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EL EFECTO DE LOS SEGUROS DE CRÉDITO EN LAS RESTRICCIONES DE LIQUIDEZ Y RIESGO DE NO PAGO: EVIDENCIA DE UNA INTERVENCIÓN GUBERNAMENTAL

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Resumen

Entender en qué medida las intervenciones al mercado financiero pueden reducir las restricciones de liquides es crucial tanto para economistas como para políticos. A pesar que existe consenso que el acceso limitado al sistema financiero puede reducir el número de proyectos empresariales, existen pocos estudios que midan cuán exitosas son diferentes tipos de intervenciones públicas en corregir este problema. En este trabajo utilizamos el sistema de garantías parciales de crédito administrado por FOGAPE, para estudiar como este tipo de instrumentos pueden afectar el nivel de acceso de los empresarios al mercado formal de crédito. También exploramos cómo estos esquemas afectan las tasas de no pago de las deudas garantizadas. En el estudio encontramos que los esquemas de garantías parciales de crédito aumentan tanto el número de préstamos como el total de recursos destinados a pequeños y medianos empresarios. Además para empresarios con similares niveles de activo fijo, las garantías de crédito aumentan la capacidad de endeudamiento. También encontramos que los sistemas de garantía aumentan la tasa de no pago de las deudas garantizadas, sin embargo la evidencia sugiere que el aumento del riesgo es mayormente explicados por problemas de incentivos a la operación de los bancos y no por problemas de riesgo moral de los emprendedores.

Please send all questions and comments to alejandro.drexler@mccombs.utexas.edu. This paper is based on the study of the effect of partial credit guarantees prepared for the Partial Credit Guarantee Conference organized by the World Bank in March of 2008, and the analysis of the effect of FOGAPE in the Chilean economy that the authors realized in cooperation with the Chilean Central Bank, the Chilean Bank Regulation Office and FOGAPE during 2008 and 2009. The work was also a Chapter in the Dissertation that Alejandro Drexler presented to earn the degree of PhD in Financial Economics at MIT. We are grateful for the comments and suggestions of Antoinette Schoar, Roberto Rigobon, Alessandro Bozzo, Javier Torres, Ricardo Villarroel, Erik Feijen, Thorsten Beck, Patrick Honohan, Jiro Kondo, and Luis Opazo. We also thank the participants in the Partial Credit Guarantees Conference organized by the World Bank in March of 2008, and the participants in several work presentations at the Chilean Central Bank during 2008 and 2009. We also thank Kate Gordon for precious help in writing this paper. All remaining errors are our own.

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Abstract

Understanding the extent to which interventions in financial markets can reduce liquidity constraints is of crucial importance to researchers and policymakers. Even though there is consensus that limited access to financing can reduce the number of profitable projects undertaken by entrepreneurs, there is little research on how well governmental interventions address this problem. In this paper we use Partial Credit Guarantee Schemes in Chile to study how such a government intervention in the financial system can affect the access that entrepreneurs have to the formal financial system. We also explore how these schemes affect the default rates on the guaranteed loans. We find that partial credit guarantee schemes increase the number of loans and the aggregate amount lent to small and medium size businesses. In addition, we find that credit guarantees increase the debt capacity of individual entrepreneurs, holding assets fixed. We also find that Credit Guarantees increase default rates, but the evidence suggests that this result is explained mainly by misalignment of bank incentives rather than moral hazard in the context of client practices.

Please send all questions and comments to alejandro.drexler@mccombs.utexas.edu. This paper is based on the study of the effect of partial credit guarantees prepared for the Partial Credit Guarantee Conference organized by the World Bank in March of 2008, and the analysis of the effect of FOGAPE in the Chilean economy that the authors realized in cooperation with the Chilean Central Bank, the Chilean Bank Regulation Office and FOGAPE during 2008 and 2009. The work was also a Chapter in the Dissertation that Alejandro Drexler presented to earn the degree of PhD in Financial Economics at MIT. We are grateful for the comments and suggestions of Antoinette Schoar, Roberto Rigobon, Alessandro Bozzo, Javier Torres, Ricardo Villarroel, Erik Feijen, Thorsten Beck, Patrick Honohan, Jiro Kondo, and Luis Opazo. We also thank the participants in the Partial Credit Guarantees Conference organized by the World Bank in March of 2008, and the participants in several work presentations at the Chilean Central Bank during 2008 and 2009. We also thank Kate Gordon for precious help in writing this paper. All remaining errors are our own.

1 Introduction

An important body of literature documents a positive and significant correlation between financial market development and entrepreneurship.[1] This strong correlation has motivated interventions in the financial markets by several governments and international financial institutions.[2] These interventions are designed to improve entrepreneurs' access to finance and to minimize potential economic distortions. However there is little research on how these interventions improve entrepreneurs' access to finance and to what extent these interventions may generate costly economic distortions. Understanding the real implications of these interventions can be extremely important for researchers and policy makers working on the design of these interventions.

One type of intervention that has been widely used in recent years to increase entrepreneurs' access to finance is Partial Credit Guarantee. The World Bank has actively promoted and supported the implementation of partial credit guarantee programs in developing countries. In these interventions a third party, usually the government, guarantees to the issuing bank a fraction of the principal's repayment in the event that the debtor defaults. The fraction of the principal to be guaranteed is established in the debt contract at the time the loan is issued. By insuring a fraction of the loan, the government reduces the risk assumed by the bank, increasing the range of loans that are profitable for the bank. Given that only a fraction of the principal is insured, it is still in the interest of the bank to screen and monitor the insured clients. However the presence of insurance can still affect the effort banks expend screening and monitoring insured clients. The insurance administrator usually charges an insurance fee that is proportional to the default rate of the insured clients. By insuring the entrepreneurs' loans, instead of directly issuing the loans, the government can target a larger number of entrepreneurs using less capital. There is also anecdotal evidence suggesting that partial credit guarantees allocated through private financial institutions generate loans that are more efficient than loans directly issued by the government.

Partial credit guarantees are designed under the premise that the lack of collateral can reduce access to finance for small and medium size entrepreneurs, thus reducing entrepreneurial activity. This would happen if banks were reluctant to grant loans to entrepreneurs with low collateral, or if the availability of collateral affected the size or ma-

[1] See among others Jayaratne & Strahan 1996, Evans & Jovanovic 1989

[2] For example, the Inter-American Development Bank estimates that their interventions to reduce financial market deficiencies in Latin America and the Caribbean in 1990 and 2004 account for a total of US$ 22 billion.

turity of the loans. However, it is unclear whether the lack of collateral is in fact a barrier to finance. After all, money is fungible, and banks could use other strategies to overcome the costs associated with issuing loans to low collateral entrepreneurs. On the other hand, it is unclear that loan guarantees will alleviate the problems associated with low collateral borrowing. First, banks could use the guarantees to insure loans that would have been issued even in the absence of insurance. Second, guarantees could reduce the incentives of entrepreneurs to exert effort and thereby potentially reducing entrepreneurial activity and/or entrepreneurs' productivity.

In this paper we use the implementation of a partial credit guarantee intervention in Chile during the years 2003 to 2006 to study how partial credit guarantees affect entrepreneurs' incentives and access to finance. We also study whether partial credit guarantees distort the incentives of financial institutions. The novelty of our approach is that we use a nonlinearity in the allocation of insurance to identify the effect that the intervention has in terms of amount, size and default rate of insured loans. To complement this analysis we also compare the repayment behavior of insured entrepreneurs to the repayment behavior of uninsured entrepreneurs. We study whether entrepreneurs that hold both insured and uninsured loans show a different repayment behavior on their insured loans compared to their repayment behavior on their uninsured loans. To study how insurance affects the allocation of credit among entrepreneurs we study the differences in default rate between clients that have insured commercial loans and clients that have uninsured commercial loans. Finally we study how the presence of credit insurance affects the credit capacity of individual entrepreneurs, holding assets fixed.

