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Institutional arrangements to determine loan repayment in Chile*

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Abstract

The major objective of this paper is to investigate institutional arrangements as determinant of loan repayment in the Chilean financial market. A second aim is to analyze the effects of these arrangements on borrowers' behavior. Despite La Porta *et al.* (1997, 1998) classify Chile as a French Civil Law country, the law and private arrangements have evolved consistently with the capital market development to protect the rights of the creditors. This is consistent with relatively low rates of bad loans, ranking from 1.1 to 2.0 percent in 1993-1997. We examine different variables which may be related to loan repayment; (a) limitations on the access to credit, (b) macroeconomic stability, (c) collection technology, (d) bankruptcy code, (e) information sharing, (f) the judicial system, (g) prescreening techniques and (h) major changes in financial market regulation. Based on the discussion presented in the paper plus regression analyses, we conclude that a satisfactory performance of the Chilean credit market, in terms of loan repayments and credit market development, hinges on a good information sharing system, an advanced collection technology, a good macroeconomic performance, credit market development and major changes in financial market regulation.

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1 INTRODUCTION 5

2 INTERNATIONAL COMPARISONS 6

3 MAJOR DETERMINANTS OF LOAN REPAYMENT AND CREDIT MARKET DEVELOPMENT 8

3.1 MACROECONOMIC STABILITY 9
3.2 FINANCIAL MARKET REGULATION AND THE BANKING SECTOR 11
3.3 INFORMATION SHARING 15
3.4 EMPIRICAL ANALYSIS 19
3.4.1 The Chilean credit market: 1993-1997 19
3.4.2 Econometric analysis 21

4 OTHER DETERMINANTS OF LOAN REPAYMENT: STYLIZED FACTS 28

4.1 ACCESS TO CREDIT 28
4.2 LEGAL FRAMEWORK 30
4.2.1 Judicial system 32
4.2.2 Bankruptcy code 33
4.3 PRIVATE SOLUTIONS 36
4.3.1 Prescreening technique 36
4.3.2 Collection technology 39
4.3.3 Private contracts 41

5 SUMMARY AND CONCLUSIONS 44

6 REFERENCES 47

1 Introduction

La Porta et al. (1997, 1998) classified Chile as a French Civil Law country, which according to them have poorer creditor rights protection and, consequently, narrower financial markets. This paper is mainly motivated by Chile's outstanding performance in terms of bad debt as compared to other countries that fit within the same class. In fact, looking at the international evidence, Jappelli and Pagano (1998) showed that the ratio between non-performing loans and total loans is lower in Chile than in other economies at a similar stage of development.

On the Chilean empirical evidence, Fuentes and Basch (1998) showed that Chile experienced a process of banking disintermediation. This process was primarily due to the entrance of institutional investors during the eighties (mainly private pension funds), and the expansion of department stores as a source of credit, leasing companies and public debt issues during the nineties. This process led to lower bank margins. For this reason, banks moved into riskier segments, i.e., lending to individuals and to small business. Yet, defaulted loans have not increased. Why was this so? More generally, what are the determinants of loan repayment in Chile?

Based on the La Porta *et al* results, someone may conclude that to reach a higher level of creditor's right protection and, consequently to develop the capital market, it is necessary to move from French Civil Law structure to a Common Law one. However, this paper shows that despite Chile belongs to the French Civil Law group of countries, it is possible to build institutional arrangements to protect creditor's right and create borrower's incentives to repay in the financial market. Therefore, our objective is to study different institutional arrangements that may determine the level of loan repayment. To accomplish this goal it is necessary to control for macroeconomic variables to discern between ability and willingness to repay.

Willingness to repay in the financial market is key to the existence of a healthy financial system. Specifically, the institutional arrangements to assure the debtor's payment should be one of the main concerns of policy-makers that oversee the operation of the banking system, since credit market failures generally derives from imperfect information and/or limited enforcement (see Besley, 1995). On the one hand, there is asymmetric information that translates into moral hazard and adverse selection problems, as creditors are only able to partially observe the behavior of the debtor. These issues may be exacerbated in a situation where creditor rights are hard to enforce, since this increases the probabilities that debtors can get away with default even in cases where they could repay their debts.

On the other hand, there are risks to the debtor's project, such as, economic shocks, that may impair her ability to repay her loans. In Latin America many external crises over the last twenty years have been generated by difficulties in the financial sector. For instance, that was the case in Chile (1982), in Mexico during the recent so-called "tequila effect" and in Argentina, etc. Sometimes, these external crises lead to a local currency

devaluation (at least in the case of Chile and Mexico), that unleashes the crisis and demonstrated the weakness of the financial system, in which debtors are unable to pay their obligations. In this case, the economy faces a generalized crisis.

We examine three important variables, namely: the macroeconomic environment, financial market regulation and information sharing. Using monthly data for 1986-1997 we find that good macroeconomic performance and the introduction of white information sharing is negatively related with past due loans. We explore the determinants of credit market development considering yearly data. We show that good macroeconomic performance plus major financial market reforms and information sharing explained the credit market development.

We also discuss the effect of other determinants of the level of arrears in the credit market. We group these additional factors in macroeconomic variables, legal environment and private arrangements. Concerning the first group we examine the effect on past due loans of access to credit. In terms of the legal environment, we study the degree of efficiency of the judicial system, and the characteristics of the bankruptcy code. We also study some private arrangements such as information sharing, prescreening techniques, collection technology and corporate bonds as an example of private contracts.

The structure of the paper is as follows. Section 2 shows international and national evidence to motivate this research. Section 3 considers the analysis of the major determinants of loan repayment and credit market development. Section 4 discusses other determinants of loan repayment in Chile. The paper ends with our concluding remarks.

2 International Comparisons

As stated in the introduction, Chile was classified by La Porta et al. (1998) as a French Civil Law country. According to their study, these countries are generally characterized by poor creditor rights protection and less developed capital markets. However, looking at individual country data, the Chilean capital market is relatively more developed than the rest of the countries in the French Civil Law group.

The following table shows statistics on creditor rights protection and capital market development as presented by La Porta et al. Panel A shows what they called measures of law enforcement: efficiency of judicial system, index of rule of law, index of corruption and risk of repudiation. All indices are measured on a scale from 0 to 10, where the higher value means higher efficiency of the judicial system, higher tradition of law and order, lower level of corruption and lower risk of contract repudiation by the government.

Table 2.1
Law Enforcement and Financial Development

Country	Efficiency of judicial system	Rule of law	Corruption	Risk of contract repudiation
Panel A: Rule of Law				
Chile	7.25	7.02	5.30	6.80
French Origin Avg.	6.56	6.05	5.84	6.84
English Origin Avg.	8.15	6.46	7.06	7.41
German Origin Avg.	8.54	8.68	8.03	9.47
Scandinavian Origin Avg.	10.00	10.00	10.00	9.44
Sample Average	7.67	6.85	6.9	7.58
Panel B: External Capital Markets				
Country	External Cap/GNP	Domestic firms/Pop	IPO's/Pop	Debt/GNP
Chile	0.80	19.92	0.35	0.63
French Origin Avg.	0.21	10.00	0.19	0.45
English Origin Avg.	0.60	35.45	2.23	0.68
German Origin Avg.	0.46	16.79	0.12	0.97
Scandinavian Origin Avg.	0.30	27.76	2.14	0.57
Sample Average	0.40	21.59	1.02	0.59

Source: La Porta et al. (1997, 1998)

Chile does not feature appreciable difference in the enforcement variables (Panel A) with respect to the average of the French Civil Law countries except for the rule of law variable, where it scores higher than other countries of this group. With the exception of this variable, however, it scores lower than English origin countries. For all four enforcement variables, it scores far worse than German and Scandinavian origin countries. Accordingly, the development of the Chilean capital market should be comparable with the rest of the French Civil Law countries. Panel B shows different indicators for capital market development and Chile is above the average of the French Civil Law countries in all the indexes, and it could be comparable to the countries with an English, German or Scandinavian law.

More connected with the main topic in the paper is the data related to bad loans. This is hard to measure for cross-country comparisons, because each economy has its own regulation as to when a bank rates a loan as non-performing or past due. For example in Chile banks rate a loan as a past due after 90 days while in Brazil it is after 60 days. If loan loss reserves are measured as a proxy of non-performing loans, once again no single criteria will be found. Despite these problems, it is interesting to analyze this kind of data for some

countries. The following table shows statistics on past due loans and loan loss reserves for different countries as reported in Jappelli and Pagano (1998).

Table 2.2
International Comparisons on Non-Performing Loans

Country	Non-performing loans/total loans	Number of banks used to estimate non-performing loans	Loan loss reserves/total loans	Number of banks used to estimate loan loss reserves
Argentina			3.79	97
Brazil	6.31	94	3.63	95
Chile	0.93	29	0.34	31
Colombia	7.34	24	1.74	27
Mexico	7.09	22	2.88	22
Peru	8.93	23	3.45	18
Australia	3.70	12	0.34	34
Canada	2.34	7	0.79	17
Germany			0.60	1596
Italy	5.21	235	1.74	250
Spain	4.74	19	0.98	163
Sweden	7.02	15	1.12	16
United Kingdom			0.16	59
United States	1.65	495	0.56	497

Source: Jappelli and Pagano (1998)

Again Chile shows very low levels of defaulted loans and it is more comparable to developed countries than to the other Latin American countries. By way of an example, non-performing loans in Chile were in the order of 1% over the last few years, which is more similar to the US and Canada than to Peru or Brazil.

3 Major determinants of loan repayment and credit market development

Institutional arrangements *per se* do not always adequately warrant the enforcement of payment. That is, creditor's rights are not completely protected. They could fail for many reasons: an inefficient judicial system, a bad policy of third-party collateral or guarantees, a lack of public dissemination of default data, etc.

We can identify at least three large groups of potential factors, which determine loan repayments. The first one includes macroeconomic determinants. On the one hand,

macroeconomic stability could be the reason for a low level of non-performing loans. On the other hand, credit rationing could explain the low level of overdue loans, since banks will lend money only to the high quality borrowers (Stiglitz and Weiss, 1981).

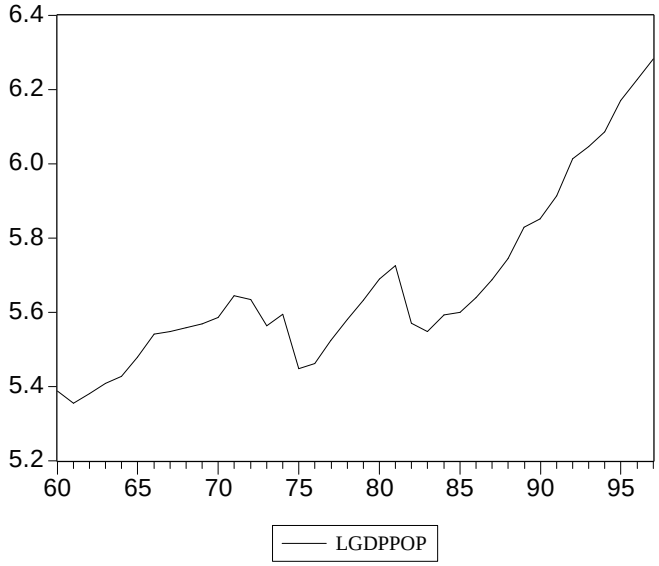
The second group of determinants is related to regulation and enforcement system. The main changes in the financial market regulation are among the key element to explain development of the credit market and the low level of arrears. If a country has a clear set of rules that protect creditor's right combined with a an efficient supervision of the rules then the creditors will have incentive to create some mechanism to ensure the repayment of a loan. On the other hand, elements like efficiency of the judicial system and bankruptcy code will be analyzed in section 4. If the rules of enforcement are inefficient, the cost of not paying a debt could be lower than the benefit. Among the inefficiencies we can mention a slow legal system and costly judicial proceedings.

