because of this extraordinary development, those who had bought PSCs in the early 1990s held onto them throughout the 1990s. These PSCs began to reach maturity in 2000, prompting those savers to invest their funds elsewhere as newly issued PSCs no longer offered attractive interest rates. Although some of these funds were re-deposited into the postal saving system, the system, which had held 260 trillion yen as of 1999, ended up losing about one-fifth of its funds (i.e., 60 trillion yen) by 2005. Given that Japan's GDP is approximately 500 trillion yen, the size of financial re-balancing that occurred after 2000 is significant. In sum, this unique institutional feature of PSCs, although it created serious distortion in the societal allocation of interest rate risk, generated a useful natural experiment in which a large sum of local funds that were taken in by the postal saving system in the early 1990s were being released to seek the highest return 10 years later for reasons unrelated to local demand conditions.

More specifically, I make use of variation in the share of postal saving deposits in total deposits (i.e., postal saving deposits plus deposits at private banks) across 47 prefectures during the period of high interest rates in the early 1990s as an instrument to predict variation in differential shifts in the share 10 years later in the early 2000. The empirical results indeed show that the prefecture with a higher share of postal saving deposits in the 1990s tended to experience larger decline in the share after 2000. That is, the prefectures whose funds were more heavily invested in the postal saving system in the early 1990s tended to experience larger outflow of deposits from the postal saving system into private banks in the early 2000s as a result of the

exogenous maturing of PSCs. Furthermore, the share of postal saving deposits, when appropriately instrumented, is negatively correlated with prefecture income and also with the number of small firms, but not the number of large firms. Overall, the findings lend support for the view that Japan's postal saving system had a negative crowding-out effect on local economy as it took away scarce funds from private banks. In addition, the results suggest that such crowding-out effects have distributional consequence as they have the largest effects on small firms that rely on local banks that compete with the postal saving system for deposits.

This paper is closely related to a large literature that studies the adverse effects of government-ownership of banks on the efficiency of credit allocation and economic performance (e.g., La Porta, Lopez-de-Silanes, and Shleifer, 2002; Sapienza, 2004; Khwaja and Mian, 2005; Dinç, 2005; Micco, Panizza, and Yanez, 2007; Cole, forthcoming; Imai, forthcoming). The empirical evidence in this literature suggests that the negative economic effects of government-owned banks stem from the fact that they are prone to make lending decisions based upon political considerations, not on the economic viability of investment opportunities. This paper complements these earlier studies by examining the funding side of a government owned depository institution and estimating the economic costs that are associated with flow of funds from private banking sector to a government owned depository institution.

The present paper also complements a growing literature on access to financial services around the world (e.g., World Bank, 2008; Schmukler, Gozzi, and de la Torre, 2007; Claessens, 2006; Beck, Demirguc-Kunt, and Martinez Peria, 2007). Strikingly, the existing cross-country studies in this literature show that government-ownership of banks, most of which are supposed to provide universal financial services, is negatively correlated with various indices of access to finance (e.g., Beck, Demirguc-Kunt, and Martinez Peria, 2007). Although these results need to

be interpreted with caution given the endogeneity of government owned banks, one interpretation that is consistent with both the results of cross-country studies and those of this paper is that large government-owned banks, like Japan's postal saving system, expends an enormous amount of resources in its efforts to draw deposits away from private banks instead of offering depository services to the un-banked (or under-banked). This interpretation is also consistent with the political motivation of governments to extract a large sum of economic rents from financial markets at the expense of public interests.

In addition, this paper's findings closely resemble those of O'Hara and Easley (1979) that show that the postal saving system in the United States diverted substantial sums from thrift institutions during the period of the Great Depression which, in turn, caused a severe slump in local housing markets. A policy implication that naturally emerges from both this paper and O'Hara and Easley (1979) is that postal saving systems -or government-owned financial institutions in general- that aim to provide financial services to the un-banked or under-banked must be carefully designed so as not to adversely affect the flow of funds to local borrowers who borrow from financial institutions that are in direct competition with postal saving systems for deposits.

Finally, Guiso, Sapienza, and Zingales (2002) show that local financial development contributes positively to entrepreneurship and local economic growth in Italy where, presumably, there have been no regulatory barriers to intra-national flow of capital for more than a century. Based on these results, they maintain that "domestic financial institutions are likely to remain important in a financially integrated Europe and, more broadly, in a financially integrated world

for some time to come."[2] The results of the present paper are also consistent with such view: the allocation of local deposits between the postal saving system and private banks turns out to be an important determinant of local income and entrepreneurships in Japan where there is no barrier to intra-national capital mobility. That is, if there was no informational friction in Japan's financial market, local economic performance would not depend on the supply condition of local deposits since profitable investment projects would have attracted finance from national (or international) capital market.

The rest of this paper is organized as follows. Section 2 describes the institutional background of Japan's postal saving system (Postal Saving Certificates, in particular) during the period that the present paper investigates. Section 3 describes the empirical strategy and data. Section 4 presents the basic results. Section 5 shows the results on differential effects of finance on small firms versus large firms. Section 6 performs robustness checks. Section 7 makes concluding remarks.

2. Institutional Background[3]

Japan's postal saving system is large. There are over 24,000 post offices nationwide, more than the total number of bank branches (just over 22,000). As of 1999, when its deposits peaked, the amount of outstanding deposits was 260 trillion yen (approximately $2.4 trillion), 37 percent of total household deposit holdings, more than a half of Japan's Gross Domestic Products). The funds collected at post offices were channeled to the Ministry of Finance, which generally used

[2] Jayaratne and Strahan (1996) and Becker (2007) also show the importance of local financial condition for local income and entrepreneurship in the US. Their results, however, might be driven by incomplete branch deregulation that left the US financial market geographically segmented.