The data used in this study were collected from three different databases. The first database is from the credit insurance administrator which contains micro level data on the identities of the entrepreneurs that received insured loans, the date each insured loan was issued, the identity of the institution granting the loan and the fraction of the principal that is insured. We also extracted from the credit insurance administrator the total amount of insurance requested by each financial institution in each period, and the amount of insurance allocated to each financial institution in each period. These two amounts differ when the total amount of insurance allocated by the government in a particular period is smaller than the aggregated insurance amount requested by all financial institutions.[3]

[3]When the total amount of insurance assigned by the government in a particular period of time is smaller than the aggregated insurance amount requested by each financial institution, the insurance funds are allocated through a bidding system. In the bidding process financial institutions request an insurance amount and the fraction of the principal they want to be covered for their insured loans. The institution requesting the lowest fraction of insurance has priority over other institutions to get insurance funds, in

The second database is from the bank regulation office and contains the total amount of credit that each entrepreneur maintains with every financial institution, the use of this credit (commercial, consumption or mortgage), and the information on missed or late payments.[4] The third source of data used in this study is the database of the Chilean Tax Revenue Office. We use a sub-sample of this database containing the yearly sales and yearly assets of each formal business operating in the Chilean Economy.[5]

We first study the effect that an increase in the total insurance allocated to a particular financial institution has on the number of loans issued, the average loan size and the default rate of its loan portfolio. We show that increasing the amount of insurance allocated to particular financial institutions increases the total number of loans and aggregated loan amount issued to small and medium size entrepreneurs. Increasing the total amount of insurance allocated to a particular financial institution also increases the default rate of the institutions' loan portfolio. In particular, we show that a 100% increase in the amount of insurance allocated to a financial institution increases its portfolio's default rate by 1.5%. It is important to note that even thought the intervention in Chile is intended to target new businesses, we find that increasing the amount of insurance allocated to a financial institution increases the number and aggregated loan amount for new loans as well as the number and aggregated loan amount for renewed loans.

Second, we study how credit insurance affects the repayment behavior of clients having insured and uninsured loans in the same bank and the repayment behavior of clients having insured and uninsured loans in different banks. We find no significant difference between the default rate of insured loans and the default rates of uninsured loans held by the same client in different banks. However, we find a strong and significant difference between the default rates of insured loans and the default rates of uninsured loans held by the same clients in the same bank. Specifically, clients holding insured and uninsured loans in the same bank have a 1.6% higher default rate on their insured loan one year after the loan is issued and a 5% higher default rate on their insured loan two years after the loan is issued, both estimations significant at the 1% level. If the difference in repayment rates was explained by a change in the clients' incentives, we should observe a difference in the repayment behavior on insured loans compared to the repayment behavior on uninsured

the event of a tie the funds are allocated pro-rata at the requested insurance amount. Complete details on this bidding process can be found in the description of the intervention in Chapter 3.1.

[4] Information on arrears is divided into categories of no missed payments, payments in arrears for less than 30 days, payments in arrears between 30 and 59 days, and payments in arrears for 60 days or more.

[5] To comply with the Chilean law on information disclosure all the identification numbers were replaced by random numbers

loans regardless of whether the loans are held in the same or in different banks. However, if the difference in repayment rate was explained by a change in the banks' incentives, we should only observe a difference in the repayment rate between insured and uninsured loans held in the same bank.[6] Therefore the evidence in this analysis suggests that partial credit insurance negatively affects the banks' incentives but not the entrepreneurs' incentives.

Third, we study how banks allocate insurance among their clients. To do this we construct two groups of entrepreneurs. The first group consists of entrepreneurs that have insurance on their commercial loans and the second group consists of entrepreneurs that do not have insurance on their commercial loans. It is important to note that insurance can only be allocated to commercial loans and therefore all consumption loans are uninsured. We first compare the difference in the default rate on commercial loans for the group of clients that have insurance on their commercial loans with the default rate on commercial loans for the group of clients that do not have insurance on their commercial loans. Second, we compare the difference in the default rate on consumption loans for which neither group has insurance. By comparing the default rate on consumption loans, which are uninsured for both groups, we can get an estimation of the default rate between the two groups in the absence of insurance. We find that one year after the loans are issued the default rate on commercial loans is 1.9% higher for the first group of entrepreneurs, and that two years after the loans are issued the default rate is 4.2% higher for the first group. However, we find no significant difference between the two groups in their default rate on consumption loans.

The finding that the default rate on uninsured loans is not different between the two groups suggests that the two groups are equally risky. In turn this shows that the screening efforts of the banks are similar for both insured and uninsured clients. However the difference in the default rate on commercial loans suggests that either the level of effort put forth by the entrepreneurs after the loans are issued is distorted by the insurance, or that the monitoring effort of the banks is distorted by the insurance, or both. In the former paragraph we presented evidence suggesting that credit insurance does not affect entrepreneurs' incentives, therefore the difference in default rate on commercial loans between insured and uninsured clients should be explained by misalignments in the banks' incentives. Given the evidence that screening incentives are not affected by the presence of credit insurance, we conclude that the difference in default rates between insured and uninsured commercial loans is most likely explained by misalignment in the banks' monitoring

[6] In this statement we are assuming that banks will not be able to affect the repayment behavior of its clients on their loans with other banks.

incentives.

Finally we study how the presence of insurance affects the average loan size of entrepreneurs getting new loans. We find that the presence of insurance increases the average loan size for clients in the fifth asset decile by 125%. The increase in loan size as a fraction of assets is 87%, 69%, 55% and 34% for businesses in asset deciles 6, 7, 8 and 9 respectively.[7] The effect of insurance on the size of renewed loans is smaller but still significant.

In conclusion, the findings in this paper suggest that credit insurance is an effective mechanism to increase the loan capacity and the total amount lent to small and medium size entrepreneurs. Credit insurance does not significantly affect the repayment incentives of the entrepreneurs, but it does strongly reduce the banks' incentives to monitor.

The rest of the paper is organized as follows. In section 2 we give a brief description of the related literature, in section 3 we describe the institutional details of the partial credit guarantees intervention in Chile and the details of the data, in section 4 we explain our methodology, in section 5 we present the results, and in section 6 we discuss our results and conclusions.

2 Related Literature

The impact that initial capital has on entrepreneurial activity is an area of great debate. Evan and Jovanovic (1989), show that initial capital has an important effect on entrepreneurial activity. In their study they argue that wealthier people are more inclined towards being entrepreneurs and reject the explanation that the wealthy tend to make better entrepreneurs. In particular, they show that a person cannot use more than 1.5 times his or her initial wealth to start a business. Supporting Evan and Jovanocvic's conclusions, Holtz-Eakin, Joulfaian and Rosen (1994a) study a group of entrepreneurs who received inheritances, and show that the businesses of these entrepreneurs have higher probability of survival than similar businesses of entrepreneurs who did not receive an inheritance. In a closely related study Holtz-Eakin Joulfaian and Rosen (1994b) show that individuals who receive an inheritance experience a substantial increase in their probability of becoming an entrepreneur and in the amount of capital employed in their new ventures. Even though most studies agree that liquidity constraints are binding for startup activities, there is still no consensus. For example, Cressy (1996) argues that the true determinant of a businesses'

[7]Clients in loan deciles 1, 2, 3, 4 and 10 were excluded from this analysis due to data limitations.

survival is human capital, and that the correlation between financial capital and survival is spurious using data from UK startups to support his statement.

Nevertheless, the strong evidence that liquidity constraints are binding has motivated governmental interventions in the forms of direct loans to entrepreneurs and indirect subsidies allocated through the financial institutions. A widely used intervention in the financial markets are credit guarantees, however the effectiveness of these type of intervention is still unclear (see Honohan 2008 for details). Credit guarantee interventions are based on the idea that entrepreneurs with low collateral may be denied access to formal financial markets or have reduced credit capacity, even if they have profitable investment projects (see Berger Espinosa-Vega Frame and Miller 2005). Credit guarantee schemes address this problem by paying banks' a fraction of the principal's repayment in the event of default, reducing the banks' risk exposure, and as a consequence reducing the collateral requirements. However, collateral plays multiple roles in the financial market other than reducing the risk for the lender. In particular, it can distort creditors' incentives to screen and monitor entrepreneurs' investment decisions. These distortions can potentially offset any benefits arising from the improvement in the entrepreneurs' access to finance.