The third set of variables is what we call private solutions to face the unwillingness to repay a loan. This group includes information sharing system, prescreening techniques, collection technology and private contracts. In many situations the financial system does not have the information on either the level of the debt or the history of the debtor and then the system is not in a position to limit the amount of loans. This is intensified by the lack of a good supervisory system within the financial sector (Edwards, 1995). In this section will measure the impact of information sharing on past due loans and credit market growth, postponing the discussion of the other solutions to section 4.

3.1 Macroeconomic stability

A key issue in this study is to separate willingness to repay from the ability to repay in the case of an unpaid loan. After the 1982 crisis, the Chilean economy experienced a high growth rate of GDP (annual rate of 7.7% since 1986) attended by a decreasing inflation rate. Figure 3.1 shows the evolution of per capita GDP since 1960 up to 1997. After the big drop in 1982-83, the economy started to recover with a strong upward trend ever since.

Figure 3.1
Log of Per Capita GDP 1960-1997



The next table shows the inflation rate for different decades. This statistic has been steadily decreasing since 1990, showing the lowest inflation rate in the whole period. This explains why the standard deviation of the inflation rate in the nineties is higher than that in the eighties, when the inflation rate fluctuated less but with a higher average.

Table 3.1
Inflation rate

Decades	Average	Std. Dev.	Coef. of Var.
60-69	24.85	12.11	0.4873
70-79	175.21	174.42	0.9955
80-89	20.69	6.28	0.3037
90-98	11.68	7.28	0.6234

Therefore, in the last decade Chile shows a more stable macroeconomic pattern, a feature that coincides with the development of the financial market. Part of the explanation for the low level of non-performing loans and the increasing development of the credit market is likely to reside in the greater ability to repay associated with macroeconomic stability.

3.2 Financial market regulation and the banking sector

It is well known that during the eighties the Latin American economies underwent a deep financial and macroeconomic crisis. Chile was no exception. At the time of the Chilean financial crisis that started in the middle of 1981 the economy was open to international trade and to foreign financial markets. This dependence originated from all the reforms implemented during the first years of the military government that took power in 1973. The main features of the reform were the deep trade reform carried out in 1974-1979, the opening of the capital account that started in 1978, the reduction in the size of government in order to control inflation, the privatization of state-owned firms and commercial banks (many of them expropriated by the former government) and the elimination of price controls including the interest rate.

After several decades of financial repression, characterized by credit ceilings and interest rate controls that generated a negative real interest rate, financial liberalization brought about an overshooting of the interest rate and a high spread in the banking system. According to De la Cuadra and Valdés (1992), banks were not prepared in terms of technology, human capital and managerial ability to handle the new situation of a free financial market. Therefore they tended to have riskier portfolios, higher interest rates and spreads owing to a poor risk evaluation.

On the other hand, the same was true for the Superintendency of Banks and Financial Institutions. Prior to the liberalization, the objective of this regulatory agency was focused on enforcing credit and interest rate control. The agency lacked the know-how required to monitor and control risk, primarily due to the absence of a prudential regulation (De la Cuadra and Valdés).

Almost concomitantly with the complete opening of the capital account, Chilean authorities implemented a fixed exchange rate system in June 1979, which brought about a real appreciation of domestic currency and a substantial current account deficit financed with foreign capital. In spite of the high amount of capital that entered Chile in 1981, the real interest rate was as high as 35 per cent in pesos. By 1982 the supply of foreign capital declined abruptly, the real interest rate remained high and the economy experienced a deep recession[1]. The fixed exchange rate system was finally abandoned in June 1982.

The Chilean financial sector was not ready to face the fast reform implemented. The existence of implicit insurance to deposits created the well-known moral hazard problem in bank lending and the absence of prudential supervision allowed banks to intermediate funds toward related companies. Economic groups owned banks and related companies that went bankrupt when external financial resources became scarce. These economic groups were

1 GDP growth rate fell from 5.5 per cent in 1981 to -14.1 per cent in 1982, the unemployment rate increased from 13.5 per cent to 21.3 per cent in those years (data from Institute of Economy, Universidad de Chile)

especially affected by the devaluation of the peso during the second semester of 1982, with the exception of export-oriented groups and with a low leverage in dollars[2].

Until 1982 the external debt crisis was a private sector crisis, but in 1983 the government was forced by foreign banks to guarantee private external debt. Given the dimension of the crisis, the economic authorities decided to bail out the banking system. In 1982, the Chilean Central Bank began to buy delinquent loans at their face value in order to postpone banks' losses. The banks had the obligation to repurchase those loans over time. This, however, did not improve the banks' solvency, it only was a makeshift solution to make up the balance sheet of the banks.

It is worth asking why the banks did not try to make good with the collateral before the crisis worsened. Among the main reasons, according to De la Cuadra and Valdés, there were the absence of any control by banks, the sluggish and inefficient judicial system and the relationship between banks and the so-called economic groups (the owners of the bank would not try to liquidate collateral that also belonged to them).

By 1980 the Superintendency of Banks and Financial Institutions ascertained that independent auditing firms were not doing their job properly in rating the bank loans. There were severe problems in terms of rating self-granted loans (i.e., loans to related firms). In 1980, a more transparent and efficient credit system began to be implemented. As a first step, loans were rated in four categories (A, B, C and D)[3]. In August 1981, the Superintendency was vested with more power to control banks through an amendment to the law that was intended to bring an end to self-granted lending. This empowered the regulatory agency to obtain information from the banks on the 300 most important debtors in the case of each institution (paid and unpaid loans). It also required banks to classify the loans (consumer loans, mortgage loans, etc.). In 1982 the law incorporated a new category which is riskier than former category B.

As from that date, the system to rate loans has been operating smoothly, and for the first time the regulator spelled out rules with respect to loan loss reserves and past due loans. As regards past due loans, at the end of the year, the loan loss reserve had to be equivalent to 100 per cent of all loans which were past due during the first semester and 50 per cent of those that were past due during the second semester. The regulation kept a general reserve of 0.75 per cent of the total amount of loans. However, economic groups found ways to bypass the law (see De la Cuadra and Valdés).

All these efforts came too late to prevent the banking crisis. In 1983, following the new risk rating, the authority liquidated three banks and intervened the administration of

2 See Maquieira and Sierralta (1990).

3 Category A: Normal loans, not presenting any doubts regarding recoverability (principal and interests). Category B: Loans below normal quality, because of weakness in the conditions under which they were granted or granted under normal conditions but after all they had the worst performance. This does not mean that they have a high likelihood to become bad debts.
Category C: Uncertain recovery, includes all loans granted under conditions which greatly depart from normal conditions to make a loan.
Category D: Defaulted loans, i.e., loans not repaid.

five other banks. This situation took place in the middle of the deepest recession since the thirties in Chile.

During 1983-1984 an intense debt rescheduling process was in place, and in which the interest rate and term conditions for debtors were changed. The banks that were bailed out were "re-privatized" during 1985-1986, through the so-called system of *popular capitalism*, whereby the ownership of the banks was sold to small stockholders who had access to governmental credit under very special conditions.

A new institutional framework for banking in Chile was set up in 1986, when a new banking law was enacted. This law was established along lines similar to the changes introduced by the Superintendency in 1981. Some of the objectives of the new legal framework were to prevent a new banking crisis and to provide more transparency to the banking business[4]. To accomplish this goal, the law required a more active role for the Superintendency in rating banks' risk, according to loan classification, a higher degree of disclosure of information to the public and a strict restriction on banks' business with related parties. In addition, the law established an active role for private risk rating agencies and, as a complement, the Security Market Law set limits to "bank secrecy" (Ramirez and Rosende, 1992). Furthermore, the government restricted the insurance to depositors, as a way of inducing depositors to seek more information on bank risk.

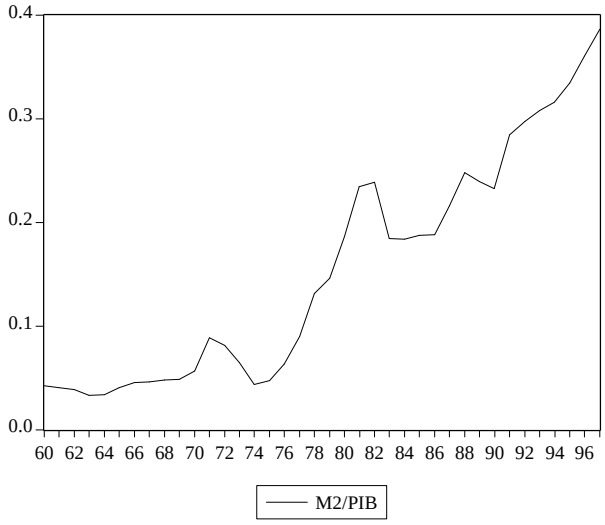
This new banking law included two important changes to protect creditor's interests. First, a bank cannot lend money under better conditions (period of grace, interest rate and guarantees), compared to other individuals and firms, to parties that have any direct or indirect relationship with the owners or with officials of the bank (insider trading). Second, the bank is not allowed to grant a loan either directly or indirectly to any member of the board of directors or any representative of the bank.

The expected results of all these changes were to improve the efficiency of the banking system. As an outcome, the financial market developed very fast. A usual measure of the depth of capital market is M2/GDP. Looking at the following figure, it is possible to see that after the liberalization in place in 1975 this measure increased very fast from below 5 per cent to almost 25 per cent in 1981. Then it dropped until 1986 when it started increasing again at a very fast rate, reaching 40 per cent of GDP.

4See Ramírez and Rosende (1992) for a summary of the changes in the Chilean banking legislation.

Figure 3.2

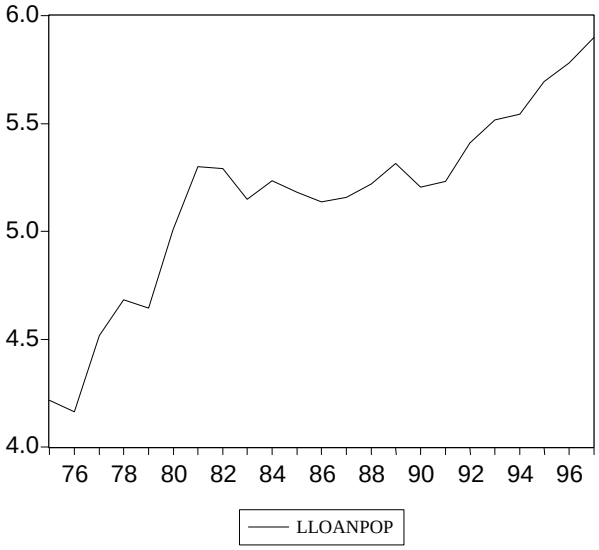
Evolution of M2/GDP, 1960-1997



Source: Central Bank

The same conclusion can be reached when we look at total loans per capita. In 1975 the Chilean government liberalized the interest rate. This was the beginning of a free financial market. The following figure shows the evolution of the log of total loans per capita from 1975 to 1997.