[3] The postal saving system went through extensive reform in 2007. This section focuses exclusively on the institutional background of postal saving system during 1985-2004.

them to fund central and local government and government-owned enterprises and banks.[4] Hence, locally collected funds were not necessarily invested in local economies.

Among the type of deposits offered at post offices, Postal Saving Certificates (PSCs) were the most popular, equaling as much as 90 percent of total deposits collected by postal saving system. PSCs closely resembled 10-year fixed-rate certificates of deposits (CDs) issued by private banks: PSCs offered virtually identical interest rates as CDs, and, like CDs, were protected by government guarantee up to 10,000,000 yen (approximately $100,000). The main attractions of PSCs were: (1) they offered a fixed-interest rate for up to 10 years maturity, so that savers did not bear any interest rate risk; and (2) early withdrawal could be made without penalty after six months.[5] Such an implicit "put option" naturally gave depositors strong incentives to hold onto PSCs during the period of declining interest rates until maturity while liquidating them during the period of rising interest rates.

Hence, if the interest rate on PSCs peaks and then never recovers to that level during the subsequent 10 years, then the postal saving system will be vulnerable to fund withdrawal exactly 10 years after the peak year, provided that the postal saving system is unable to offer a competitive interest rate in order to prevent deposit withdrawal. The Japanese economy has twice experienced such movement in interest rates as can be seen in Figure 1. The first such episode occurred in the 1980s. As the interest rate on PSCs rose prior to 1980, depositors exercised their "put option" by liquidating their PSCs and then purchasing them back at higher interest rates, which can be seen by the simultaneous rise in "receipts" and "withdrawals" of funds in and out of postal saving system prior to 1980. Over the next 10 years, the interest rate never recovered to

[4] Recent empirical studies suggest that these funds were allocated based on political purposes and invested in unviable projects (Doi and Hoshi (2003), Imai (forthcoming)).
[5] Private banks in Japan were offering so-called Maturity Designated Time Deposits (MTDs), which gave the same type of implicit option, but the maturity of MTDs was only three years.

the 1980 level, which meant that the postal saving system was vulnerable to a loss of deposits in 1990. As Figure 1 shows, however, although the postal saving system did experience rapid withdrawals of funds in 1990, virtually all of these funds were re-deposited back into it, resulting in no significant net loss of deposits. The key to understanding this phenomenon is that the Ministry of Post and Telecommunication led an aggressive political campaign with the Ministry of Finance in order to retain these deposits by offering competitive interest rates in 1990, which can be seen in the shrinking difference between the interest rate on PSCs and that on 10-year Japanese Government Bonds.

The interest rate peaked again in 1990 and did not recover to this level for more than a decade, leaving the postal saving system vulnerable to a loss of deposits in 2000. This episode was similar to the events of 1980-90 except that the interest rates dropped to extremely low levels as PSCs were maturing in 2000 and the Ministry of Post and Telecommunications was *not* allowed to offer competitive interest to retain funds in the postal saving system.[6] Predictably, even though most PSCs were rolled over, the postal saving system lost a large sum of funds - approximately 60 trillion yen, or 23 percent of its total funds- starting in 2000.

3. Empirical Strategy and Data

The above discussion suggests that the allocation of local funds between the postal saving system and private banks in the early 2000 is in part driven by the inevitable maturing of PSCs that were purchased during the early 1990s. That is, the differential decline in the share of postal saving deposits in the early 2000 across 47 prefectures should be related to how heavily local funds

[6] This is because the privatization/shrinkage of postal saving system and government-affiliated financial institutions were given serious political consideration in the Diet. See Imai (forthcoming) for the political background surrounding the postal saving privatization in Japan.

were invested in the postal saving system as of the early 1990s. Hence, the basic specification for the first stage regression is:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 2000\text{-}04)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (1)$$

where *Postal Saving* is the ratio of postal saving deposits to total deposits, and *Dummy for 2000-04* is a dummy variable that equals 1 during 2000-04. The regression equation includes prefecture fixed effects and year fixed effects, β_i and β_t, which capture the unobservable time-invariant characteristics of each prefecture and economic-wide shocks that affect the allocation of local funds. Standard errors are adjusted for heteroskedasticity and serial correlation of error terms within each prefecture (Bertrand, Duflo, and Mullainathan, 2004).[7] A coefficient β_1 on $(Dummy\ for\ 2000\text{-}04) * (Postal\ Saving)_{it-10}$ captures differential shifts in the share of postal saving deposits that occurred starting in 2000. If β_1 is negative, then it means that those prefectures where local funds were more heavily invested in postal saving system relative to private banks in the early 1990s (i.e., the prefectures with high $(Postal\ Saving)_{it-10}$) tended to experience a larger shift of funds from postal saving system to private banks (i.e., a larger decline in $Postal\ Saving_{it}$) beginning in 2000 as a result of the maturing of these deposits.

The second stage regression equation is simply:

$$Income_{it} = \gamma_i + \gamma_t + \gamma_1 Postal\ Saving_{it} + \varepsilon_{it} \quad (2)$$

[7] Stata's *robust* and *cluster* options are used to compute standard errors that are robust to heteroskedasticity and serially correlation in error term.

where *Income* is the log of Gross Prefecture Product per capita. As in the first stage regression, this equation includes prefecture fixed effects and year fixed effects, γ_i and γ_t, which capture the unobservable time-invariant characteristics of each prefecture and economic-wide shocks that affect local economic activities.[8] A system of these two equations is estimated with Two Stage Least Squares (TSLS) using the data that cover 47 prefectures in Japan over a decade from 1995 to 2004.[9] The crucial identifying assumption in this framework is that the share of postal saving deposits in total deposits in the early 1990s in each prefecture does not contain any information that predicts economic performance 10 years later. Data sources are described in Table A.2. Table A.3 provides summary statistics.