There is a limited literature that studies the role that collateral plays in borrowing. Rajan and Winton (1995) find that collateral and covenants increase the incentives of banks to monitor firms, because the effective priority when the loan is collateralized is contingent on monitoring. Bester (1985 and 1987) shows that collateral can be used by financial intermediaries to screen risky clients. In Bester's model, entrepreneurs have private information about the riskiness of their project and therefore low risk entrepreneurs prefer an increase in the collateral requirements rather than an increase in the interest rate. By simultaneously offering contracts with fixed interest rates and collateral requirements, the financial institutions can screen risky entrepreneurs from less risky entrepreneurs, thereby reducing the liquidity constraints associated with asymmetric information. While Bester's model is based on asymmetric information, it does not study the potential moral hazard problems associated with collateral. Manove, Padilla and Pagano (2001) develop a model with two different types of entrepreneurs, those with a high probability of selecting a profitable business and those with a low probability of selecting a profitable business. In their model the bank has expertise in screening these two types of entrepreneurs and they have to choose the level of effort they wish to put in the screening process. In Monove et al. the absence of restrictions on the amount of collateral that the creditors' can request from the debtor can lead to an inefficient level of screening.

In an empirical approach, Berger and Udell (1989) present empirical evidence suggesting that collateral is most often associated with riskier borrowers, however they do not identify whether the riskiness is associated with the entrepreneurs' investment decision, the banks' screening process or the levels of effort exerted by the entrepreneur and-or the creditors after the investment decision is made.

The intrinsic endogeneity of the decision of creditors to request collateral and the decision of debtors to pledge collateral makes it difficult to empirically study the effect of partial credit guarantees on the entrepreneurs' liquidity constraints, the entrepreneurs' incentives, and the creditors' incentives. Our work sheds light on some of these questions by studying a governmental intervention in Chile that exogenously affected the credit availability and level of collateral requested by banks to low wealth entrepreneurs.

3 Description of the Intervention and Data

3.1 Description of the Intervention

The Partial Credit Guarantee Fund in Chile is administrated by a governmental agency. It has a capital of 60 million dollars, which can be levered up to 10 times according to the current law. Therefore the administration can allocate insurance funds for a total of 600 million dollars.

Between January 2003 and September 2006 (the period of analysis) approximately 100,000 operations were insured and the average fraction of the principal that was insured was 68%. The average amount for these loans was 15,000 dollars and the average maturity was 22 months. The maximum maturity, established by law, is 120 months.

The administrator of the Credit Guarantee Fund distributes the insurance funds among the financial institutions through a sealed bid auction, explained at the end of this chapter. The financial institutions can freely allocate the insurance among their clients, subject to satisfying the following restrictions:

- Insurance cannot be allocated to loans that have already been issued.
- Only loans below US$ 200,000 can be insured
- The maximum coverage ratio for loans below US$ 120,000 is 80%
- The maximum coverage ratio for loans above US$ 120,000 is 50%

- Clients getting insurance cannot have payment in arrears in the financial system at the time the insured loan is issued

- Only clients with sales below US$ 1,000,000 can get insured loans

The administrator charges a fee for the insurance, dependent on the past default rate insured loans have at each institution. Therefore the fee can vary across financial institutions but can not exceed 2%. Although the administrator reserves the right to not allocate insurance funds to institutions that present excessively high default rates.

There are three types of insurance offered by the fund: insurance for working capital, insurance for short term investment, and insurance for long run investment. The insurance for working capital can only be allocated to credit lines. The insurance for short term investment can be allocated to loans with a maximum maturity of 36 months. The insurance for long term investment can be allocated to loans with a minimum maturity of 37 month and a maximum maturity of 120 months. In the first part of this study (tables 4 and 5) we only focus on the insurance for long term investment, which represent 12% to 24% of the operations depending on the year.[8]

Currently there are 17 institutions that use credit insurance, however the 5 biggest financial institutions account for 90% of the insured loans. In the present study we only use data from these 5 institutions.

The following table presents the number and amount of operations by year and the percentage of long run investment loans.

year	operations	amount in $ millions	mean in US$	Long term loans loans
2001	2228	16	7405	13%
2002	28924	227	7864	12%
2003	30867	310	10032	12%
2004	34683	431	12433	15%
2005	33030	468	14173	22%
2006	25673	448	17466	24%

We can see that the loan administration guarantees approximately 30,000 loans per year. The average size of these insured loans has been increasing over time reaching a

[8] The reason for focusing only on insurance for long term investments is that given data limitations it is difficult to distinguish a credit line from a loan for short term investment, making the analysis of these type of insurance problematic.

maximum of \$ 17,466 in 2006. Between 12% and 24% of the insured loans are long term investment (maturity longer than 36 weeks).

The allocation of the insurance funds across financial institution is made through a sealed bid auction. There are separate auctions for each type of insurance (working capital, short term investment and long term investment). In each auction the insurance administration offers a certain amount of insurance to be allocated across all the financial institutions. Each financial institution bids for an amount of insurance funds together with the fraction of the principal they want to be repaid by the insurance administration for the defaulted loans. Institutions asking for a lower fraction of the principal to be repaid have priority over other institutions in receiving insurance funds. In the event of a tie in the fraction of the principal institutions request to be repaid, the tied institutions receive insurance funds pro rata at the requested insurance amount. In the event that the amount offered by the insurance administration is larger than the aggregated amount requested by all financial institution, all institutions receive 100% of the requested amount. In table 1 we present the results for the auction of long term investment insurance during years 2003 to 2006. In the odd rows we present the fraction of the principal that institutions requested to be repaid by the insurance administration for the defaulted loans. In the even rows we present the amount of funds allocated to each financial institution as a fraction of the amount requested by each institution. For example on 06/19/03 all institution requested 80% of the principal to be repaid by the insurance administrator for the defaulted loans, as a consequence all institution were allocated 61% of the amount of insurance funds they requested. On 09/01/05 institution 1 requested 69% of the principal to be repaid for the defaulted loans, while the rest of the institutions requested 70% of the principal to be repaid, as a consequence institution 1 received 100% of the funds it requested while the other institutions received 8% of the funds they requested. On 11/01/05 institution 1 requested 67% to be repaid for defaulted loans, institution 2 requested 60% to be repaid for defaulted loans, institution 3 requested 65%, institution 4 requested 70%, and institution 5 requested 67%. As a consequence institutions 1, 2, 3, and 5 got 100% of the amount they requested while institution 4 got 7% of the amount it requested.

All the insurance funds have to be used before the next auction. Institutions that do not use all the funds they were allocated by the time of the next auction are limited in the amount of insurance funds they can request, this limit is equal to the amount they actually used. This constraint was implemented by the insurance administration to discourage financial institutions from bidding for more funds than what they are planning to use.

3.2 Data

The data used in our study was gathered from 3 different databases. The first database is from the credit insurance administrator which contains the identities of the entrepreneurs getting insured loans, the date when each insured loan was issued, the identity of the institution issuing the loan, the total amount of insurance requested in each auction by each financial institution, and the amount of insurance allocated in each auction to each financial institution. As stated in the last section, these amounts differ when the total amount of insurance distributed by the insurance administration in the auction is smaller than the aggregated insurance amount requested by all financial institutions. This data is sent by the financial institutions to the insurance administration in a monthly basis. Failure to file this information for a particular loan disqualifies the financial institution from getting the principal repaid by the insurance administration in the event that the loan defaults.

The second database is from the bank regulation office which contains the size of the credit each entrepreneur maintains with each financial institution, use of the credit (commercial, consumption or mortgage), and information on missed payments, [9] This information has to be sent to the bank regulation office on a monthly basis. Failure to file this information can result in fines. The bank regulation office uses this information to monitor the financial risk of each financial institution, and to control that financial institutions satisfy the capital requirement established by the Chilean bank law.