Figure 3.3
(Per capita loans)



The composition of banks' ownership structure changed as a consequence of the new environment. Foreign banks increased their importance in the banking system, while only the State-owned bank lost importance. As it may be expected, finance companies also increased their participation (see Table 3.2). In terms of ownership concentration, the main 5 banks (C5) concentrate 61 per cent of loans in 1986, which went down to 49.7 per cent in 1994 and increased to 62 per cent again in 1997, as a result of two large mergers in 1996. The latter movement could be interpreted as an outcome of increased competition.

Table 3.2
Banking Sector Composition
(% of total amount of loans of banking sector)

Year	Private National Banks	Banco del Estado	Foreign Banks.	Finance Companies
1986	64%	22%	13%	1%
1990	60%	19%	19%	2%
1994	64%	16%	17%	3%
1997	62%	14%	21%	3%

Source: Superintendency of Banks and Financial Institutions

The banking disintermediation process, as pointed out by Fuentes and Basch (1998), brought about a reduction in banks' margin during the nineties. This process is related to the pension fund reform in 1981, the creation of leasing companies in 1986, the access to foreign credit market, public debt issues and the more aggressive competition of department stores in the nineties (see next section). The market share, measured trough total amount of assets, of the banking sector[5] in the financial system went down from 91 per cent in 1986 to 66 per cent in 1997, considering mutual funds, pension funds, leasing companies, insurance companies, stock brokers and investment funds among the agents in the financial sector

To sum up, all this led to a more concentrated market. Banks also had to resort to the retail market, i.e., households and small and medium-sized business lending. This should probably increase the risk of bank portfolios, and therefore could lead to an increase in non-performing loans. As we will see in the next section this has not been the case. As we said, this is the second reason why the Chilean case is interesting.

3.3 Information sharing

Information sharing may be an important mechanism to mitigate both adverse selection and moral hazard. According to Pagano and Jappelli (1993), information sharing can be used as a prescreening element by the financial market, so as to partially solve the adverse selection problem. This institutional arrangement is more likely to arise when borrowers are heterogeneous, the credit market is large and the cost of sharing information is low.

5 Department stores were excluded because the corresponding data was not available, but at present their volume of intermediation is as large as that managed by leasing companies.

On the other hand, information sharing reduces the moral hazard problem, since it increases the borrower's willingness to repay the loan. In this case, banks provide incentives to the borrower to do his or her best effort to repay the loan since the debtor knows that the bank is going to share default information with other lenders in the future, and therefore reveal the borrower's quality to the market. This mechanism ensures a lower default rate and interest rate.[6]

On the empirical side, Jappelli and Pagano (1998) find evidence that supports the positive relationship between the existence and the quality of information sharing with the ratio of total debt to GNP. With respect to default rates they found weak evidence that information sharing is negatively associated with those rates. The data does not show that larger size of consumer credit market statistically precede the creation of credit bureaus. At this point Jappelli and Pagano state: "However, international comparisons fail to convey all the information that can be gleaned from the detailed history of specific countries. The historical evidence from the United States, Japan, Spain and Italy suggests that credit bureaus tend to be created in the wake of consumer credit booms".

Concerning the regulation on the information market in Chile, there are three main principles that are to be abided by; banking secret, tax secret and statistical secret. The information provided by banks can be released only to the banking system. The tax secret prevents divulging information on companies' revenues and households' income. Finally, the statistical secret protects demographic information relative to the family (age, sex, religion, political affiliation, etc.).

Consistent with one of the conclusions obtained by Jappelli and Pagano in Chile the main credit bureau (DICOM) began its operation in 1979. The Chilean Chamber of Commerce (with a 50% stake in ownership) and a group of entrepreneurs set up this bureau, at the suggestion of a group of international issuers of credit card who were introducing this instrument in the Chilean financial market. Although the Chilean Chamber of Commerce had a Commercial Bulletin that listed bad checks and overdue bills of exchange, these international companies required more, better and updated information to evaluate creditworthiness. In 1986 the Chilean Chamber of Commerce sold its ownership to the rest of the group. In August 1994, Equifax bought 25 per cent of DICOM shares. Subsequently, in December 1995 Equifax became the controller of DICOM with 50 per cent of ownership, and in March 1997 Equifax became the owner of DICOM holding 100 per cent of the shares.

DICOM started with four products: information drawn from the Commercial Bulletin (Chilean Chamber of Commerce), address verification, job verification and a consolidated system of defaulted verification for credit issued by department stores (called SICOM). At the beginning of the eighties, the Chilean Association of Banks called a public tender to contract information services, which was awarded to DICOM. At the time this firm provided the four products mentioned above, in addition to information on individuals

[6] See, for instance, Padilla and Pagano (1997).

interdicted from opening checking accounts and information available from the Official Bulletin.[7]

In 1989 DICOM started signing individual contracts with each bank to provide "white" and "black" information of debtors. This information was available (and still is) only for the banking system, i.e., DICOM was processing information supplied by the banks. In addition, department stores and the so-called Real Estate Mutual Funds only provide "black" information to the system.

With respect to the banking system, banks and financial institutions are under the obligation to provide information on individual customers (both households and companies) to the Superintendency of Banks and Financial Institutions. This information is processed by the Superintendency of Banks and Financial Institutions, so as to have information on the total debt and the unpaid debt by each customer.[8] Subsequently, the consolidated figures are returned to the banks and they know the total debt and the outstanding debt in the banking system of any customer or prospective customer. They do not have access to the information of who is (are) the creditor(s) of each economic agent.

The cost of processing the data for the banks was very high when the system began to operate; important economies of scale derive from centralizing all information in only one processing unit. Due to the development of the data processing industry, the cost of processing the information by each bank itself has gone down. For this reason DICOM has diversified both the information services provided and the portfolio of customers.

Among the main technological changes in this industry it is worth mentioning that initially (1979) microfiches were used. By 1980 DICOM installed a computer main frame and in 1984 it installed a network. Finally, the major change comes in 1991, with the establishment of a computer-based system, which allows to give information directly from DICOM to its connected client.

Related to this study, the main services provided by DICOM to its customers are:

a) Data on the consolidated system of past due loans by individual and companies in the banking system. This information is revised on a daily basis. This information is useful in evaluating credit risk, opening current accounts, collection of overdue debts, acceptance of bills of exchange, etc.
b) Black information from Department Stores. These are reluctant to share white information.
c) Information on bad checks and overdue bills of exchange in the financial system, published by the Chilean Chamber of Commerce in the Commercial Bulletin. It covers the last five years. This information is revised on a weekly basis and it fulfills the same purposes as the information in (a).

[7] Information in the Official Bullet includes company charters, names of partners, equity of companies, bankruptcy filings, laws enacted and amended, etc.

[8] It is important to notice that each individual and company is identified by a CUSIP (Individual Identification Number) that is used to consolidate the information. In the case of individuals, this number also corresponds to the Identification Card Number, Passport Number, diver's license number and Social Security Number.

d) Information on people who are under an interdiction to open a current account and the corresponding period for which it is in effect pursuant to instructions from the Superintendency of Banks and Financial Institutions.
e) Name of individuals and companies who have defaulted payment of fines or who have been prosecuted due to violations of International Trade and International Exchange Laws. This information is updated periodically by the Chilean Central Bank. It is useful for banks in determining credit facilities for international trade purposes.
f) Statistics on the number of times that DICOM has been resorted to in order to obtain information on an individual or company over the last three months. This is updated on a daily basis. This information permits the detection of changes in the pattern of leverage and contributes relevant information for evaluating credit risk (due to a higher likelihood that the individual or the company is increasing the leverage).
g) A record of new companies and amendments to charters and by-laws of existing companies, list of individuals and companies who are or have been partners in a given firm. This information helps to detect higher risk due to related business activities between individuals and companies.
h) Information on past due debts with state agencies.
i) Records of people and firms who have filed a bankruptcy.

DICOM has a competitive advantage in processing information, mainly due to the existence of economies of scale and of scope, and in spite of the cost reduction in the data processing industry, banks still hire its services. This is consistent with theoretical arguments that given the increasing returns to scale of information sharing it will bring about a natural monopoly (Pagano and Jappelli, 1993), which is seemingly the case of DICOM. Actually, DICOM has a 67% share of the information market considering the market in which it provides services. It is important to notice that there are about 60 smaller companies in the market. Only considering the commercial reports, providing information on creditworthiness, DICOM has a 75% of market share.

At present DICOM issues the equivalent of 1.4 million full credit reports per month[9] demanded by 20,000 clients. This company has grown between 15 per cent and 20 per cent annually over the last 10 years measured in terms of report requirements. Its scope may explain the low price of a full report, which is only US$ 0.40, as compared to the US (US$ 1.5), Peru (US$ 2) and Argentina (US$ 3).

[9] DICOM receives 120 million calls, 67% of which are related to credit.

3.4 Empirical analysis

This section develops an econometric exercise seeking to summarize the discussion presented in this section. The analysis will consider the effects of institutional changes on two variables: a measure of banking system development and the performing loans in the banking system. First let's look some statistics of the Chilean credit market.

3.4.1 The Chilean credit market: 1993-1997

This section will show some of the key statistics on capital market size and non-performing loans for the formal Chilean credit market, by type of debtor and contract. Information on those under the control of the Superintendency of Banks and Financial Institutions is easy to obtain. Table 3.3 shows the stock of loans at the end of each year for the period 1993-1997.

Table 3.3

Size of the Chilean Credit Market

(Millions US$)

Type of Loan	**1993**	**1994**	**1995**	**1996**	**1997**
Net Bank Loans	31,002	33,123	38,764	43,622	49,340
Growth rate (%)	13.0	6.8	17.0	12.5	13.1
Leasing Contracts	1,130	1,421	1,670	1,777	1,976
Growth rate (%)	47.7	25.7	17.6	6.4	11.2
Bonds	1,468	1,851	1,770	1,750	1,408
Growth rate (%)	24.6	26.1	-4.4	-1.1	-19.6
Credit cards	454	582	739	886	1,025
Growth rate (%)	31.7	28.1	26.9	19.9	15.7
Department Stores	204	427	664	880	1,165
Growth rate (%)	NA	109.1	55.4	32.6	32.4
TOTAL	**34,259**	**37,404**	**43,608**	**48,915**	**54,913**
As % of GDP	**62.4**	**64.5**	**68.0**	**71.0**	**74.5**

Source: Superintendency of Banks and Financial Institutions, Superintendency of Securities and Insurance and Chilean National Chamber of Commerce.