4. Basic Results

Table 1 shows the basic results. Column 1 reports the results of simple ordinary least squares (OLS) regression. The coefficient on *Postal Saving* is negative and significant, but there is no causal interpretation to this coefficient given the endogeneity of the allocation of deposits between private banks and the postal saving system. Column 2 shows the results of the instrumental variable (IV) estimation in which *(Dummy for 2000-04)*(Postal Saving, t-10)* is used as an instrument to extract the exogenous component of *Postal Saving*. The results of the first stage regressions are consistent with the prior expectation. The coefficient on *(Dummy for 2000-04)*(Postal Saving, t-10)* is negative and statistically significant, suggesting that those prefectures with large amount of postal saving deposits in the early 1990 experienced a larger shifts of funds from the postal saving system to private banks in the early 2000 due to the

[8] Alternatively, the panel data can be collapsed into a simple cross-sectional data to estimate the parameter of interest γ_1. The discussion and results of this approach are given in Appendix.
[9] Standard errors are adjusted for heteroskedasticity and serial correlation of error terms within each prefecture (i.e., I use Stata's TSLS with Stata's *xtivreg2* command (Schaffer, 2007) with.*robust* and *cluster* options (Bertrand, Duflo, and Mullainathan, 2004).

maturing of PSCs. The first stage F-statistic is large, suggesting that the instrument is strong (Stock and Yogo, 2005).

In the second stage regression, the coefficient on *Postal Saving* is negative and statistically significant. The results are economically important as well. They suggest that a 3 percentage point increase in the share of postal saving deposits, a typical change within prefecture over time (Table A.2), leads to roughly a 3 percent increase in local income. Overall, the results seem to confirm that the postal saving system had crowding-out effects on local economic activity.

However, one might wonder if the share of postal saving deposits in the early 1990s contains some information about future economic condition, thereby making these results spurious. That is, the instrumental variable may in fact be invalid. To address this concern, I perform three falsification exercises. First, I eliminate the period of treatment (2000-2004) from the data and check whether the share of postal saving deposits in the early 1990s has predictive power for the differential shifts in this share in the late 1990s, a few years before the treatment was in effect. In other words, I apply a fictitious treatment starting in 1997, not in 2000, and estimate the following regression equation:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1 (Dummy\ for\ 1997\text{-}99)_t * (Postal\ Saving)_{it-7} + v_{it} \quad (3)$$

If β_1 is negative and significant, then it means that my instrument is strongly correlated with the endogenous regressor even in the absence of compelling mechanism that would induce such correlation. Such results would cast serious doubts on my proposition that that the observed negative correlation between the share of postal saving deposits in the early 1990s and the flow

of deposits from the postal saving system to private banks in the early 2000 is driven by the exogenous maturing of 10-year PSCs. To the contrary, however, the results suggest that the share of postal saving deposits in the early 1990s does not have any spurious predictive power for the shift in its value in the late 1990s (column 3).

Second, I again drop the period of treatment from the data (2000-2004) while adding the data from the 1980s and check whether the share of postal saving deposits in the 1980s has any systematic relation with the differential flow of deposits 10 years later in the 1990s even before the treatment kicked in. That is, I apply fictitious treatment during 1991-1995, 1992-1996, 1993-1997, 1994-1998, and 1995-1999 and estimate a series of regression equations:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 1991\text{-}95)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (4)$$

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 1992\text{-}96)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (5)$$

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 1993\text{-}97)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (6)$$

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 1994\text{-}98)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (7)$$

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1(Dummy\ for\ 1995\text{-}99)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (8)$$

Again, if β_1 is negative and significant, then it undermines the validity of my instrument. The results, however, suggest that the share of postal saving deposits in the 1980s does not have any predictive power for the shift in this share in the 1990s (columns 4-8).

Lastly, I again drop the period of treatment and check whether the share of postal saving deposits is spuriously negatively correlated with its future value during the preceding 15 years before the treatment; i.e., I estimate the following regression equation using the sample period from 1985 to 1999:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1 Postal\ Saving_{it-10} + v_{it} \qquad (9)$$

The results suggest that there is not a statistical correlation between the share of postal saving deposits and its future value 10 years later prior to 2000 (column 9). In sum, these falsification exercises based on the historical data show that the share of postal saving deposits does not predict its future value or a change in its future value; it has such predictive power only after a decade long decline in interest rates in the early 2000.

5. Distributional Effects

A large theoretical literature in banking suggests that banks (partially) solve asymmetric information problems in credit markets by investing in the acquisition of borrower-specific information and/or closely monitoring borrowers (e.g., Sharpe, 1990; Rajan, 1992; Diamond, 1984, 1991). One of the empirical implications of this theory is that banks are important particularly for those borrowers that face severe information problems (e.g., Hubbard, Kuttner, and Palia (2002), Hadlock and James (2002), Ashcraft (2005), Khwaja and Mian (forthcoming)).[10] Therefore, if the observed statistical relationship between income and the (instrumented) flow of deposits from the postal saving system to private banks is indeed non-mechanic, then the effects of postal saving deposits should have distributional consequence; i.e., an increase in the share of postal saving deposits hurt small firms more than large firms because

[10] In a related literature, it has been shown that competition in banking sector has positive effects on real economy and, in particular, it fosters the entry and growth of small firms which depends on bank loans for external finance (e.g., Black and Strahan (2002), Beck, Demirguc-Kunt, and Maksimovic (2004), Cetorelli and Strahan (2006), Kerr and Nanda (2007), Benfratello, Schiantarelli, and Sembenelli (forthcoming)).

small firms, on average, tend to have limited access to stock and bond markets, and thus relying mostly on local banks.