The third database is a subset of the database from the Chilean Tax Revenue Office containing; yearly sales and yearly assets by entrepreneur.[10] This information was constructed from the sales tax and personal tax information filed by each company to the tax revenue office.

In table 2a we present the total number of companies that received loans in the Chilean financial system from 2003 to 2006 and divide our sample into new loans and renewed loans (loans issued before the expiration of a preexisting loan). For each type of these loans we present the number of insured loans and the number of uninsured loans. We observe

[9] Information on arrears is divided into categories of no missed payments, payments in arrears for less than 30 days, payments in arrears between 30 and 59 days, payments in arrears between 60 and 89 days, and payments in arrears for 90 or more days.

[10] To comply with the Chilean law on information disclosure, all the identification numbers were replaced by random numbers

that credit insurance was widely used by Chilean firms from 2003 to 2006. On average 19% of firms getting new loans used credit insurance while 15.5% of companies renewing preexisting loans used credit insurance. Firms in the first and last asset decile on average used less insurance than companies in the other asset quintiles. This is most likely because firms in the upper asset decile have sales above US$ 1,000,000 a year and therefore do not qualify for insurance. It is somewhat puzzling that firms in the lowest asset quintile do not use insurance as intensively as other quintiles. A potential explanation may be that the fixed costs of using insurance for these loans is higher than the benefit of using insurance and therefore banks prefer to issue very small loans without insurance.

In table 2b we present the mean and median asset amount and loan amount by asset decile, and the debt/asset ratio.[11] We observe that there is a strong correlation between asset size and credit size. We also observe that companies with less assets have a higher debt/asset ratio. Finally we observe that companies renewing their loans have higher debt/asset ratio, suggesting that companies can obtain larger loans when they have a longer relationship with the lender.

In table 3 we present the default rate on commercial loans by asset decile, one and two years after the loans are issued. We also present the default rate on consumption loans issued to the owner of the company.[12] We observe that default rate for commercial loans one year after the loan is issued is 2.61% for new loans and 2.69% for renewed loans. The default rates for consumption loans one year after the loan is issued is 4.67% for new loans and 4.8% for renewed loans. The default rate for commercial loans two years after the loan is issued is 4.54% for new loans and 4.99% for renewed loans while for consumption loans the default rate after two years is 4.22% for new loans and 4.47% for renewed loans. It is interesting to note that the default rate on consumption loans is similar one and two years after the loan is issued, while the default rate on commercial loans is significantly higher after two years.

4 Methodology

In tables 4 and 5 we estimate the effect of credit insurance on the total number of loans, loan amount and aggregated default rate of banks' portfolios. Because the amount of insurance allocated to each financial institution depends on the amount of insurance it

[11]The debt/asset ratio is evaluated using debt and asset median.

[12]Only when the owner owns 100 % of the company

requests, we cannot estimate the effect of credit insurance by regressing the dependent variables on the allocated insurance. To partially solve this problem we implement a two stage estimation. In the first stage we estimate the amount of insurance allocated to each financial institution as a function of the amount of insurance requested by each financial institution. In the second stage we estimate the number of loans, total loan amount and aggregated default rate as a function of the residual of the first estimation.

In order to understand the result of the second stage we have to understand the meaning of the residuals of the first stage. The first stage regress the amount of insurance allocated to each financial institution as a function of the amount of insurance requested by each financial institution. If we assume that each institutions expects to get a fraction of its requested amount, then we can interpret the residual of the first estimation as the "unexpected" amount of insurance received by each institution in each auction. Therefore in the second stage estimation, we get an approximation of the effect on the variables under analysis of an increase/decrease of the credit insurance.

It is important to understand the limitation of this approach. The amount of insurance allocated to each financial institution does not only depend on its requested insurance amount. As we previously discussed the amount of insurance allocated to each financial institution also depends on: the fraction of the principal they request to be paid in the event of default, the fraction of the principal that other institutions request to be repaid, and the amount of credit insurance that other institutions request from the insurance administration. Furthermore because the insurance is allocated through a sealed bid auction the participant can implement complicated dynamic strategies and therefore a linear estimation like the one implemented in the first stage is probably not going to capture all the relevant information. It is important to keep in mind these limitations when interpreting the results obtained in tables 4 and 5.

In tables 6a, 6b, 7a and 7b we estimate the effect of credit insurance on an individual's default rate. We do this by studying how loan size and default rate varies in the presence of partial credit insurance. The novelty of our analyses in these tables is that instead of comparing the repayment behavior of entrepreneurs with insurance to the repayment behavior of entrepreneurs without insurance, we compare the repayment behavior of the same entrepreneurs on insured and uninsured loans. By comparing loans held by the same entrepreneurs, we address the omitted variables problem that arises when comparing different individuals. We do this by studying two different situations. In tables 6a and 6b we study entrepreneurs that have two commercial loans in different banks, one of the loans is insured while the other one is not. Because the two loans are issued by different and independent banks, changes in repayment behavior could be attributed to changes in the client's incentives to repay each loan. In tables 7a and 7b we study entrepreneurs that have two different loans in the same bank, one of the loans is insured while the other is not. In this case the banks are the same for both loans, and therefore a difference in the repayment behavior can potentially be explained by a difference in the bank's incentives to enforce the repayment of one loan over the other.

In table 8 we study how banks allocate insured and uninsured credit among their clients. We study this by comparing the default rate on insured loans to the default rate on uninsured loans. To address potential endogeneity in this analysis we: i) control for all the observables in the database, and ii) we conduct a robustness check (in tables 10 and 11) that tests whether insured clients are different from uninsured clients. Finally in table 9 we study how insurance affects the size of commercial loans. We do this by comparing the loan size of entrepreneurs with insured commercial loans to the loan size of entrepreneurs with uninsured commercial loans. We address potential endogeneity in this table in the same way as we do in table 8.

Tables 10 and 11 contain robustness checks for the analyses in tables 8 and 9. In table 10 we study the default rate on consumption loans (which do not qualify for insurance), between two different groups: clients that have insurance on their commercial loans and clients that do not have insurance on their commercial loans. If clients with insured commercial loans were significantly different from clients with uninsured commercial loans, we should still observe a difference in the default rate on their consumption loans. However if both groups were similar we should not observe differences in the default rate of consumption loans.

In table 11 we compare the size of the consumption loans of the same two groups used in table 10. Similarly to table 10, if the two groups were similar we shouldn't observe a significant difference in their average consumption loan size. On the contrary, if the groups were different, the size of their consumption loans will not necessarily be similar. These two tables help to rule out potential selection biases in the analyses in tables 8 and 9.

5 Results

In table 4 and 5 we present the effect of an increase/decrease in the availability of credit insurance on the number of loans, loan amount and default rates. In table 4 we present the effect of credit insurance on new loans, while in table 5 we present the effect of credit insurance on renewed loans. We observe in table 4 that an increase in the availability of credit generates a significant increase in the number of new loans issued by each financial institution. We also observe that an increase in the availability of credit insurance generates a significant decrease in the average loan size of new loans. While an increase in the availability of insurance does not affect the probability of loan default after 1 year, it significantly increases the probability of default after 2 years. In fact, a 100% increase in the availability of credit insurance generates a 1.7% increase in the average default rate of new loans after 2 years, significant at the 5% level.

In table 5 we observe that an increase in the availability of credit insurance also generates an increase in the number of renewed loans, however for these type of loans the availability of insurance does not affect the average loan size. The availability of insurance is also associated with higher default rates both 1 and 2 years after the loans are issued, however only the increase in the default rate after 2 years is statistically significant. Specifically, an increase of 100% in the availability of credit insurance generates an increase of 1.43% in the average default rate of renewed loans.