As Table 3.3 shows, the credit market has grown very quickly compared to the economy as a whole, thus corroborating the M2/GDP trend shown in Figure 3.2 and per

capital loans showed in Figure 3.3. While GDP increased by about 7.7% during 1993-1997, the credit market grew by 12.5% over the same period. The bank loan is, by far, the most important type of contract in the credit market. However, the type of contract, with the highest growth rate, has been credit from Department Stores and Credit Cards. This is only another evidence of banking disintermediation (Fuentes and Basch, 1998).

The fast growth of the credit card and Department Stores credit market reflects a more general trend in consumer loan. From Table 3.4 it is possible to compare the fast increase of consumer loans to the growth of all the other types of loans. The share of consumer loans plus housing loans in total bank loans increased from 19% to 25.4%. This type of loans shows a higher growth rate than corporate loans. The strong competition within the financial system is the reason why banks have moved into new market segments, such as the household credit market.

In Table 3.4 past due loans represent approximately 1 per cent of total loans. According to the regulations of the Superintendency of Banks and Financial Institutions a loan that has not been paid within 90 days after its maturity is classified as a past due loan. This rule differs from the measure for loan loss reserves, that is useful in classifying the risk of the bank portfolio, which are banks' estimates of the default risk.

Table 3.4

Distribution of bank loans as a percentage of total loans

(%)

Balance	**1993**	**1994**	**1995**	**1996**	**1997**
Corporate Loans	54.33	55.82	55.53	55.64	56.10
Consumer Loans	7.05	7.87	8.66	10.35	10.74
Housing	11.92	12.81	12.95	14.16	14.67
Foreign trade	19.14	15.85	15.09	12.39	10.51
Past dues	0.84	1.05	0.94	0.98	1.00
Credit line	3.13	3.36	3.53	3.59	3.58
Rescheduled	2.06	1.49	1.04	0.75	0.54
Other	1.53	1.74	2.25	2.14	2.86
Net Loans (millions US$)	**31,002**	**33,123**	**38,764**	**43,622**	**49,340**

Source: Superintendency of Banks and Financial Institutions

Table 3.5 shows non-performing loans for each type of contract. It is interesting to note that past due loans as a percentage of total credit, is relatively low (about 2%). The exception is the credit card contract, but if past dues are defined in terms of 30 days then this ratio decreases very rapidly. In general, it can be stated that past due loans are small

percentages of total credit. However, the performance of bank loans is much better than the rest of the contracts. This situation could be attributed to the fact that banks offer several products, and therefore if the customer does not pay any part of the loan on time, banks will cancel all other contracts. Banks may also have better screening and monitoring technologies as well as loan recovery technology.

Table 3.5

Non-performing loans as percentage of total credit

Type of Loans	**1993**	**1994**	**1995**	**1996**	**1997**
Past due loans (over 90 days)	0.8	1.1	0.9	1.0	1.0
Leasing contracts (over 90 days)		6.0	4.0	3.4	2.9
Credit cards (1 to 90 days)	NA	NA	10.2	10.9	9.6
Credit cards (30 to 90 days)	NA	NA	2.3	2.6	2.9
Credit cards (60 to 90 days)	NA	NA	0.6	0.8	0.8
Department Stores	1.1	1.5	1.5	1.6	2.0

Source: Superintendency of Banks and Financial Institutions, Superintendency of Securities and Insurance and Chilean National Chamber of Commerce.

3.4.2 Econometric analysis

The first question that we will explore is how the reforms of the seventies, the changes in the legal framework and in the information sharing system affect the development of the banking system. The idea is that the reforms of the seventies and the incorporation of the information sharing system should have positively affected the development of banking sector, while the 1986 banking law should have had an ambiguous effect on the development of the sector. To test these hypotheses we built an annual database of per capita banking loans (in real terms) from 1960 to 1997. A natural variable to control for is the per capita GDP (see section 3.1); the hypothesis here is that the banking system should be developing with the economy, on a long run perspective.

The first problem that we face in performing this analysis is that, in the case of Chile, many changes were going on almost at the same time. As shown in section 3.2, there were several reforms taking place in the seventies (financial liberalization, reserve requirements, etc.) and in the eighties (new pension fund system, changes in banking law, the beginning of information sharing, etc.). We attempt to sort out the effect of the most important institutional innovations.

The variables included in the regression analysis were:

Log (per capita GDP): Log of per capita GDP expressed in pesos of 1986.

Log (per capita loans):	Log of per capita banking loans expressed in pesos of 1986.
Log (loans/GDP):	Log of banking loans expressed in pesos of 1986 to real GDP.
D7597:	Dummy variable that takes the value 1 for the period 1975-1997, i.e., for the post-reforms period.
D8697:	Dummy variable that takes the value 1 for the period 1986-1997, i.e., for the period of a new banking law.
D8997:	Dummy variable that takes the value 1 for the period 1989-1997, i.e., for the period of information sharing among banks.

Some other structural changes were tested using dummy variables, but they were not significant. For example, there was no evidence that per capita loans were affected by the pension fund reform (1981-1997) or by information sharing that was in operation prior to 1989, when the private contract between DICOM and each bank in the financial system started[10].

Table 3.6 shows the results of the regression. First of all, both per capita loans and loans to GDP are strongly and positively correlated with per capita GDP. The reform of the seventies had a positive impact on the development of the banking system, while Law No. 18,576 enacted in 1986 had a negative impact on the growth of per capita loan and loan/GDP. There is certainly a structural change in 1986, but we could not ascertain whether it affected the intercept or the slope coefficient. Both were significant, but if you include a dummy for the intercept and the slope simultaneously become non-significant.

There is something interesting about information sharing. As described in section 3.3, since 1979 DICOM started gathering public information and providing it to the market. But the beginning of private contracts between DICOM and the banks took place only in 1989. We checked for structural changes in 1979 but they do not appear to be statistically significant. On the other hand, the structural change of 1989 affected both the intercept and the slope coefficient in different directions. Per capita loans become less sensitive to the growth rate of the economy, but at the same time there had a once-and-for-all increase in the function by 1989 that can interpret as the effect of the improvement in the information sharing system.

[10] It should be borne in mind that some information sharing started in 1979, but it was public information that DICOM pooled. This information did not include the indebtedness with the financial system.

Table 3.6

Development of the banking sector

(Least square)

Variable	Log (per capita loan)	Log (per capita loan)	Log (loan/GDP)	Log (loan/GDP)
Constant	-6.650	-6.657	-5.301	-5.309
	(-3.615)	(-3.616)	(-2.837)	(-2.838)
Log (per capita GDP)	1.372	1.373	0.888	0.889
	(3.899)	(3.899)	(2.674)	(2.675)
Log (per capita loan)_1	0.745	0.744		
	(14.331)	(14.330)		
Log (loan/GDP)_1			0.786	0.786
			(14.697)	(14.689)
D7597	0.307	0.307	0.271	0.271
	(3.554)	(3.557)	(3.198)	(3.200)
D8697	-0.135		-0.159	
	(-3.563)		(-3.653)	
D8697*Log (per capita GDP)		-0.024		-0.028
		(-3.565)		(-3.657)
D8997	4.484	4.355	3.248	3.097
	(2.386)	(2.354)	(1.715)	(1.660)
D8997*Log (per capita GDP)	-0.800	-0.778	-0.583	-0.557
	(-2.429)	(-2.398)	(-1.754)	(-1.700)
R-squared	0.987	0.987	0.980	0.980
S.E. of regression	0.124	0.124	0.130	0.130
Log likelihood	28.482	28.486	26.967	26.969
Durbin-Watson	2.201	2.200	2.178	2.177

t ratio in parenthesis. The estimation procedures was OLS correcting the variance covariance matrix by the Newey-West HAC procedure.

Considering the literature on growth and financial development, one can be suspicious of the results in terms that pre capita GDP is endogenous and jointly determined with any of the proxies for credit market development. Therefore we proceed to estimate using instrumental variables using one lag of per capita GDP. As it can be seen in Table 3.7 the results do not change very much and the same conclusions can be derived.

Table 3.7

Development of the banking sector

(Instrumental variables)

Variable	Log (per capita loan)	Log (per capita loan)	Log (loan/GDP)	Log (loan/GDP)
Constant	-6.692	-6.701	-8.427	-8.439
	(-2.458)	(-2.460)	(-2.549)	(-2.550)
Log (per capita GDP)	1.380	1.382	1.427	1.429
	(2.650)	(2.652)	(2.444)	(2.445)
Log (per capita loan)_1	0.744	0.743		
	(13.459)	(13.462)		
Log (loan/GDP)_1			0.721	0.721
			(9.887)	(9.881)
D7597	0.308	0.308	0.334	0.334
	(4.695)	(4.702)	(3.571)	(3.572)
D8697	-0.135		-0.197	
	(-2.833)		(-2.793)	
D8697*Log (per capita GDP)		-0.024		-0.035
		(-2.828)		(-2.794)
D8997	4.523	4.396	6.227	6.042
	(1.641)	(1.619)	(1.899)	(1.874)
D8997*Log (per capita GDP)	-0.807	-0.784	-1.109	-1.076
	(-1.667)	(-1.645)	(-1.921)	(-1.897)
R-squared	0.987	0.987	0.978	0.978
S.E. of regression	0.124	0.124	0.135	0.135
Durbin-Watson	2.198	2.200	1.943	1.941

t ratio in parenthesis. The estimation procedures was TSLS correcting the variance covariance matrix by the Newey-West HAC procedure.

The following table shows the long-term elasticity of capital market development respect to per capita GDP. As it can be seen this elasticity decreases dramatically after 1989.

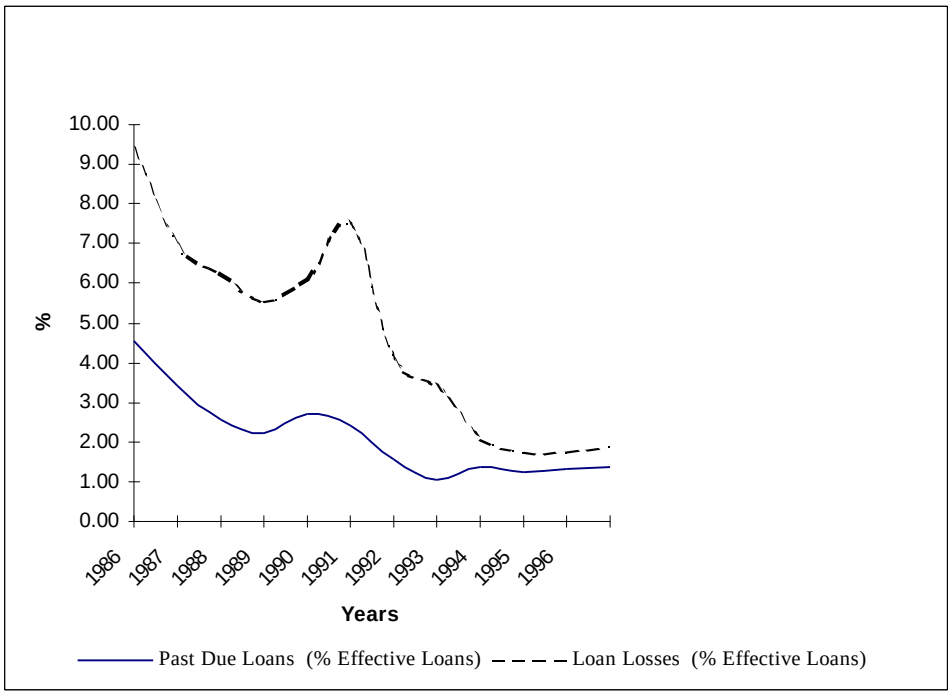
Table 3.8
Long-term elasticity of per capita loan and Loan/GDP ratio respect to per capita GDP

Dependent Variable	1960-1985	1986-1988	1989-1997
log per capita loan	5.3774	5.2840	2.2335
log (loan/GDP)	5.1219	4.9964	1.1398

The second objective was to identify the determinants of aggregate overdue loans as a share of total loans. Unfortunately we do not have a long yearly series, but we were able to build a monthly series of overdue loans from January 1986 to December 1997 (see Figure 3.4). An alternative to a measure of unpaid debt is loan losses computed by the banks. However, we believe that the former measure is a better proxy to unpaid debt. In any case, both measures have decreased over time, as shown in Figure 3.4. Important regulatory improvements and the strong growth of the economy may explain this fact, after the financial crisis during the first half of the eighties.