To check if this is the case, I use the log of number of firms per capita, log of number of small firms (fewer than 30 employees) per capita, and log of number of large firms (300 employees or more) per capita as the dependent variable in the second stage regression instead of the log of prefecture income per capita.[11] It must be noted that, while the data on prefecture income are available annually, the data on the number of firms are from *Jigyousho Kigyou Toukei Chousa Houkoku* (*Enterprise Statistical Survey*), and this survey was performed only in 1996, 1999, 2001, and 2004, and thus the sample size declines dramatically from 470 to 188.

The results are reported in Table 2. The results of simple OLS with prefecture fixed effects and year fixed effects show that the coefficients on *Postal Saving* are not statistically significant (columns 1-3). Columns 4-6 show the results of instrumental variable estimates. These estimates suggest that the shift of funds from private banks to the postal saving system has negative effects on small firms, but not on large firms. Hence, these results are consistent with the story that the presence of a government-owned depository institution hurts small businesses as it takes away deposits from local private banks that small businesses rely on for external finance. Moreover, the observed negative correlation between local income and the share of postal saving deposits (Table 1) is unlikely to be spurious, given the differential effects of crowding-out on small versus large borrowers.

6. Robustness Checks

[11] I follow the previous studies (Beck, Demirguc-Kunt, and Maksimovic (2004), Cetorelli and Strahan (2006), Kerr and Nanda (2007)), which use the cut-off size for small firms that range from 5 to 100 employees in classify small firms and large firms.

Instrumental variable methods generate inconsistent estimates if instruments are weakly correlated with a bad regressor in the first stage regression or correlated with error terms in the second stage regression. The first stage F-statistics seem to suggest that my instruments are reasonably strong (Stock and Yogo, 2005). However, the validity of instrument cannot be tested formally. In this section, I run two robustness checks to rule out some alternative stories that could potentially explain the negative correlation between real variables and the instrumented share of postal saving deposits.

6.1. Pre-Existing Trend

The simplest possible alternative explanation as to why the share of postal saving deposits has predictive power for its future value and income a decade later is the presence of prefecture specific trends that might have existed even before the treatment. Such trends might in turn depend on the initial conditions that are spuriously captured by my instrument. For instance, suppose that some prefectures started out relatively poor and thus more likely to be "un-banked" in my sample. If the Japanese government aggressively set up post offices to provide financial services to households in these relatively poor prefectures, then they are likely to have high initial postal saving deposits-to-total deposits ratio. If there is no reason to expect that economic growth is unrelated to past income, then my instrument, which is based on past postal saving deposits-to-total deposits ratio, is valid. The problem, however, is that it has been shown that local economies that start out with relatively low income have a strong tendency to grow more rapidly (e.g., Sala-i-Martin (1996)).

To address this concern, I include the "prefecture specific trend" in both the first stage and second stage regression equations, which accounts for a variation in growth rate of income

per capita that arises from unobserved initial economic conditions that might be correlated with my instrument, the initial share of postal saving deposits:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \delta_i t + \beta_1 (Dummy\ for\ 2000\text{-}04)_t * (Postal\ Saving)_{it-10} + v_{it} \quad (10)$$

$$Income_{it} = \gamma_i + \gamma_t + \phi_i t + \gamma_1 Postal\ Saving_{it} + \varepsilon_{it} \quad (11)$$

If the pre-existing trend is driving the observed correlations between the share of postal saving deposits and its future shift a decade later, and between the (instrumented) share of postal saving deposits and local income, then the coefficient on *Postal Saving* in the second stage regression will decline toward zero and lose statistical significance once these differential growth patterns are controlled for.

6.2. Differential Sensitivity to Macroeconomic Shocks

It is widely known that the Japanese economy was affected by a wave of macroeconomic shocks during the 1990s (Kuttner and Posen, 2001; Hoshi and Kashyap, 2004). Hence, postal saving deposits as of the early 1990s can be spuriously correlated with economic conditions in the early 2000 via differential sensitivity of local economies to common macroeconomic shocks. In particular, some prefectures might be more sensitive to monetary shocks simply because their investment schedule is more elastic to the cost of capital. According to this explanation, those prefectures with high postal saving deposits as of 1990 might be the ones in which local economies responded sensitively to adverse macroeconomic conditions. As interest rates declined over time, stimulating demand for credit, the share of postal saving deposits and local

income in these prefectures might have recovered relatively more rapidly than in other prefectures.

To address this concern, I allow the response of each prefecture to fluctuations in interest rate (on 10-year Japanese government bonds) and in aggregate income (Japan's total Gross Domestic Product) to vary as follows:

$$Postal\ Saving_{it} = \beta_i + \beta_t + \beta_1 (Dummy\ for\ 2000\text{-}04)_t * (Postal\ Saving)_{it-10}$$
$$+ \omega_i Interest\ Rate_t + \pi_i Aggregate\ Income_t + v_{it} \quad (12)$$

$$Income_{it} = \gamma_i + \gamma_t + \gamma_1 Postal\ Saving_{it} + \theta_i Interest\ Rate_t + \lambda_i Aggregate\ Income_t + \varepsilon_{it} \quad (13)$$

Note that the coefficients on *Interest Rate* and *Aggregate Income* have subscript *i*, which allows different prefectures to respond differently to macroeconomic shocks. Again, if the share of postal saving deposits in the early 1990s, its shift in the early 2000, and local income are spuriously correlated via differential responses of each prefecture to macroeconomic shocks, the effects of the share of postal saving deposits should vanish once these differential responses to macroeconomic shocks are taken into account.