In table 6a and 6b we present the difference in default rates between insured and uninsured loans held by the same entrepreneurs in different financial institutions. In table 6a we present the difference in the default rate of the loans one year after the insured loan was issued while in table 6b we present the difference in default rates 2 years after the insured loan was issued. In table 6a we observe that there is no significant difference in the default rate of insured loans compared to the default rate of uninsured loans 1 year after the insured loan was issued. We also observe in table 6a that entrepreneurs tend to default more on big loans. We observe that when the uninsured loan represents more than 90% of the total loan the default rate on this loan is 2.4% higher than the default rate on the insured loan (see second line in table 6a). However, when the insured loans represent more than 90% of the total loan the default rate is 1.8% higher for the insured loan (see last line in table 6a). A similar but milder effect is observed when the insured/uninsured loan represents between 80% and 90% of the total credit. When we estimate a weighted average for the difference in default rates (as a matching estimation with equal weights for different insurance over total loan ratios) we find no significant difference in default rates. In table 6b we present the difference in default rates between uninsured and insured loans two years after the insured loan was issued. The results in table 6b do not differ significantly from the results in table 6a.

In tables 7a and 7b we present the difference in default rates between insured and uninsured loans held by the same entrepreneurs in the same bank. In table 7a we present the difference in default rate one year after the insured loan was issued while in table 7b we present the difference in default rate two years after the insured loan was issued. In table 7a we observe that the default rate on insured loans is significantly higher than the default rate on uninsured loans. However this result does not hold when the uninsured loan is significantly bigger than the insured loan. In particular, when the insured loan represents less than 40% of the loan (lines 2 and 3 in table 7a) the difference in the default rate is not significant, when the size of the insured loan represents between 40% and 50% of the total loan the default rate on insured loans is 3.5% higher than the default rate on uninsured loans, however this result is significant only at the 10% level. The difference in default rates when the insured loan represents between 50% and 60% of the total loan is positive but not significant. Finally, when the insured loan represents more than 60% of the loan, the difference is positive and significant at the 1% level (2.5% when the insured loan represents between 60% and 80% of the total loan and 2% when the insured loan represents more than 80% of the total loan).

The results in table 7b, are more pronounced than the results in table 7a. In particular the difference in default rate after 2 years, presented in this table, is significantly higher for the insured loans even when the insured loan represents a small fraction of the total loan. In particular when the insured loan represents less than 20% of the total loan, its default rate is already higher than the default rate of uninsured loans by 3.8%, when the insured loan represents between 20% and 40% of the total loan the difference is positive but not significant. Finally when the insured loan represents more than 40% of the total loan its default rate is more than 6% higher than the default rate of uninsured loans.

In table 8 we compare the default rate of clients with insured loans to the default rate of clients with uninsured loans. Columns 1 and 3 present the results without controlling for the total assets while columns 2 and 4 present the results controlling for total assets. We observe that one year after issuance clients with insured loans have a 1.9% higher default rate than client with uninsured loans, but this result is not homogeneous across financial institutions. Institutions 3 and 4 do not present higher default rate for insured loans after one year. After two years of issuance the effect of insurance on the default rate becomes stronger at 4.2%. , and is present in 4 out of 5 of the financial institutions under analysis.Financial institution 5 presents the highest difference in default rate between insured and uninsured loans; 8.6% (4.4% higher than the average for other institutions).

In table 9 we compare the loan size of clients getting insured loans to the loan size of clients getting uninsured loans, controlling for their total assets. Columns 1 and 3 present the results without controlling for sales amount while columns 2 and 4 present the results controlling for sales amount. We observe in the second column of table 10 that clients with the same level of assets on average receive 3.6 million Chilean pesos (about $7,200) more on new loans when they have credit guarantee, the difference increases to 3.8 million Chilean pesos(about $7,600) for renewed loans. This represents an increase of 125% for new loans and 85% for renewed loans.[13] We also observe that the increase is consistent across different financial institutions (see columns 2 through 5). The relative magnitude of the effect decreases with the increase in total assets. For example for new loans the increase in loan size generated by the presence of insurance represents 87%, 69%, 55% and 34% for businesses in the 6th, 7th, 8th and 9th asset deciles.

In table 10 we compare the default rate on consumption (uninsured) loans between clients with insured commercial loans and clients with uninsured commercial loans. Columns 1 and 3 present the results without controlling for the total assets while columns 2 and 4 present the results controlling for total assets. We observe that the difference in default rate on consumption loans is not statistically different. This finding is consistent across financial institutions, the only exception is the default rate after 1 year for institutions 3 and 4, for which the default rate of consumption loans is lower for clients that have insured commercial loans (2% lower for financial institution 3 and 1.2% lower for financial institution 4).

Finally in table 11 we compare the loan size of consumption loans between clients that get insured commercial loans and client that get uninsured commercial loans. We can see that the presence of insurance reduces the size of consumption loans, but this decrease is only significant at 10% level for renewed loans and is not significant for new loans. The only exception is financial institution 4 where the presence of insurance on the commercial loan generates a reduction in the consumption loans that is significant at the 5% level.

6 Discussion and Conclusions

The results in this paper show that partial credit guaranties have been effective in increasing the number of loans and the credit capacity of small and medium size entrepreneurs in

[13]These percentages are evaluated for the benchmark asset decile, which for this estimation is the fifth asset decile. The reason we chose this decile is that sales and assets where not consistently available at the Tax Revenue Office for lower deciles making the estimation unfeasible.

Chile. However, partial credit guaranties also present serious costs. The default rate of a guaranteed loan can be as much as 8% higher than the default rate of similar non-insured loan. We show that the main reason for the higher default rate of insured loans is due to misalignments in the incentives of banks to monitor their insured clients. In particular, we show that clients holding both insured and uninsured loans in different banks do not show a significant difference in their default rate on their uninsured loans compared to the default rate on their insured loans. We also show that entrepreneurs whose commercial loans are insured do not show a higher default rate on their consumption (uninsured) loans compared to the default rate on consumption loans of entrepreneurs who have uninsured commercial loans. These two findings suggest that insurance does not affect the repayment behaviors of entrepreneurs. Nor does insurance affect the screening effort of banks. However, we show that clients with insured and uninsured loans in the same banks have a higher default rate on their insured loans compared to their default rate on uninsured loans. We also show that for the same levels of sales and assets, clients with insured commercial loans have a higher default rate on commercial loans than similar entrepreneurs with uninsured commercial loans. These two findings suggest that insurance seriously affect the banks' monitoring incentives causing banks to allocate less effort to collecting insured loans.

The former results are, in part, a consequence of the design of the intervention. The partial credit guarantee in Chile does not reduce the cost of default for the debtor. In particular, the borrowers are still liable for their loans, even after the insurance administrator repays the insured principal to the bank. Furthermore, reputational costs and costs of being in distress are faced by the entrepreneurs regardless of the presence of insurance. The only benefit the debtor gets from the availability of insurance is better access to finance; they do not get a reduction in the cost of default. On the contrary banks are guaranteed a fraction of the principal in the event of a loan default, and therefore have fewer incentives to enforce repayment. In our opinion, the problem is that the credit being partial only aligns the screening incentives of the bank, but it does not align its monitoring incentives. In fact because the creditors assume a fraction of the risk, they have incentives to issue loans to the most profitable clients. However after a loan is issued the banks have more incentives to monitor uninsured loans.

This paper shed important light on the effect that partial credit insurance has on small and medium size entrepreneurs' access to finance and default rates. It also explored the design of a partial credit insurance intervention in Chile, and the mechanisms through which this intervention increased the default rate on insured loans. This information can be used to improve the design of this type of instrument and to work to minimize economic distortions in future interventions.