Figure 3.4

Measures of unpaid debt



Source: Superintendency of Banks and Financial Institutions

We regress the overdue loans to total loans ratio on macroeconomic variables and seasonal dummies. It is important to remember that banks have 90 days to consider an unpaid loan as past due in their balance sheets. Therefore we had to include the macroeconomic variables that capture the cycle but with a lag of four months. The four candidates to explain short-term economic situation are the interest rate (we used loan rate

of interest), IMACEC[11], an index of economic activity constructed monthly by the Central Bank, inflation rate and the standard deviation of inflation rate.

Then we looked for structural changes that could be explained by the effect of information sharing. At the time there was some information sharing in the system and by August 1986 the authority enacted the new law. Therefore, major changes did not appear except for the private arrangements between DICOM and the banks to share private information on debtors. As we saw in the previous exercise, these agreements started in 1989, but we did not know their exact date and when it began to be effective. Therefore, we start verifying structural changes in January 1990, and then we went back month by month through 1989 searching for a structural change. This seems to have been in place in October 1989[12].

In summary the variables used for the analysis were the following:

LPDUEPR:	Past dues to total loans ratio for the private banking system
Interest:	Loan interest rate
Yearly %ΔIMACEC:	Percentage change in economic activity measured by the IMACEC indicator
DINFO:	Dummy variable that takes the value 1 from October 1989 to December 1997.

Table 3.9 shows the regression results for this exercise. In the first column we have the regression of past due loans as a proportion of total loans for private banks on interest rate, 12 months variation of the IMACEC, rate of interest, lag values of the dependent variables and the seasonal dummies (coefficients not reported, but all of them were statistically significant). As can be seen, the interest rate positively affects past due loans, i.e., an increase in this independent variable will bring about a higher proportion of past dues over total loans. On the other hand, a drop in the economic activity will generate a higher share of past dues. However, this coefficient is not significantly different from zero.

The second column of Table 3.9 shows the results when introducing the dummy variable DINFO. First we observed that starting October 1989, there are changes in both the intercept and the slope coefficient. There is a reduction, ceteris paribus, of past dues loans after that date. But also the sensitivity of past dues with respect to the per capita loan decreases. The coefficient of the interest rate diminishes from 0.095 to 0.027, comparing before and after October 1989. On the other hand, for the same period, the impact of economic activity decreases (in absolute value) from 0.0072 down to 0.016. Neither average nor standard deviation of the inflation rate is statistically significant in any of the regressions.

[11] IMACEC: Monthly Index of Economic Activity, available as from January 1986.
[12] The Chow test for this month has the lowest p-value, which is consistent with the inclusion of our dummy variable (DINFO).

Table 3.9
Past due loans, macroeconomic variables and information sharing

Variables	LPDUEPR	LPDUEPR
Constant	0.0003	0.0002
	(0.0816)	(0.0696)
$Interest_{-4}$	0.0125	0.0950
	(2.2241)	(3.8538)
Yearly $\%\Delta IMACEC_{-4}$	-0.0025	-0.0072
	(-0.8960)	(-2.1505)
DINFO		-0.0019
		(-3.6947)
DINFO* $Interest_{-4}$		-0.0685
		(-2.7533)
DINFO* Yearly $\%\Delta IMACEC_{-4}$		0.0056
		(2.6067)
$LPDUEPR_{-1}$	1.2172	1.1229
	(14.2244)	(13.2340)
$LPDUEPR_{-2}$	-0.2945	-0.2575
	(-2.4338)	(-2.5314)
$LPDUEPR_{-4}$	-0.1987	-0.2554
	(-1.7588)	(-2.3140)
$LPDUEPR_{-5}$	0.2481	0.3259
	(2.9615)	(3.4503)
R-squared	0.9926	0.9939
S.E. of regression	0.0008	0.0007
Log likelihood	739.2267	751.8486
Durbin-Watson stat.	1.8781	1.9392
Number of observations	128	128

t ratio in parenthesis. The estimation procedures was OLS correcting the variance covariance matrix by the Newey-West HAC procedure.

We also computed long-run coefficients, which show that an increase in the interest rate of 100 base points will have the same impact of a drop of the economic activity in 3.7 per cent. It seems that past dues are more closely related to interest rate than to economic activity. Table 3.10 shows the long-term coefficients.

Table 3.10

Long-term coefficients

Variables	01.86 to 09.89	09.89 to 12.97
$Interest_{-4}$	1.4808	0.4131
Yearly $\%\Delta IMACEC_{-4}$	-0.1119	-0.0253

4 Other determinants of loan repayment: Stylized facts

This section analyzes those determinants of loan repayments that cannot be included in the regression analysis. Specifically we will discuss the role of access to credit, legal framework and private solutions. In terms of private solutions we will consider prescreening techniques, collection technology and private contracts.

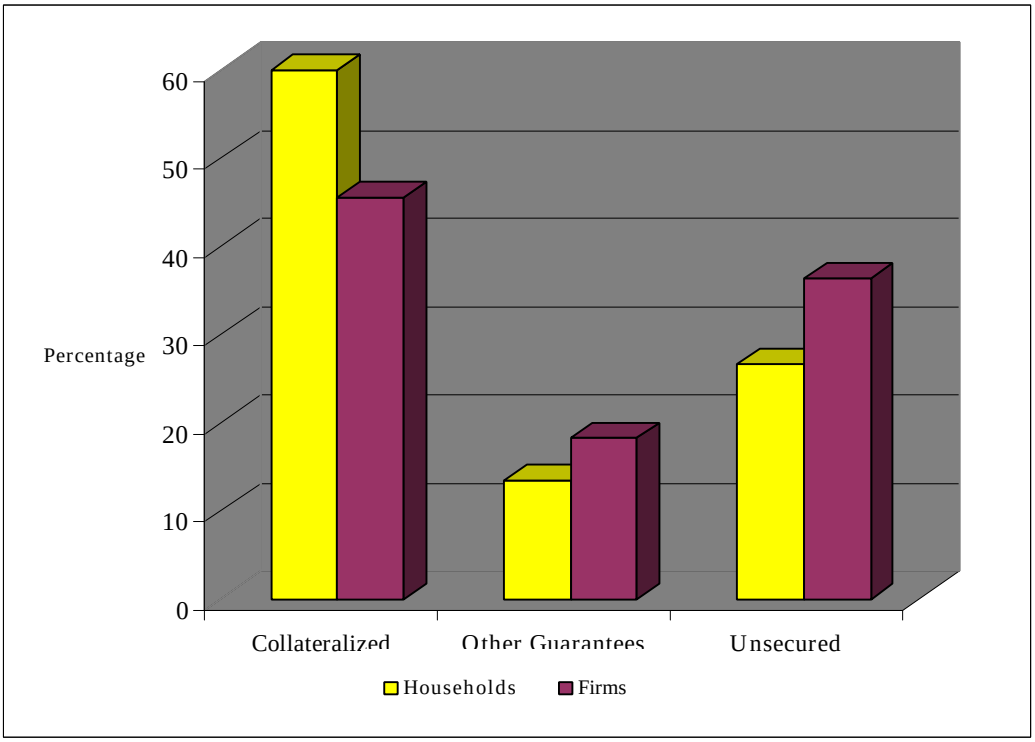
4.1 Access to credit

Another important feature to assess the performance of the financial market is the access to credit, which is usually mentioned as problematic in developing countries. One may argue that the good performance of the Chilean credit market is due to a reduced access to credit by small firms and households. As shown in Section 3, this seems not to be the case in Chile, as the credit market has been growing at a very fast rate (under any measure that you may consider M2/GDP, Total Loans/GDP, etc.), particularly in the case of consumer loans.

To a certain extent, the development of the household credit market has been able to rely on a more intense use of collateral than for company lending united to the lower risk of default of collateralized loans to households compared to firms. This is witnessed by survey data that we collected from banks during 1998, asking for information on several variables as of December 1997. We only obtained nine responses out of 28 banks operating in 1997. Due to their size and the type of market in which they operate, these banks may be representative of the structure of the Chilean banking system. Both large and small private banks made up this group of banks, both foreign and domestic.

Using data drawn from the survey, figure 4.1 shows the percentage of total loans covered by collateral and other guarantees, grouped by households and firms. Comparing secured loans (collateral plus other guarantees) between firms and households, the latter group shows a higher proportion than the former. This may be explained by the use of the funds. In the case of households, some of the loans are used for consumption (Townsend, 1995), which do not generate cash flows. On the other hand, most loans to firms will be used for investment purposes and consequently they will produce cash flow to pay back.

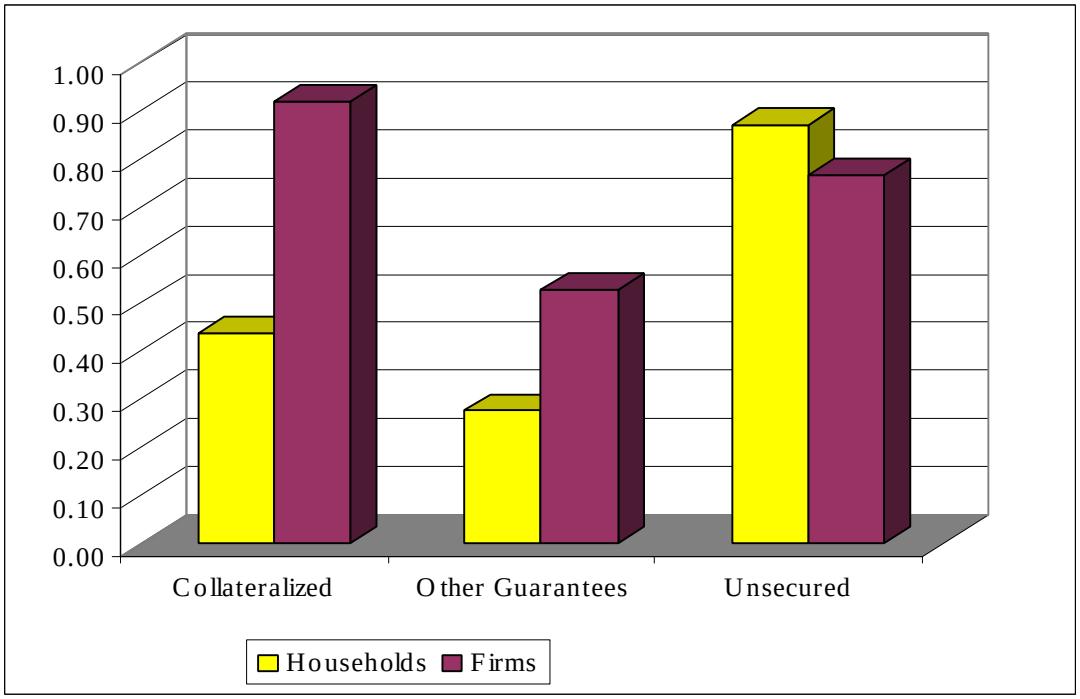
Figure 4.1
Secured and Unsecured Loans in the Banking Sector



Source: Bank Survey.