6.3 Robustness Check Results

The results of these robustness checks are reported in Table 3. The coefficients on the instrumental variable in the first stage remain statistically significant and qualitatively similar to the ones in the baseline specifications (Table 1). In addition, the first stage F-statistics remain large even with the inclusion of these various control variables (i.e., the instrument remains fairly strong). Although the coefficients on the share of postal saving deposits in the second stage

regression do indeed change from one specification to others, they remain statistically robust and quantitatively important. According to the most conservative estimate (column 4, Table 3), a 3 percentage point increase in loans-to-total deposits ratio, a typical change within prefectures, leads to a 2.5 percent increase in local income. Overall, the results are robust to alternative specifications, and they are not driven by pre-existing trends or differential sensitivities of local economies to common macroeconomic shocks.

In addition, I run the same robustness checks on the regression equations for the number of firms of various sizes (Table 4). In these robustness checks, one result turns out to be fragile. When I include the prefecture specific time trends, the F-statistic of the instrument declines dramatically and it dips below 10, which means that the instrument in this specification is weak and the results of the second stage regression might be seriously biased (columns 1 and 5). Otherwise, the results on the log of number of small firms are robust (columns 2-4), while the non-results on log of number of large firms are again robust (columns 6-8). In sum, these results suggest that the instrument is likely to be valid (although it might be weak), and that the postal saving system seems to adversely affect small firms as it takes away deposits from local banks that these firms depend on for external finance.

6.4. Alternative Definitions of Small and Large Firms

The definitions of small and large firms are somewhat arbitrary. In the main specification, I classify firms with fewer than 30 employees as small and those with 300 employees or more as large, classifications which can certainly be disputed. In fact, according to the Small and Medium Enterprise (SME) Basic Law in Japan, SMEs are defined as enterprises with 300 or fewer regular employees or with a capital stock of 300 million yen or less, which is much higher

than my “cut-off” size for the definition of small firms. Hence, I experiment with alternative classification scheme for small and large firms and see how the results change. As shown in Table 5, the results are robust even when I classify firms with 1-4 employees, 1-9 employees, or 1-49 employees as small (columns 1-3). The (non-)results are robust to alternative criterion for large firms (column 4, Table 5).

7. Concluding Remarks

As a large number of 10-year fixed-rate Postal Saving Certificates (PSCs) that had been purchased during the period of high interest rates in the early 1990s began to mature in the early 2000, the Japanese economy experienced a rapid outflow of funds from the government-administered postal saving system. Through identifying this plausibly exogenous financial shock as a natural experiment, this paper investigates the crowding-out effects of a large government-owned depository institution. Three notable results emerge. First, the share of local funds that had been deposited into the postal saving system in the early 1990s has strong explanatory power for the differential change in the share of postal saving deposits a decade later in the early 2000. Second, when appropriately instrumented, an increase in the share of postal saving deposits has economically important negative effects on the local income and the number of small firms, but not the number of large firms. These results support the hypothesis that the presence of large government-owned depository institutions has negative crowding-out effects on local economies, and in particular, on small local firms which rely on local banks that compete with government-owned depository institutions for local deposits.

References

Ashcraft, Adam B., 2005, Are banks really special? New evidence from the FDIC-induced failure of healthy banks, *American Economic Review* 95, 1712-30.

Beck, Thorsten, Demirguc-Kunt, Asli, and Martinez Peria, Maria Soledad., 2007, Reaching Out: Access to and Use of Banking Services across Countries. *Journal of Financial Economics* 85, 234-66.

Beck, Thorsten, Asli Demirguc-Kunt, and Vojislav Maksimovic, 2004, Bank competition and access to finance: international evidence, *Journal of Money, Credit, and Banking* 36, 627-48.

Becker, Bo, 2007, Geographical segmentation of US capital markets, *Journal of Financial Economics* 85, 151-78.

Benfratello, Luigi, Fabio Schiantarelli, Alessandro Sembenelli, forthcoming, Banks and innovation: Microeconometric evidence on Italian firms. *Journal of Financial Economics*.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics* 119, 249-75.

Black, Sandra E, and Philip E. Strahan, 2002, Entrepreneurship and bank credit availability, *Journal of Finance* 57, 2807-33.

Cetorelli, Nicola, and Philip E. Strahan, 2006, Finance as a barrier to entry: Bank competition and industry structure in local U.S. markets, *Journal of Finance* 61, 437-61.

Claessens, Stijn, 2006, Access to Financial Services: A Review of the Issues and Public Policy Objectives. *World Bank Research Observer* 21, 207-40.

Cole, Shawn A. 2007. Fixing Market Failures or Fixing Elections? Agricultural Credit in India. *American Economic Journal: Applied Economics*.

Diamond, Douglas W., 1984, Financial intermediation and delegated monitoring, *Review of Economic Studies* 51, 393-414.

Diamond, Douglas W., 1991, Monitoring and reputation: The choice between bank loans and directly placed debt, *Journal of Political Economy* 99, 689-721.

Dinç, I Serdar. 2005. Politicians and Banks: Political Influences on Government-Owned Banks in Emerging Markets. *Journal of Financial Economics* 77, 453-79.

Doi, Takero, and Takeo Hoshi, 2003, Paying for the FILP, in Magnus Blomstrom, et al., eds.: *Structural Impediments to Growth in Japan* (University of Chicago Press)

Hadlock, Charles J., and Christopher M. James, 2002, Do banks provide financial slack*? Journal of Finance* 57, 1383-1419

Hoshi, Takeo; Kashyap, Anil K. 2004. Japan's Financial Crisis and Economic Stagnation. *Journal of Economic Perspectives*, 3-26.

Hubbard, R. Glenn, and Kenneth N. Kuttner, Darius N. Palia, 2002, Are there bank effects in borrowers' costs of funds? Evidence from a matched sample of borrowers and banks, *Journal of Business* 75, 559-81.