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Table 1: Insurance Bidding Summary

	inst. 1		inst. 2		inst. 3		inst. 4		inst. 5	
date	insur	funds	insur	funds	insur	funds	insur	funds	insur	funds
03/31/03	80	98%	80	98%	80	98%	80	98%	80	98%
06/19/03	80	61%	80	61%	80	61%	80	61%	80	61%
09/22/03	80	47%	80	47%	80	47%	80	47%	80	47%
12/19/03	80	67%	80	67%	80	67%	80	67%	80	67%
03/31/04	70	100%	80	92%	80	92%	80	92%	80	92%
06/30/04	70	100%	80	81%	80	81%	80	81%	80	81%
09/30/04	70	100%	80	77%	80	77%	80	77%	80	77%
12/30/04	70	100%	80	61%	80	61%	80	61%	80	61%
04/01/05	70	100%	80	58%	80	58%	80	58%	80	58%
07/01/05	70	100%	80	12%	80	12%	80	12%	80	12%
09/01/05	69	100%	70	8%	70	8%	70	8%	70	8%
11/01/05	67	100%	60	100%	65	100%	70	7%	67	100%
01/02/06	60	100%	60	100%	65	100%	60	100%	65	100%
03/16/06	60	100%			65	100%	65	100%	65	100%
05/01/06	60	100%	80	100%	65	100%	70	100%	65	100%
07/01/06	63	100%	80	100%	80	100%	80	100%	70	100%
09/01/06	70	100%	80	100%	75	100%	80	100%	70	100%

Table 2a: Total number of loans and fraction of insured loans by asset decile

	New loans			Renewals		
assets decile	number insured	number uninsured	percentage insured	number insured	number uninsured	percentage insured
1	227	2056	9.94	97	1867	4.94
2	512	2855	15.21	216	2545	7.82
3	911	3605	20.17	475	3432	12.16
4	1176	3930	23.03	595	3787	13.58
5	1525	4974	23.47	1000	5083	16.44
6	1786	5469	24.62	1461	5935	19.75
7	2467	7725	24.21	2704	8981	23.14
8	2728	8662	23.95	4013	11444	25.96
9	2684	11142	19.41	5468	16461	24.94
10	754	15708	4.58	1531	21984	6.51
Total	14770	66126	18.86	17560	81519	15.52

Table 2b: Asset and Loan size by asset decile

assets decile	assets mean	assets median	new loans mean	new loans median	new loans debt/asset	renewals mean	renewals median	new loans debt/asset
1	418651	437330	1133284	528678	1.21	2291658	1101716	2.52
2	1088128	1072617	1832912	739966	0.69	2705884	1286932	1.20
3	2000714	1984510	1754369	1006439	0.51	3256116	1569968	0.79
4	3482489	3440462	2479385	1137867	0.33	3883440	2063487	0.60
5	6021888	5937404	2891127	1597175	0.27	4478587	2551202	0.43
6	10708119	10509000	4673525	2198077	0.21	6108851	3548844	0.34
7	20606730	20045244	6524384	3727262	0.19	8378088	5337472	0.27
8	47043424	44908328	9896918	6353064	0.14	12710665	9113570	0.20
9	148211840	133145872	20212892	13504230	0.10	24345006	16980800	0.13
10	29633228800	890374592	50508516	23484654	0.03	55494888	30724136	0.03

Table 3: Default rate by asset decile

	New loans				Renewals			
assets	com +1	com +2	cons +1	cons +2	com +1	com +2	cons +1	cons +2
1	3.08	3.88	5.75	4.93	2.90	4.70	8.01	7.72
2	3.09	4.28	8.65	7.00	2.54	2.79	8.71	5.22
3	3.35	4.10	6.18	5.94	3.22	4.55	8.30	4.14
4	2.98	4.28	6.44	5.36	2.92	4.81	5.22	5.52
5	3.36	5.29	7.44	5.48	4.10	6.44	5.66	4.29
6	3.34	5.90	3.39	3.38	3.35	6.89	4.21	5.33
7	3.12	6.78	2.84	4.10	3.27	7.37	3.49	4.94
8	2.04	5.55	2.87	3.52	2.54	6.51	2.35	3.59
9	1.29	3.93	1.62	1.70	1.51	4.22	1.38	2.43
10	0.43	1.41	1.52	0.76	0.56	1.59	0.66	1.56
average	2.61	4.54	4.67	4.22	2.69	4.99	4.80	4.47

Table 4: Effect of Changes in Availability of Credit Insurance on Number of loans, Loan Size and Default Rate of Small and Medium Size Businesses (New Clients)

In this table we present the change in the total number of issued loans, the average loan size, the default rate after one year and the default rate after two years for small and medium size businesses getting their first loan from the bank. We estimate this parameters by regressing the number of loans, average loan size and default rates, by institution, on the residuals of a first stage estimation of the credit insurance available to each institution. In the first stage, not presented in this paper, we estimate the credit insurance amount available to each institution as a function of the credit insurance amount requested by the institution. Because the allocation process is non lineal the residual of this estimation can be used as an instrument for the second stage presented in this table.

	Number of loans	Loan size	default(+1)	default(+2)
First stage residual	122.51**	-1.333e+06***	0.019	1.697**
	(57.55)	(4.339e+05)	(0.301)	(0.705)
dummy institution = 2	-229.40***	6.663e+06***	2.284***	4.148***
	(46.59)	(5.383e+05)	(0.619)	(1.078)
dummy institution = 3	-309.64***	8.035e+06***	0.819**	-1.510*
	(44.49)	(5.713e+05)	(0.345)	(0.847)
dummy institution = 4	-254.98***	9.371e+06***	0.814**	3.187***
	(44.32)	(5.511e+05)	(0.384)	(0.928)
dummy institution = 5	54.60	2.52E+04	0.243	0.693
	(92.68)	(6.525e+05)	(0.329)	(0.789)
Constant	369.67***	5.286e+06***	0.691***	5.952***
	(37.15)	(2.867e+05)	(0.226)	(0.618)
Observations	224	224	224	224
Adjusted R-squared	0.2024	0.6224	0.0949	0.1390

Table 5: Effect of Changes in Availability of Credit Insurance on Number of lans, Loan Size and Default of Small and Medium Size Businesses for Renewed Loans

In this table we present the change in the total number of issued loans, the average loan size, the default rate after one year and the default rate after two years for small and medium size businesses renewing their loans. we estimate this parameters by regressing the number of loans, average loan size and default rates, by institution, on the residuals of a first stage estimation of the credit insurance available to each institution. In the first stage, not presented in this paper, we estimate the credit insurance amount available to each institution as a function of the credit insurance amount requested by the institution. Because the allocation process is non lineal the residual of this estimation can be used as an instrument for the second stage presented in this table.

	Number of loans	Loan size	default(+1)	default(+2)
First stage residual	84.39*	-9.99E+04	0.463	1.430*
	(47.39)	(5.652e+05)	(0.714)	(0.808)
dummy institution = 2	-203.12***	1.784e+07***	0.513	1.649*
	(36.88)	(6.168e+05)	(1.027)	(0.930)
dummy institution = 3	-271.28***	1.773e+07***	-1.025	-1.099
	(36.18)	(6.523e+05)	(0.889)	(0.769)
dummy institution = 4	-171.09***	2.027e+07***	6.721***	5.160***
	(35.98)	(7.592e+05)	(1.096)	(0.872)
dummy institution = 5	9.66	2.694e+06***	-2.456***	1.468*
	(75.27)	(8.202e+05)	(0.892)	(0.805)
Constant	329.38***	5.658e+06***	3.630***	6.675***
	(30.90)	(3.864e+05)	(0.808)	(0.588)
Observations	224	224	224	224
Adjusted R-squared	0.1677	0.8444	0.3752	0.2362

Table 6a: Difference in Repayment Behavior Among Insured and Uninsured Loans Hold in Different Banks, measured after 1 year

In this table we present the difference in default rate on insured loans compared to the default rate of the uninsured loans hold by the same entrepreneurs in a different bank. We present the results by the importance of the insured loan, measured as a fraction of total loam amount. We observe that clients tend to default more on their bigger loans, however a matching estimation shows no statistical difference in the repayment behavior for insured loans compared to the repayment behavior of uninsured loans.