Figure 4.2 shows that, for households, collateralized loans have been far less risky than unsecured loans and than collateralized loans to firms. It may appear puzzling instead that, in the case of companies, the default rate is lower for uncollateralized loans than collateralized ones, in contrast with what happens for households. This may be explained with a sample selection effect: for firms, banks ask for collateral mainly from the highest risk companies, so that ex post one observes a higher proportion of defaults for collateralized loans.

Figure 4.2
Past Due Loans by Type of Contract



Source: Bank Survey. This figure shows the percentage of unpaid loans of total loans approved for that type of contract.

These figures do not imply that banks may have a higher level of loan losses, since the information gathered through interviews with normalization departments stated that over 90 per cent of secured past due company loans are recovered, which does not hold in the other case (see Section 4.2 below).

On the other hand, the rapid expansion of credits from Department Stores along with the ease to obtain credit from them, allows us to state that there are not many limitations to credit.

4.2 Legal framework

As described in Section 2, Chile has a French Civil Law framework. The main characteristic of this legal structure is that laws, rather than judicial precedent, determines the rules which apply to economic transactions. In fact, there are laws that regulate creditor rights, e.g., Law No. 18,010 of 1981 that governs credit transactions in terms of conditions of the loan, interest payments and type of currency. Additionally, any business transaction is also regulated by general rules established in the Code of Commerce in the Civil Code.

La Porta et al. (1997, 1998) conclude that Civil laws give weaker rights to creditors than Common laws do. For this reason, a less developed financial market is expected in Civil Law countries. What makes Chile different is that the financial market has undergone a major change since the beginning of the eighties, which has gone hand in hand with the modernization of the legal framework and the passing of new laws (See Section 3). However, not only the law matters, but also its enforcement. This section shows that the solution provided by the Chilean judicial system is inefficient. We hypothesize that this is due to the high cost and low likelihood of obtaining an effective result.

Another determinant of the willingness to pay is punishment. As an example we have difference of the treatment to bad checks and to overdue bills of exchange. The latter are a type of promissory note where an agent recognizes a debt with somebody else, e.g., firms sign this type of note with suppliers. The payment of a check is easier to collect, since the debtor could go to prison, which is not the case for bills of exchange. This explains why, among the figures for bad checks and those for bills of exchange (Table 4.1), the latter are much higher than the former[13].

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Table 4.1
Bad Checks and Overdue Bills of Exchange

Year	Bad Checks		Bills of Exchange			
	% of Number of Checks	% of Total Value of Checks	Share of Number of Bills of Exchange		Share of Total Value	
			% Not paid	% In litigation	% Not paid	% In litigation
1986	0.37	0.22	7.17	5.50	5.47	2.37
1987	0.41	0.23	8.81	6.78	6.66	2.68
1988	0.36	0.23	8.56	6.21	4.42	2.55
1989	0.43	0.26	8.45	5.99	5.57	3.15
1990	0.41	0.26	9.29	6.66	5.68	3.8
1991	0.35	0.23	9.85	8.26	5.46	2.19
1992	0.39	0.26	10.08	6.17	6.31	2.97
1993	0.43	0.37	8.38	7.58	9.54	4.47
1994	0.41	0.20	8.30	7.82	7.62	5.56
1995	0.38	0.17	8.60	7.15	9.07	3.86
1996	0.43	0.22	10.62	7.34	11.88	4.34
1997	0.54	0.27	9.16	9.6	9.4	6.22

Source: Superintendency of Banks and Financial Institutions

Also in this section we show the effect of the changes in the bankruptcy code in place in 1982, under the operation of Law No. 18,175, to evaluate if the objectives of the

13 As regards the difference mentioned above between checks and bills of exchange, there is a new credit instrument, which is the post-dated check that is widely accepted by department stores. A customer with a checking account can pay for his or her purchase with three such checks. This type of credit is not included in the statistics on the size of the financial market.

law were accomplished. The idea is to ascertain whether the new framework did improve the efficiency of the system. We also analyze whether the law protects creditor (some or all of them) or debtor rights.

4.2.1 Judicial system

In the section on international comparisons we showed Chile's performance in terms of the efficiency of the judicial system as compared to other groups of countries. As a summary we can say here that Chile performs above the average of the group of French Civil Law countries but below the average of the whole sample (Table 2.1). The performance is even worse if we compare it with the average of the other groups. It is important to notice that La Porta et al.'s information is based on the assessment that foreign investors made about doing business in the country. In this section we include statistics on the efficiency of the judicial system to gain a better understanding of the Chilean case.

The next table shows statistics on lawsuits filed and ruled during the period 1993-1996. It was possible to develop a flow of cases from the Department of Statistics of the Court of Appeals. Executory lawsuits include all types of lawsuits where a payment agreement was involved. For example, they include a lawsuit for unpaid loans and also for car accidents. It was not possible to distinguish between the different type of cases, but the figures still provide a perception of how well the judicial system operates.

Table 4.2
Flow of lawsuits classified by type of litigation
(%)

Type of Litigation	**1993**		**1994**		**1995**		**1996**	
	Filed	**Ruled**	**Filed**	**Ruled**	**Filed**	**Ruled**	**Filed**	**Ruled**
Bad check notification litigation	32.5	38.0	30.7	34.4	28.0	35.8	25.8	33.5
Notification of overdue Bill of Exchange litigation	9.9	11.6	5.9	7.6	5.4	7.4	4.2	5.9
Bankruptcy	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1
Executory lawsuits	57.5	50.2	63.3	57.8	66.5	56.7	69.9	60.5
Total	**175,679**	**126,816**	**236,909**	**154,747**	**233,104**	**187,749**	**259,069**	**216,366**

Source: National Institute of Statistics (INE) and Department of Statistics, Court of Appeals. Data on stock and length of lawsuits developed by authors.

Lawsuits ruled in any given year are less than the lawsuits filed during that same year, with the exception of bankruptcy cases. We cannot say much about the length of the trial as the Court of Appeals does not have any information on that. However, we compute

the stock of lawsuits for 1995[14], and then divide it at the beginning of each year by the lawsuits ruled during that year. As can be seen in Table 4.3 this estimated length of lawsuits varies from one and a half to two years[15].

Table 4.3
Length of lawsuits 1990-1996

Year	Lawsuits filed	Lawsuits ruled	Stock of Lawsuits at the end of the year	Length of a lawsuit (years)
1990	128,494	117831	205,656	1.95
1991	127,380	105625	227,411	2.10
1992	123,026	108,233	242,204	1.91
1993	175,679	126,816	291,067	1.88
1994	236,909	154,747	373,229	1.99
1995	233,104	187,749	418,584	1.93
1996	259,069	216,366	461,287	

Source: National Institute of Statistics (INE) and Department of Statistics, Court of Appeals. Data on stock and length of lawsuits developed by authors.

Another item of information provided by banking sector executives is that only 20 per cent of unpaid loans are taken to court, because most of them are settled through private arrangements. In fact, banks prefer to negotiate a private agreement with the debtor for a period of up to four months rather than filing a lawsuit. When a lawsuit is filed, the cost of attorneys is about ten per cent of the amount recovered. Considering the direct cost and the time to recover a payment through the judicial system, in addition to the many more favorable alternatives in order to recover a higher present value of unpaid loans through a negotiation process, banks have all the incentives not to take legal action.

Here, we can conclude that the judicial system cannot explain why we observe a low level of arrears in the banking system. This is consistent with the idea that French Civil Law countries have less efficient judicial systems and hence offer less protection to creditors. It should be noted that a French Civil Law system is less flexible as compared to a Common Law one, since the former establishes general rules while the latter provides more alternative of solutions. This is mainly due to the fact that Common Law operates on a case by case basis.

4.2.2 Bankruptcy code

The current bankruptcy code is stipulated in Law No. 18,175 enacted in 1982, to replace Law No. 4,558 which dates since 1925. The new law includes two important changes that may accelerate bankruptcy proceedings. First, bankruptcy receivers are private agents

[14] For 1995, we were able to obtain the lawsuits that may be classified as debt litigation, by applying the average share of this item to total lawsuits filed during 1990-1996.
[15] This confirms the information obtained from the interviews to banking sector executives.

designated by the creditors and under State supervision through the National Bankruptcy Receivership (Fiscalía Nacional de Quiebras, FNQ) which is responsible for overseeing their actions. Second, the law provides for a deposit of U.F. 100 (approximately US $ 3,117)[16] whenever anybody files a bankruptcy petition against another party. In the previous code, no cost was involved and many bankrupt companies and individuals had no assets. If we compare the length of the bankruptcy proceedings, by only taking into account those that had assets, we find that under the code in force they are much faster than what they used to be.

The following table compares the length of bankruptcy proceedings under the different codes.

Table 4.4
Length of Bankruptcy Proceedings

Code	Number of bankruptcies	Period of Time	Mean duration	Standard deviation
4,558	1,218	1929-1983	4 years and 10 months	4 years and 11 months
18,175	887	1983-1996	3 years and 1 month	2 years and 5 months

Source: National Bankruptcy Receivership, Bulletin No.54

The means are different at the 1- per cent level of significance. It can be stated that the standing bankruptcy code did improve the efficiency of bankruptcy proceedings, by taking this measure of efficiency. Moreover, the variance of the length has decreased considerably, making the length of the procedure more predictable.

An important economic implication of a bankruptcy code is to determine how the law protects the debtor's versus creditor's interests. In this sense the National Bankruptcy Receivership classifies bankruptcies into three categories based on their causes - fortuitous, guilty, and fraudulent. The first type is in place when something unexpected happens, such as a natural disaster. In the second case, the debtor is negligent in managing the firm. Finally, the last type occurs when the debtor has acted in an illegal manner.

The debtor must file a bankruptcy petition within the next days following its failure to pay a liability. He must submit all required financial statements, identifying his creditors, the amount of debt outstanding with each one, a list of his assets and a report clearly explaining the reasons for the company's bad performance.