Imai, Masami, forthcoming, Political determinants of government loans in Japan, *Journal of Law and Economics*.

Imai, Masami, forthcoming, Ideologies, vested interested groups, and postal saving privatization in Japan, *Public Choice*

Jayaratne, Jith, and Philip E. Strahan, 1996, The finance-growth nexus: Evidence from bank branch deregulation, *Quarterly Journal of Economics* 111, 639-70.

Kerr, William, and Ramana Nanda, 2007, Democratizing entry: banking deregulations, financing constraints, and entrepreneurship, Center for Economic Studies, U.S. Census Bureau, Working Papers.

Khwaja, Asim Ijaz; Mian, Atif. 2005. Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market. *Quarterly Journal of Economics* 120, 1371-1411.

Khwaja, Asim Ijaz, and Atif Mian, forthcoming, Tracing the impact of bank liquidity shocks: evidence from an emerging market, *American Economic Review*.

King, Robert G; Levine, Ross. 1993. Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics* 108, 717-37.

Kuttner, Kenneth N; Posen, Adam S. 2001. The Great Recession: Lessons for Macroeconomic Policy from Japan. *Brookings Papers on Economic Activity* 0, 93-160.

La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, 2002. Government Ownership of Banks. *Journal of Finance* 57, 265-301.

Guiso, Luigi; Sapienza, Paola; Zingales, Luigi. 2004. Does Local Financial Development Matter? *Quarterly Journal of Economics* 119, 929-69.

Micco, Alejandro, Panizza, Ugo, Yanez, Monica, 2007, Bank Ownership and Performance. Does Politics Matter? *Journal of Banking and Finance* 31, 219-41.

O'Hara, Maureen, and David Easley, 1979, The postal savings system in the Depression, *Journal of Economic History*, 39, 741-53.

Rajan, Raghuram G., 1992, Insiders and outsiders: The choice between informed and arm's-length debt, *Journal of Finance* 47, 1367-400.

Rajan, Raghuram G; Zingales, Luigi. 1998, Financial Dependence and Growth. *American Economic Review* 88, 559-86.

Sala-i-Martin, Xavier X., 1996, The Classical Approach to Convergence Analysis. *Economic Journal* 106, 1019-36.

Sapienza, Paola. 2004. The Effects of Government Ownership on Bank Lending. *Journal of Financial Economics* 72, 357-84.

Schaffer, M.E., 2007, xtivreg2: Stata module to perform extended IV/2SLS, GMM and AC/HAC, LIML and k-class regression for panel data models. http://ideas.repec.org/c/boc/bocode/s456501.html

Sharpe, Steven A., 1990, Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships, *Journal of Finance* 45, 1069-87.

Schmukler, Sergio L; Gozzi, Juan Carlos; de la Torre, Augusto, 2007, Innovative experiences in access to finance: market friendly roles for the visible hand? The World Bank, Policy Research Working Paper Series: 4326.

Stock, James H., and Motohiro Yogo, 2005, Testing for weak instruments in linear IV regression, in Donald W.K. Andrews and Stock, James H., eds.: *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg* (Cambridge University Press)

World Bank. 2008. Finance for All? Policies and Pitfalls in Expanding Access. Washington, D.C.: World Bank.

Appendix

Cross-Sectional Approach

We start with a system of two equations that determine the share of postal saving deposits and local income:

$$PS_{it} = \beta_i + \beta_t + \beta_1 D_t PS_{it-10} + \nu_{it}$$
$$Y_{it} = \gamma_i + \gamma_t + \gamma_1 PS_{it} + \varepsilon_{it}$$

where the variables are abbreviated to conserve space; i.e., *PS* is the share of postal saving deposits, *D* is "*Dummy for 2000-04*", and *Y* is the outcome variable of interest (the log of income per capita, log of total firms per capita, log of small firms per capita, or log of large firms per capita). We can eliminate prefecture fixed effects β_i by defining the amount of change in *PS* from the late 1990s to the early 2000s as follows:

$$\begin{aligned}
&\Delta\overline{PS_i} = \overline{PS}_{i1995-99} - \overline{PS}_{i2000-04} \\
&= \frac{1}{5}\left(\sum_{t=1995}^{1999} PS_{it} - \sum_{t=1995}^{1999} PS_{it}\right) \\
&= \frac{1}{5}\left(\sum_{t=1995}^{1999}\beta_t - \sum_{t=2000}^{2004}\beta_t\right) + \beta_1 \frac{1}{5}\sum_{t=1990}^{1994} PS_{it} + \bar{\nu}_{i1995-99} - \bar{\nu}_{i2000-04} \\
&= \beta_0 + \beta_1 \overline{PS}_{i1990-94} + \Delta\bar{\nu}_i
\end{aligned}$$

Similarly, we can define the amount of change in *Y* from the late 1990s to the early 2000s to eliminate prefecture fixed effects γ_i as follows:

$$\begin{aligned}
&\Delta\bar{Y}_i = \bar{Y}_{i1995-99} - \bar{Y}_{i2000-04} \\
&= \frac{1}{5}\left(\sum_{t=1995}^{1999} Y_{it} - \sum_{t=1995}^{1999} Y_{it}\right) \\
&= \frac{1}{5}\left(\sum_{t=1995}^{1999}\gamma_t - \sum_{t=2000}^{2004}\gamma_t\right) + \gamma_1\left(\overline{PS}_{i1995-99} - \overline{PS}_{i2000-04}\right) + \bar{\varepsilon}_{i1995-99} - \bar{\varepsilon}_{i2000-04} \\
&= \gamma_0 + \gamma_1\Delta\overline{PS_i} + \Delta\bar{\varepsilon}_i
\end{aligned}$$

Hence, the parameter of interest γ_1 can be estimated by simply estimating cross-sectional regression of change in a outcome variable (ΔY) from the late 1990s to the early 2000 on change in the share of postal saving deposits (ΔPS) during the same period while instrumenting ΔPS with the share of postal saving deposits in the early 1990s. Note that the virtue of this approach is its simplicity as well as the fact that the statistical significance of the results will not be affected by possible serial correlation of error term. A drawback is that it does not make use of variation in the share of postal saving deposits within prefecture during the early 2000. The results based on the cross sectional approach are given in Table A1, and they are qualitatively comparable to the panel data results.