	$\beta_{insurance}$	std	C	std	Observations	Adj. R^2
matching estimation	**-0.0024**	**(0.0019)**	**0.0452*** **	**(0.0013)**		
$0 \leq$ ratio < 0.1	-0.0242***	(0.0077)	0.0423***	(0.0054)	1984	0.0045
$0.1 \leq$ ratio < 0.2	-0.0173**	(0.0070)	0.0429***	(0.0050)	2660	0.0019
$0.2 \leq$ ratio < 0.3	-0.0046	(0.0070)	0.0470***	(0.0050)	3446	-0.0002
$0.3 \leq$ ratio < 0.4	-0.0069	(0.0068)	0.0527***	(0.0048)	4058	0.0000
$0.4 \leq$ ratio < 0.5	-0.0004	(0.0059)	0.0445***	(0.0042)	4894	-0.0002
$0.5 \leq$ ratio < 0.6	-0.0025	(0.0058)	0.0503***	(0.0041)	5602	-0.0001
$0.6 \leq$ ratio < 0.7	0.0006	(0.0059)	0.0559***	(0.0041)	6192	-0.0002
$0.7 \leq$ ratio < 0.8	0.0040	(0.0049)	0.0421***	(0.0035)	7078	0.0000
$0.8 \leq$ ratio < 0.9	0.0092**	(0.0046)	0.0424***	(0.0032)	8496	0.0004
$0.9 \leq$ ratio ≤ 1	0.0182***	(0.0034)	0.0321***	(0.0024)	13322	0.0020

Table 6b: Difference in Repayment Behavior Among Insured and Uninsured Loans Hold in Different Banks, measured after 2 years

In this table we present the difference in default rate on insured loans compared to the default rate of the uninsured loans hold by the same entrepreneurs in a different bank. We present the results by the importance of the insured loan, measured as a fraction of total loam amount. We observe that clients tend to default more on their bigger loans, however a matching estimation shows no statistical difference in the repayment behavior for insured loans compared to the repayment behavior of uninsured loans.

	$\beta_{insurance}$	std	C	std	Observations	Adj. R^2
matching estimation	**-0.0024**	**(0.0031)**	**0.0875*** **	**(0.0022)**		
$0 \leq$ ratio < 0.1	-0.0284**	(0.0136)	0.0806***	(0.0096)	1340	0.0025
$0.1 \leq$ ratio < 0.2	-0.0331***	(0.0114)	0.0838***	(0.0080)	1934	0.0039
$0.2 \leq$ ratio < 0.3	-0.0238**	(0.0115)	0.1003***	(0.0081)	2432	0.0014
$0.3 \leq$ ratio < 0.4	-0.0170	(0.0111)	0.1044***	(0.0078)	2816	0.0005
$0.4 \leq$ ratio < 0.5	0.0006	(0.0096)	0.0898***	(0.0068)	3540	-0.0003
$0.5 \leq$ ratio < 0.6	0.0000	(0.0094)	0.0993***	(0.0066)	4050	-0.0002
$0.6 \leq$ ratio < 0.7	0.0083	(0.0091)	0.0961***	(0.0064)	4350	0.0000
$0.7 \leq$ ratio < 0.8	0.0034	(0.0078)	0.0862***	(0.0055)	5290	-0.0002
$0.8 \leq$ ratio < 0.9	0.0347***	(0.0072)	0.0720***	(0.0051)	6278	0.0035
$0.9 \leq$ ratio ≤ 1	0.0309***	(0.0053)	0.0621***	(0.0038)	10020	0.0032

Table 7a: Difference in Repayment Behavior Among Insured and Uninsured Loans Hold in the Same Bank, measured after 1 year

In this table we present the difference in default rate on insured loans compared to the default rate of the uninsured loans hold by the same entrepreneurs in the same bank. We present the results by the importance of the insured loan, measured as a fraction of total loam amount. We observe that there is a significant difference in the repayment behavior for insured loans compared to the repayment behavior for uninsured loans.

	$\beta_{insurance}$	std	C	std	Observations	Adj. R^2
matching estimation	**0.0158*** **	**(0.0032)**	**0.0312*** **	**(0.0023)**		
$0 \leq$ ratio < 0.2	0.0122	(0.0121)	0.0061	(0.0086)	328	0.0000
$0.2 \leq$ ratio < 0.4	-0.0041	(0.0176)	0.0412***	(0.0125)	486	-0.0020
$0.4 \leq$ ratio < 0.5	0.0354*	(0.0184)	0.0276**	(0.0130)	508	0.0053
$0.5 \leq$ ratio < 0.6	0.0068	(0.0139)	0.0408***	(0.0098)	882	-0.0009
$0.6 \leq$ ratio < 0.8	0.0246***	(0.0069)	0.0369***	(0.0049)	3906	0.0030
$0.8 \leq$ ratio ≤ 1	0.0197***	(0.0024)	0.0343***	(0.0017)	30288	0.0023

Table 7b: Difference in Repayment Behavior Among Insured and Uninsured Loans Hold in the Same Bank, measured after 2 years

In this table we present the difference in default rate on insured loans compared to the default rate of the uninsured loans hold by the same entrepreneurs in the same bank. We present the results by the importance of the insured loan, measured as a fraction of total loam amount. We observe that there is a significant difference in the repayment behavior for insured loans compared to the repayment behavior for uninsured loans.

	$\beta_{insurance}$	std	C	std	Observations	Adj. R^2
matching estimation	**0.0515*****	**(0.0044)**	**0.0267*****	**(0.0031)**		
$0 \leq$ ratio < 0.2	0.0382*	(0.0225)	0.0153	(0.0159)	262	0.0072
$0.2 \leq$ ratio < 0.4	0.0055	(0.0222)	0.0440***	(0.0157)	364	-0.0026
$0.4 \leq$ ratio < 0.5	0.0695***	(0.0213)	0.0107	(0.0151)	374	0.0252
$0.5 \leq$ ratio < 0.6	0.0556***	(0.0197)	0.0359***	(0.0139)	612	0.0113
$0.6 \leq$ ratio < 0.8	0.0701***	(0.0090)	0.0265***	(0.0064)	2796	0.0209
$0.8 \leq$ ratio ≤ 1	0.0698***	(0.0033)	0.0279***	(0.0023)	21584	0.0206

Table 8: Effect of Insurance on the Default rate of Individuals' Commercial Loans

In this table we present the effect of insurance on the default rate of commercial(insurable) loans of small and medium size businesses. In the first and third columns we present a standard OLS estimation, while in the second and fourth column we present an OLS estimation controlling for the effect of assets.

	default(+1)		default(+2)	
dummy insurance	0.0156***	0.0186***	0.0416***	0.0422***
	[0.0060]	[0.0060]	[0.0100]	[0.0100]
dummy insurance x institution = 2	-0.0076	-0.0103	0.0177	0.0168
	[0.0081]	[0.0081]	[0.0130]	[0.0130]
dummy insurance x institution = 3	-0.0186	-0.0162	-0.0419**	-0.0380*
	[0.0121]	[0.0121]	[0.0199]	[0.0199]
dummy insurance x institution = 4	-0.0168**	-0.0166**	-0.0164	-0.0149
	[0.0075]	[0.0075]	[0.0119]	[0.0119]
dummy insurance x institution = 5	-0.0036	-0.0025	0.0429*	0.0442*
	[0.0165]	[0.0165]	[0.0236]	[0.0236]
default on commercial loans	0.3730***	0.3704***	0.2262***	0.2250***
	[0.0112]	[0.0112]	[0.0167]	[0.0167]
default on consumption loans	0.0864***	0.0836***	0.0937***	0.0921***
	[0.0106]	[0.0106]	[0.0174]	[0.0174]
Size of Commercial loan	-3.19e-10***	-1.73e-10**	-2.32e-10**	-8.94E-11
	[6.82e-11]	[7.12e-11]	[1.08e-10]	[1.13e-10]
Size of Consumption loan	3.73E-10	6.26e-10**	2.71E-10	4.54E-10
	[3.15e-10]	[3.16e-10]	[5.51e-10]	[5.53e-10]
Constant	0.0237***	0.0168***	0.0431***	0.0394***
	[0.0038]	[0.0039]	[0.0062]	[0.0063]
Assets Controls	×	√	×	√
Observations	26254	26254	20264	20264
Adjusted R-squared	0.0544	0.0567	0.0234	0.0241

Table 9: Effect of Insurance on the Size of Individual Commercial Loans

In this table we present the effect insurance on the loan size of small and medium size businesses. In the first and third columns we present a standard OLS estimation, while in the second and fourth column we present an OLS estimation controlling for the effect of sales.