The creditors` committee designates the bankruptcy receiver, whose first action is to collect all accounting books, documents, records and assets of the debtor in order to compile a list of the assets, with an indication of their condition. This is normally accomplished in less than seven days (86 per cent of the cases).[17] The receiver is responsible for the firm's management while its assets are sold, and also has to collect any

[16]See Article 44 of Law No. 18,175.
[17] Source: National Bankruptcy Receivership,

notes and accounts receivable outstanding and, finally, he must sell the assets and make a settlement with the creditors.

The receiver must privilege the payment of first class debts[18], which have not been objected to in the judicial process. A second class debt includes those guaranteed with assets. The next type of debts is mortgages and the last one is the remainder of debt with no guarantees. These are paid proportionally to the amount of the debt.

According to Article 102, everyone who has been acknowledged as a creditor by the bankruptcy receiver will have voting rights in the creditors committee to determine the future of the bankrupt firm[19]. In this sense, Chilean standing law does not assign any special role to secured creditors as in the case of the UK code and Chapter 11 in the US[20]. Under the current Chilean code, creditors can agree on either the continuation of the operation of the company[21] or liquidate its assets.[22] In the case of the first decision, the law requires at least 67 per cent of majority of the creditors and for the second one at least 50 per cent. In the UK secured creditors can liquidate the firm even if it is worth more as a going concern to all creditors. In Germany all creditors vote. For the liquidation decision, in the UK the bankruptcy receiver has complete control of the firm and does not require the approval of the creditors to sell the company's assets. In Germany, there is no haste in selling the firm's assets. According to Franks et al. in this case the bankruptcy receiver has great powers to take his time in selling the insolvent firm (the average time is 27.5 months).

Briefly stated, the bankruptcy code in Chile accelerates bankruptcy proceedings as compared to developed countries, as it imposes time limits for asset liquidation which are lower than a year. Another important feature is that all the creditors have the right to vote, which prevents possible redistribution of wealth from unsecured creditors to secured creditors, as in the case of the UK and the US. It should be noted that the new German code (enacted in 1994 and to become effective in 1999) gives the same voting rights to all creditors (as in the case of Chile), but the time required for liquidation is still much longer.

The debtor, as any other agent in the economy, can file a petition for bankruptcy. In Chile, during the period 1982-1994, financial institutions were the most frequent creditors filing petitions for bankruptcy (38.9 per cent of the cases) followed by the debtors themselves (34.9 per cent).[23] These figures make sense: financial institutions are in a position to provide resources to the companies to continue in business and debtors must avoid being classified as guilty or fraudulent in bankruptcy.

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[18] First class debts are as follows: judicial expenses incurred, expenses generated from managing the bankruptcy, expenses incurred due to illness and /or death of debtor, employees salaries, social security contributions not paid by the debtor to the Pension Fund, legal compensations for workers, taxes and withholding tax claims. In general, the priorities in descending order are as follow: direct cost associated to the bankruptcy, debtor illness and death, debts with workers and tax debts.

[19] The law requires that at least two of them should attend meeting of creditors committee and that they should represent no less than 25 per cent of the debts entitled to vote.

[20] For a more detailed discussion see Franks, Nyborg and Thorous (1996).

[21] The firm can continue in operation (either partially or totally) at the most for two years.

[22] This must be done within the next six months and if there is any land and buildings (real property), the law allows nine months at the most.

[23] Source: National Bankruptcy Receivership.

Another factor to determine the efficiency of bankruptcy proceedings is the amount of direct cost. In international literature, Warner (1977) computes the direct bankruptcy cost for a sample of American railroad companies and finds it to be irrelevant from an economic viewpoint. Actually, he finds it to be, on average, one per cent of the market value of the firm prior to bankruptcy. However, he recognizes that bankruptcy costs should be higher since he is not taking indirect costs into account. Another problem underlying this estimation is that regulated firms such as those studied by Warner have lower bankruptcy costs. Altman (1984) is one of the first authors that tries to measure the indirect bankruptcy cost for a sample of 19 firms in different industries and he finds that these costs are between 8.1 per cent and 10.5 per cent of the market value of the firm prior to bankruptcy. It can even be as high as 17.5 per cent of the market value of the firm one-year prior to the bankruptcy. Furthermore the direct bankruptcy costs varies from 2 to 4 per cent of the market value of the firm, prior to bankruptcy.

With respect to bankruptcy costs for Chile, Maquieira (1993) tries to estimate direct and indirect bankruptcy costs. In order to compute the direct bankruptcy cost, the initial sample consisted of 1207 companies that went bankrupt during the period 1983-1992, and he finds that the direct cost increases over this time interval. Therefore, to be more realistic he computes the direct cost for the sample of firms that went bankrupt in 1992 (73 firms). He performs a regression analysis between the liquidation value of the firms and the direct costs and he finds that the direct cost is basically a variable cost and it is approximately 9.5% of the liquidation value of the assets.

Unfortunately, most of these firms were not listed on the stock exchange, which made it difficult to compare the results with those obtained by Altman. However, taking the sample that traded its stocks (only 7 firms) he finds that the liquidation value of the assets is approximately 17.5 per cent of the market value. He then concludes that the direct cost is 1.7 per cent of the market value of the firm. On the other hand, and following a similar methodology to the one used by Altman with this small sample, the author finds that the indirect bankruptcy costs represents, on average, a 14.5 per cent of the market value of the firm one year before the bankruptcy. This result suggests that total bankruptcy costs-direct plus indirect- in Chile are on average higher than in U.S.A., and that, though relatively fast, the bankruptcy procedure is sufficiently expensive to considerably reduce the probability of repayment of the creditors filing for bankruptcy.

4.3 Private solutions

4.3.1 Prescreening technique

Banks apply different prescreening procedures to companies and households. With respect to the first group, due to the nature of corporate loans, banks do not apply the scoring techniques to be discussed in the next section. In this case banks work on a case-by-case

basis. There are different variables that banks analyze in order to allocate a credit. The specific weight of each variable in the decision process depends on each bank's policy. These variables are:

a) the track record of past performance with the bank and the financial system as revealed by DICOM's information;
b) the economic sector of the company: some banks do not lend money to firms involved in certain industries;
c) the capacity to generate cash flows to meet financial costs;
d) the ownership structure: if the owners have good business references, even if the firm does not show a good cash flow generation, banks are willing to make loans.[24]However, some banks do not assign much weight to this variable, as owners could well allow the firm to go bankrupt or simply sell the firm;
e) the track record of bad checks or bills of exchange that have been under litigation;
f) the company's leverage and liquidity.
g) the trend of sales trend;
h) the losses reported in the recent past;
i) the firm's working capital requirements.

The functional level at which the decision is made within banks depends on the amount of credit requested and on the existence of collateral. That is, a bank executive makes small credit decisions, while the board of directors of the bank is responsible for the decision on credit applications involving higher amounts. Thus, the requirement of collateral is an important characteristic of the loan contract so as to increase the probability of repayment.

In the household market, consumer loans can be obtained from banks, finance companies[25] and department stores. Banks are mainly concentrated in the higher income household segment compared to finance companies, while department stores on average cater to even lower income households. Given that each group has different risk, the interest rate reflects it, which allows segmentation of the consumption credit market.

Actually, since consumption credit is a type of retail credit, finance companies and retail banks use a statistical technique, called credit scoring, to discriminate between high and low quality borrowers. Among the variables included in the statistical analysis are: a) historical and current indebtedness with the financial system, b) number of arrears, c) commercial track record (checks and bills of exchange under litigation), d) past performance with the finance company, e) past performance with credit cards f) job situation (economic activity, net income, job tenure, etc.) g) demographic variables. This technique, it is not widely spread among banks, because of the nature of their customers[26].

[24] As Avery, Bostic and Samolyck (1998) show in the case of small business companies in the US economy, personal assets serve as a substitute for business collateral at the time when banks approve lines of credit. On the other hand, personal guarantees appear not to be substitutes of personal collateral.
[25] By finance companies are meant those institutions which by law are not allowed to issue current accounts. They receive money from banks as depositors, and they lend to individuals for consumption purposes.
[26] DICOM also provides the calculation of a credit score that could be used by banks either directly or an input to their own models. DICOM's score may not consider some important characteristics proper to the bank's specific customer.

We obtained a data set of 38,281 consumer loans, granted during June through August 1997, for which credit scoring was applied. Among these 14,507 (37.9%) were rejected by the scoring system, but applicants received the credit anyhow. This data set provides a good opportunity to examine the ex post efficiency of the technique as the same credits were observed one year later. Some of them were outstanding and others were past due. In the following table we show the percentage of accepted loans that were accepted by the scoring technique and one year later were either outstanding or past due. The table also shows the loans granted, but rejected by the credit scoring that were outstanding and past due after 30, 60 and 90 days. This table allows to compute unconditional probabilities, e.g., the probability that a credit is outstanding given that the credit scoring rejected it (Type I error)[27].

Note that out of 14,507 loans, between 86 and 96 per cent are outstanding loans depending on the definition of non-performing loans (if the loan is unpaid 30, 60 or 90 days after the due date). Also if we allow for more time to normalize an unpaid situation the Type I error increases from 73.3 to 91.1 per cent. Table 4.7 below provides the finance company with information as to whether it should relax its credit policy or not depending on the loss function that they want to minimize. Here we can calculate the expected loss of a bad decision, which will depend on the weight that the firm allocates to each type of error. According to the result if we accept the actual criteria to reject a credit, the finance company would have rejected between 10 to 13 thousand loans (depending again on the time period considered) that ultimately were outstanding.

Table 4.7
The efficiency of the bank policy

		Outstanding	30 Days Past Due	Total
Scoring Results	Accepted	93.96	6.04	62.10
	Rejected	73.28	26.72	37.90
	Total	86.12	13.88	100.00

		Outstanding	60 Days Past Due	Total
Scoring Results	Accepted	96.98	3.02	62.10
	Rejected	83.62	16.38	37.90
	Total	91.92	8.08	100.00

		Outstanding	90 Days Past Due	Total
Scoring Results	Accepted	98.47	1.53	62.10
	Rejected	91.09	8.91	37.90
	Total	95.67	4.33	100.00

[27] Type II error will be the probability that a credit is past due given that it was accepted by the credit scoring.

The cutoff policy established by the bank appears to be "too tough". For instance, Table 4.7 shows that among rejected loans only 8.9% were 90 days overdue. However, we do not know how many outstanding loans were repaid at maturity. The bank could change the policy for rejecting credit applications so as to induce a higher rate of acceptance. This will reduce Type I error but will increase Type II error. If the company wants to minimize Type II error it will never reduce the cut-off point.

4.3.2 Collection technology

The technology to collect past due loans depends on the type of contracts, issuer and debtor. In other words, the type of contract and debtor define the strategy that a bank will follow. Thus, they could either outsource the collection service (mainly in the case of consumer loans and large household loans) or resort to using an internal office called Department of Normalization (mainly in the case of firms).