Table A1: Results of Transformed Cross-Sectional Regression

The dependent variable is the change in postal saving deposits-to-total deposits ratio in the first stage regression and the change in the log of prefecture income per capita (column 1), change in the log of firms per capita (column 2), change in the log of small firms per capita (column 3), change in the log of large firms per capita (column 4) from the late 1990s to the early 2000s in the second stage regression. The data cover Japan's 47 prefectures. The regression equations are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used.

	(1)	*(2)*	*(3)*	*(4)*
	First Stage Regression			
Variables				
Initial Postal Saving Share	-0.116***	-0.116***	-0.116***	-0.116***
(as of the early 1990s)	(0.0255)	(0.0255)	(0.0255)	(0.0255)
Constant	0.00124	0.00124	0.00124	0.00124
	(0.00815)	(0.00815)	(0.00815)	(0.00815)
Observations	47	47	47	47
R-squared	0.196	0.196	0.196	0.196
First Stage F Statistic	20.44	20.44	20.44	20.44
P-value of First Stage F	0.000	0.000	0.000	0.000
	Second Stage Regression			
	ln(Income)	ln(Firms)	ln(Small Firms)	ln(Large Firms)
Change in Postal Saving Deposit Share	-1.074**	-1.693***	-1.778***	-0.0843
(from the late 1990s to the early 2000s)	(0.493)	(0.601)	(0.628)	(2.116)
Constant	-0.0543***	-0.126***	-0.131***	-0.0109
	(0.0184)	(0.0214)	(0.0224)	(0.0760)
Observations	47	47	47	47

Table A.2: Data Source and Description

Variables	*Description*	*Data Source*
Prefecture Income	Log of Gross Prefecture Product per capita	Kenmin Keizai Keisan Nenpo (Annual Report on Economics Statistics in Prefecture)
Postal Saving	Ratio of postal saving deposits to total deposits	Kinyu Keizai Tokei Geppou (Reports on Finance and Economy)
Postal Saving, t-10	Ratio of postal saving deposits to total deposits (lagged 10 years)	Same as above
Dummy for 2000-04	Dummy variable (= 1 if year = 2000-2004)	Author's calculation
ln(Firms)	Log of number of firms	Jigyousho Kigyou Toukei Chousa Houkoku (Enterprise Statistical Survey)
ln(Small Firms), (1-29 employees)	Log of number of small firms (1-29 employees)	Same as above
ln(Large Firms), (300 employees or more)	Log of number of large firms (300 employees or more)	Same as above

Table A.3: Summary Statistics

	mean	Standard Deviation			Minimum	Maximum
		Overall	Between	Within		
Prefecture Income	1.27092	0.164181	0.164047	0.023774	0.943397	1.992875
Postal Saving	0.370798	0.066549	0.060713	0.02852	0.132717	0.548002
(Dummy for 2000-04)*(Postal Saving, t-10)	0.173226	0.165376	0.031692	0.162371	0	0.498513
ln(Firms)	-3.00763	0.139707	0.132914	0.046211	-3.47583	-2.73307
ln(Small Firms)	-3.05339	0.142627	0.135591	0.047462	-3.53255	-2.77173
ln(Large Firms)	-9.78534	0.363485	0.360811	0.063447	-10.6288	-8.57327

Table 1: Postal Saving Deposits and Prefecture Income

The dependent variables are postal saving deposits-to-total deposits ratio in the first stage and log of prefecture income per capita in the second stage. The data cover Japan's 47 prefectures from 1995 to 2004 except for falsification exercise (columns 3-9) which cover the period from 1985 up to 1999. The regression equations include fixed prefecture effects and fixed year effects, and are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used.

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
	OLS	**IV**				IV			
		1st Stage				1st Stage			
Variables		**Main Results**				Falsification Exercises			
(Dummy for 2000-04)*(Share of Postal Saving Deposits, t-10)		**-0.125*** **							
		(0.0260)							
(Dummy for 1997-1999)*(Share of Postal Saving Deposits, t-7)			0.0136						
			(0.0250)						
(Dummy for 1995-1999)*(Share of Postal Saving Deposits, t-10)				0.0257					
				(0.0401)					
(Dummy for 1994-1998)*(Share of Postal Saving Deposits, t-10)					0.0281				
					(0.0383)				
(Dummy for 1993-1997)*(Share of Postal Saving Deposits, t-10)						0.0229			
						(0.0371)			
(Dummy for 1992-1996)*(Share of Postal Saving Deposits, t-10)							0.00547		
							(0.0357)		
(Dummy for 1991-1995)*(Share of Postal Saving Deposits, t-10)								-0.0249	
								(0.0331)	
Share of Postal Saving Deposits, t-10									-0.0854
									(0.108)
R-squared		**0.864**	0.863	0.940	0.942	0.935	0.923	0.893	0.919
		23.25	0.29	1.85	2.40	1.80	0.12	2.67	0.62
		0.000	0.590	0.175	0.122	0.180	0.729	0.103	0.433
	OLS	**2nd Stage**				2nd Stage			
Share of Postal Saving Deposits	-0.306**	**-1.007****	2.528	6.396	6.147	6.407	24.64	-4.650	-9.108
	(0.130)	**(0.442)**	(8.106)	(5.182)	(4.413)	(5.300)	(71.60)	(3.015)	(11.38)
R-squared	0.415								
Observations	470	**470**	235	470	470	470	470	470	705

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Postal Saving Deposits and Firm Creation

The data cover Japan's 47 prefectures in 1996, 1999, 2001, and 2004. The regression equations include fixed prefecture effects and fixed year effects, and are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used.