	New loans		Renewals	
dummy insurance	3.74e+06***	3.60e+06***	3.99e+06***	3.84e+06***
	[7.47e+05]	[7.55e+05]	[1.04e+06]	[1.02e+06]
dummy insurance x institution = 2	-1.23e+06*	-1.21e+06*	2.89e+06***	2.68e+06***
	[6.66e+05]	[6.71e+05]	[8.51e+05]	[8.39e+05]
dummy insurance x institution = 3	-4.29E+05	-5.83E+05	1.86E+06	1.62E+06
	[1.01e+06]	[1.01e+06]	[1.30e+06]	[1.27e+06]
dummy insurance x institution = 4	-4.06E+05	-5.37E+05	-1.70E+04	-3.36E+05
	[5.93e+05]	[5.96e+05]	[8.26e+05]	[8.14e+05]
dummy insurance x institution = 5	-2.53E+05	-2.10E+05	1.62E+06	1.48E+06
	[1.98e+06]	[1.96e+06]	[1.63e+06]	[1.59e+06]
dummy insurance x assets = 2	4.50E+05	3.86E+05	1.01E+06	8.32E+05
	[8.29e+05]	[8.33e+05]	[1.23e+06]	[1.21e+06]
dummy insurance x assets = 3	9.22E+05	9.07E+05	6.03E+05	5.43E+05
	[7.78e+05]	[7.83e+05]	[1.13e+06]	[1.11e+06]
dummy insurance x assets = 4	1.81e+06**	1.85e+06**	1.98e+06*	1.72E+06
	[7.74e+05]	[7.80e+05]	[1.12e+06]	[1.10e+06]
dummy insurance x assets = 5	3.36e+06***	3.29e+06***	3.47E+05	1.70E+05
	[8.19e+05]	[8.25e+05]	[1.14e+06]	[1.12e+06]
default on commercial loans	-6.08E+05	-5.40E+05	8.29e+06***	7.91e+06***
	[1.68e+06]	[1.73e+06]	[1.54e+06]	[1.57e+06]
default on consumption loans	-1.80e+06***	-1.58e+06**	-2.69e+06*	-2.30E+06
	[6.97e+05]	[7.49e+05]	[1.41e+06]	[1.43e+06]
Constant	5.21E+05	9.65e+05***	6.78E+05	1.42e+06***
	[3.49e+05]	[3.74e+05]	[4.68e+05]	[4.94e+05]
Sales Controls	×	√	×	√
Observations	10506	9929	15556	14831
Adjusted R-squared	0.1153	0.1220	0.1322	0.1450

Table 10: Effect of Insurance on the Default rate of Individuals' Consumption Loans

In this table we present the effect of insurance on the default rate on consumption(uninsurable) loans for small and medium size businesses. In the first and third columns we present a standard OLS estimation, while in the second and fourth column we present an OLS estimation controlling for the effect of assets.

	default(+1)		default(+2)	
dummy insurance	-0.0026	0.0019	0.0013	0.0035
	[0.0055]	[0.0055]	[0.0074]	[0.0074]
dummy insurance x institution = 2	0.0021	-0.0018	0.0151	0.0133
	[0.0074]	[0.0074]	[0.0096]	[0.0096]
dummy insurance x institution = 3	-0.0215*	-0.0198*	-0.0267*	-0.0222
	[0.0111]	[0.0111]	[0.0147]	[0.0147]
dummy insurance x institution = 4	-0.0111	-0.0118*	-0.0096	-0.0082
	[0.0068]	[0.0068]	[0.0088]	[0.0088]
dummy insurance x institution = 5	-0.0058	-0.0046	-0.0026	-0.0006
0.0000	[0.0150]	[0.0150]	[0.0175]	[0.0175]
default on commercial loans	0.0398***	0.0361***	0.0096	0.0072
	[0.0102]	[0.0102]	[0.0124]	[0.0124]
default on consumption loans	0.0189*	0.0154	-0.0162	-0.0185
	[0.0097]	[0.0096]	[0.0129]	[0.0129]
Size of Commercial loan	-5.41e-10***	-3.77e-10***	-4.50e-10***	-2.71e-10***
	[6.22e-11]	[6.48e-11]	[8.01e-11]	[8.39e-11]
Size of Consumption loan	6.64e-10**	9.72e-10***	-4.66E-12	2.77E-10
	[2.87e-10]	[2.88e-10]	[4.08e-10]	[4.09e-10]
Constant	0.0306***	0.0214***	0.0287***	0.0222***
	[0.0035]	[0.0035]	[0.0046]	[0.0047]
Assets Controls	×	√	×	√
Observations	26254	26254	20264	20264
Adjusted R-squared	0.0063	0.0116	0.0032	0.0058

Table 11: Effect of Insurance on the Size of Individual Consumption Loans

In this table we present the effect insurance on the loan size of small and medium size businesses. In the first and third columns we present a standard OLS estimation, while in the second and fourth column we present an OLS estimation controlling for the effect of sales.

	New loans		Renewals	
dummy insurance	-5.58e+05*	-4.80E+05	-5.24e+05**	-4.21e+05*
	[3.23e+05]	[3.26e+05]	[2.31e+05]	[2.30e+05]
dummy insurance x institution = 2	-2.95E+05	-2.28E+05	-2.22E+05	-1.84E+05
	[2.88e+05]	[2.90e+05]	[1.89e+05]	[1.89e+05]
dummy insurance x institution = 3	6.64E+05	6.43E+05	1.68E+05	1.35E+05
	[4.37e+05]	[4.36e+05]	[2.90e+05]	[2.86e+05]
dummy insurance x institution = 4	-5.44e+05**	-5.56e+05**	1.96E+05	1.13E+05
	[2.57e+05]	[2.57e+05]	[1.84e+05]	[1.83e+05]
dummy insurance x institution = 5	2.10E+05	1.34E+05	9.85E+04	2.32E+04
	[8.55e+05]	[8.46e+05]	[3.63e+05]	[3.58e+05]
dummy insurance x assets = 2	1.53E+05	1.36E+05	4.13E+04	6.48E+04
	[3.59e+05]	[3.60e+05]	[2.74e+05]	[2.72e+05]
dummy insurance x assets = 3	-1.48E+05	-1.81E+05	-1.39E+05	-1.89E+05
	[3.37e+05]	[3.38e+05]	[2.52e+05]	[2.50e+05]
dummy insurance x assets = 4	9.78E+04	9.66E+04	-2.68E+05	-2.99E+05
	[3.35e+05]	[3.37e+05]	[2.49e+05]	[2.48e+05]
dummy insurance x assets = 5	-2.89E+05	-2.56E+05	-4.63E+04	-1.53E+05
	[3.54e+05]	[3.56e+05]	[2.54e+05]	[2.53e+05]
default on commercial loans	-6.57E+05	-8.21E+05	-3.30E+05	-5.32E+05
	[7.27e+05]	[7.46e+05]	[3.42e+05]	[3.53e+05]
default on consumption loans	8.15e+05***	7.85e+05**	1.36e+06***	1.29e+06***
	[3.02e+05]	[3.23e+05]	[3.14e+05]	[3.22e+05]
Constant	8.99e+05***	8.41e+05***	7.86e+05***	7.25e+05***
	[1.51e+05]	[1.62e+05]	[1.04e+05]	[1.11e+05]
Sales Controls	×	√	×	√
Observations	10506	9929	15556	14831
Adjusted R-squared	0.0872	0.0899	0.0906	0.0979

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