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
		OLS			IV (First Stage Regression)	
Variables						
(Dummy for 2000-04)*(Share of Postal Saving Deposits, t-10)				-0.158***	-0.158***	-0.158***
				(0.0308)	(0.0308)	(0.0308)
R-squared				0.892	0.892	0.892
First Stage F Statistic				26.35	26.35	26.35
P-value of First Stage F				0.000	0.000	0.000
		OLS			IV (Second Stage Regression)	
	ln(Firms)	ln(Small Firms)	ln(Large Firms)	ln(Firms)	ln(Small Firms)	ln(Large Firms)
Share of Postal Saving Deposits	0.0202	0.0187	0.0521	-1.174***	-1.234***	-0.0319
	(0.101)	(0.107)	(0.555)	(0.403)	(0.420)	(1.535)
Observations	188	188	188	188	188	188
R-squared	0.928	0.926	0.134			

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Robustness Checks (Prefecture Specific Time Trend and Differential Effects of Common Macroeconomic Shocks)

The dependent variables are postal saving deposits-to-total deposits ratio in the first stage and log of prefecture income per capita in the second stage. The data cover Japan's 47 prefectures from 1995 to 2004. The regression equations include fixed prefecture effects and fixed year effects, and are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used. In these robustness checks, prefecture specific time trend are included to account for pre-existing trend (column 1). In addition, each prefecture is allowed to exhibit different sensitivity to fluctuations in interest rates and aggregate output (columns 2-4).

	(1)	*(2)*	*(3)*	*(4)*
	First Stage Regression			
Variables				
(Dummy for 2000-04)*(Postal Saving, t-10)	-0.0852***	-0.135***	-0.114***	-0.123***
	(0.0274)	(0.0252)	(0.0259)	(0.0235)
R-squared	0.025	0.108	0.065	0.078
First Stage F Statistic	9.68	28.91	19.42	27.45
P-value of First Stage F	0.003	0.000	0.000	0.000
	Second Stage Regression			
Share of Postal Saving Deposits	-1.515**	-0.860***	-1.000*	-0.841**
	(0.661)	(0.320)	(0.538)	(0.417)
Prefecture Specific Time Trend	Yes	No	No	No
Differential Effects of Interest Rates	No	Yes	No	Yes
Differential Effects of Aggregate Output	No	No	Yes	Yes
Observations	470	470	470	470

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Robustness Checks on Firm Results

The data cover Japan's 47 prefectures in 1996, 1999, 2001, and 2004. The regression equations include fixed prefecture effects and fixed year effects, and are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used. In these robustness checks, prefecture specific time trend are included to account for pre-existing trend (columns 1 and 5). In addition, each prefecture is allowed to exhibit different sensitivity to fluctuations in interest rates and aggregate output (columns 2-4 and 6-8).

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
	First Stage Regression							
Variables		ln(Small Firms)				ln(Large Firms)		
(Dummy for 2000-04)*(Postal Saving, t-10)	-0.107**	-0.200***	-0.238***	-0.224***	-0.107**	-0.200***	-0.238***	-0.224***
	(0.0460)	(0.0496)	(0.0582)	(0.0639)	(0.0460)	(0.0496)	(0.0582)	(0.0639)
R-squared	0.044	0.137	0.171	0.210	0.044	0.137	0.171	0.210
First Stage F Statistic	5.39	16.22	16.76	12.27	5.39	16.22	16.76	12.27
P-value of First Stage F	0.025	0.000	0.000	0.001	0.025	0.000	0.000	0.001
LABELS	IV	IV	IV	IV	IV	IV	IV	IV
	Second Stage Regression							
		ln(Small Firms)				ln(Large Firms)		
Share of Postal Saving Deposits	-0.394	-0.629***	-0.802***	-0.792***	-0.560	-0.655	-0.513	-0.846
	(0.377)	(0.231)	(0.292)	(0.266)	(3.075)	(1.219)	(1.109)	(1.158)
Prefecture Specific Time Trend	Yes	No	No	No	Yes	No	No	No
Differential Effects of Interest Rates	No	Yes	No	Yes	No	Yes	No	Yes
Differential Effects of Aggregate Output	No	No	Yes	Yes	No	No	Yes	Yes
Observations	188	188	188	188	188	188	188	188

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Results Based on Alternative Definitions of Small Firms and Large Firms

The data cover Japan's 47 prefectures in 1996, 1999, 2001, and 2004. The regression equations include fixed prefecture effects and fixed year effects, and are estimated with Two Stage Least Squares (TSLS). Standard errors are in parenthesis and robust to heteroskedasticity and serial correlation within each prefecture. Stata's *xtivreg2* with *robust* and *cluster* options is used.

	(1)	*(2)*	*(3)*	*(4)*
Variable	ln(Small Firms) (1-4 employees)	ln(Small Firms) (1-9 employees)	ln(Small Firms) (1-49 employees)	ln(Large Firms) (100 employees or more)
Share of Postal Saving Deposits	-1.051***	-1.252***	-1.215***	0.662
	(0.404)	(0.441)	(0.413)	(0.749)
Observations	188	188	188	188

*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Co-movement of Interest Rates, Receipts and Withdrawals of Postal Saving Deposits, and Postal Saving Deposits Outstanding