By law, banks cannot make any profit from the collection activity. However, banks are allowed to charge interest on past due loans. For some types of contracts they use external collection agencies. The need to develop a collection technology derives from the fact that banks have become concentrated in the consumer loan market, as an outcome of the disintermediation process (see Section 3.2). Both the volumes of loans in this market and the fact that banks cannot profit from collection activities have led to the development of a collection industry. If a debtor's loan is past due, the bank will charge past due interest rate and the collection agency will charge a collection fee. The banks' owners control some of these collection agencies, while others are independent.

In the case of households credit market the collection technology is very important. The collection activity usually starts on the fifth day after the due date of a payment in the case of credit cards, around 15 days in the case of consumer loans and 45 days in the case of mortgage loans. To do so, banks, finance companies and department stores operate with collection agencies before taking the case to court. There seems to be a positive correlation between the existence of (and the type of) collateral and the time that the financial institution takes to start collection activities.

The main support for the collection action has been the technological improvement of the telecommunications sector. The liberalization of the telecommunications industry (at the end of the eighties) triggered the change in the collection technology. The cost of using the phone has decreased dramatically over the last ten years, which along with a downward trend in the cost of computer-based activities have created a new scenario for this activity.

The creditor begins the collection activity by sending to the collecting agency a periodic list of loans past due. Then the collecting agency proceeds to obtain payment.

The most advanced way of collection technology consists in an electronic device that consolidates, integrates and evaluates all the information in a single database. This device ranks the information based on the likelihood of recovery through payment. This

step accomplishes two objectives simultaneously: a more efficient use of resources and a more effective collection.

The electronic device integrates the database provided by the debtor with a CTI (Computer Telephone Integration) system. This handles both exit and entry phone calls. The exit phone calls are made by a calling predictive system, which recognizes if there is a person responding at the other end of the line, if there is an answering machine or if there is no answer at all. Based on the probability of getting an answer, the system makes several simultaneous calls. When finally an answer is obtained, the machine passes the call and the debtor's information (on the computer's screen) to an operator on hand and it disconnects all other calls. The operator invites the debtor to regularize the credit situation or leaves a message if the debtor is not available. Actually, in an even more sophisticated system, the computer will display on the screen what the operator should communicate to the person at the other end of the line.

The messages left by the operators will generate future entry phone calls to the system, which are received by the IVR (Intelligent Voice Response) system if no operator is available. Otherwise, the phone call goes through the ACD (Automatic Calling Distributors) device, which communicates the debtor while it displays all the debtor information on the operator's computer screen.

The technology described is the most capital-intensive one. It is possible to dispense with some of the devices used by this technology, and thus move forwards as more labor-intensive technology in collecting unpaid debt. In fact, the whole process could be managed in a very rudimentary way, where the database provided by the creditor is given directly to the operator who starts calling without any specific order. The most labor-intensive technology lacks a CTI system. Because the database is not consolidated through any computer system, sometimes there is duplication of collection actions. For instance, an operator is trying to locate a debtor while at the same time a collector from the same agency is making a call at the debtor's home. This type of inefficiency involves higher costs, but it requires less fixed investment.

There is another interesting feature of household credit collection, which is used by the department stores. When they want to collect an unpaid loan, they simultaneously send the information to a collection agency and to DICOM. The latter action is one of the most effective mechanisms to collect the payment, since department stores' debtors do not have good access to the credit market and, therefore, have to clear their situation with the creditor as soon as possible.

In the case of a firm, when a loan is past due, the bank, at first, tries to negotiate an agreement with the debtor. In other words, the bank resorts to different methods to collect the payment, which usually implies changing the conditions of the loan. Some of the elements that are present in this type of negotiation are: a) re-scheduling the terms of the loan, b) introducing new collateral c) reducing the interest rate, d) refinancing the debt

based on a partial cash payment at the time of rescheduling, e) liquidating guarantees[28], f) financing a new project[29].

When all the possibilities of negotiation have failed or the debtor is dishonest, the case is sent to the bank's Legal Department to initiate legal actions. The success of these actions depends on the existence of collateral and the type of guarantees. When there is no collateral, the bank's collection depends basically on the debtor's willingness to repay. The lawsuit regularly lasts between one and a half and two years.

On the other hand, if collateral exists, the recovery of a loan depends on the type of guarantee. In fact the establishment of collateral could be a mortgage in the case of real estate, or a pledge in the case of equipment. To liquidate the collateral, at first, the bank needs to take the debtor to the court. When the court rules and the debtor is notified, then the bank can auction the asset.

The first possible legal action is called executory action and the second one ordinary procedure. The former relates to the collection of the promissory note. This is valid for one year. After that it takes place the ordinary procedure which can take years.

As can be seen, there are several reasons why borrowing firms have incentives to repay the debt: a) DICOM spreads the information in the system, which means that access to credit will be cut off; b) bank loans provide valuable information to the market, which is an additional incentive for the borrowing firm to repay[30]; c) the possibility of liquidating a collateral, the market value of which is generally higher than the loan and whose private value to the borrower may be even higher.
On the other hand, borrowing firms know that the bank will attempt different ways to get paid, before going to court. This could work as a disincentive to repay the debt, since the firm knows that the bank will negotiate in any event. If it does not work, the bank will decide to go to court, with a low probability to collect anything, unless there is real estate as security.

4.3.3 Private contracts

In this section we analyze bond contracts and we show how the market and the legal framework work together to mitigate adverse selection and moral hazard problems between debtors and creditors[31]. However we also find leasing contracts which have weaker legal protection to creditor's rights. The leasing contracts are governed by the General Law of Rental Agreements, which implies that to recover the asset the lessor has to take action via the judicial system, bearing all the costs discussed above. This kind of contracts is subject

[28] This must be done within a year as a bank can not hold an asset for more than that period of time.
[29] If the debtor ha a new project the bank will agree to finance it order to share its benefits and obtain the payments associated to the unpaid loan.
[30] See Benston and Smith (1976), Leland and Pyle (1977), Campbell and Kracaw (1980), Diamond (1984), for theoretical work on this topic. On the empirical side, see James (1987), Lummer and McConnell (1989) and Cole (1998).
[31] See Jensen and Meckling (1976) for a conceptual framework.

to a different legal framework than the typical credit contract between a lender and a borrower, therefore we will concentrate in bonds contracts.

The Superintendency of Securities and Insurance supervises public debt issues, where the Issuing Company has to disclose all relevant information that may affect the interests of bondholders.

Law No. 18,045 (the Capital Market Law) enacted in 1981 regulates the public offerings of securities and their markets and intermediaries (stock exchange brokers, stockbrokers, and security agents). Specifically, its Title XVI (Issue of Long Term Debt Securities) establishes the procedures for the offering. Furthermore, the information has to be disclosed on a timely basis, in addition to procedures and requirements to issue Corporate Bonds. It includes a set of regulations that protect bondholders. For example, a fundamental principle underlying this law states that any issuer has to fully disclose all essential information[32] with respect to itself or the security, which should be truthful and sufficient.
Furthermore, the Superintendency of Securities and Insurance has enforced the application of General Rule 30 (GR 30). GR 30 contains information requirements for bond issuers and it establishes their obligation to constantly disclose information that may affect bondholders' interests.

A. Bond Issue

The first requirement for a firm that issues bonds is to be registered with the Superintendency of Securities and Insurance, involving the submission of quarterly financial information through the FECUs[33] to this institution and also it has to disclose any essential information about the company and the bond issue. To register a bond issue, companies are required to submit a prospectus of the issue to the Superintendency of Securities and Insurance that contains all the information related to the issue. This prospectus is public information. The firm should also provide a public deed acknowledging the shareholders' meeting that approved the issue. Finally, it is necessary to submit two risk ratings performed by independent risk rating companies.[34] At least two days before the issue is placed, the firm has to publish a notice in two leading newspapers indicating the most important information about the issue (name of the issuer, amount, payment structure, risk ratings, etc.)[35].

32 Essential information is defined, in the second section of Article of the Capital Market law, as information that any individual with good judgment would consider relevant for his or her investment decision.
33 A FECU contains general information about the company (name, CUSIP, number of shareholders, twelve major shareholders and their percentage of capital stock, CEO, etc.) and the different financial statements (balance sheet, statement of income and cash flow statement).
34 Risk rating agencies are independent private firms registered with the Superintendency of Securities and Insurance. The key objective of this rating is to determine the ability to pay. Companies in Chile are rated AAA, AA, A, BBB, BB, B, C, D and E. The first one is the best rating that can be assigned and the last one is the worst one. A D rating is assigned to issues that either do not provide enough relevant information or do not have sufficient guarantees. All these ratings are defined in Article 88 of the Capital Market Law and in General Rule 25 (GR25) of the Superintendency of Securities and Insurance.
35 See section 4.4. of GR 30.

Once the issue is placed, the firm has to create a bondholder register of record stating the number of the issue, the series, nominal value and the name of the bondholder[36]. The issuer has to give notice to the Superintendency of Securities and Insurance of any unpaid coupon that may occur.

B. Special Rights for Bondholders

Bondholders have the special right to apply for total payment of the coupons if the issuing firm does not pay one of them. To do this, the bondholder needs not initiate a legal action against the company: he or she can ask to be paid by seizing the assets of the firm. The law establishes that the bondholder cannot waive his or her right through a covenant in the bond contract[37]. It is important to point out that any bondholder does not need the approval of the rest of them to enforce this right.

The bondholders can sue the issuer only if they do it as a group in order to accelerate or to obtain the coupons before the time of maturity and to file a petition of bankruptcy.[38] With respect to the representative of the bondholders, he or she can ask the General Manager of the issuer to provide any information about the firm to protect the interests of the bondholders. Furthermore, in the case of joint stock companies, the representative can attend the shareholders' meetings without the right to vote.

C. Bond Contract

The contract has to include all the characteristics of the bond issue, the rights and duties of the issuer, the bondholders representing the others and the depository of the bonds.
The Superintendency of Securities and Insurance requires the following information to be contained in the contract:

a) Legal and economic information related to the issuer, the provisional bondholders representing and the depository of the bonds.
b) Characteristics of the issue: amount, series, number of coupons, maturity, interest payments, indexation, amortization, callable conditions, guarantees, convertibility conditions and procedures to replace and exchange the bond series.
c) Use of proceeds.
d) Duties, limitations and constraints relative to leverage ratio; asset maintenance, asset substitution and limitations to celebrate contracts.
e) Cases in which breach of contract by issuer might be presumed.
f) Rules relative to the representative and board of bondholders.
g) The nature of arbitrage in case of conflicts, the maturity and its extinction give preference to certain credits.

36 See section 6 of GR 30.
37 See article 120 (second and third section) in the Capital Market Law.
38 See article 120 (fourth section) in the Capital market Law.

Considering the incentive to dilute creditors' claims[39], in the case of bond contracts there is a need to establish various covenants that will protect bondholders' wealth. Actually, in the United States, Smith and Warner (1979) study bond covenants from a random sample of 87 public issues of debt between 1974 and 1975 for American firms. They find that in most of the bonds there were covenants to restrict the stockholders' behavior. In 90.8 per cent of the bonds there were constraints on the ability to issue additional debt, 39.1 per cent restrict merger activities, 35.6 per cent constrain the selling of assets, and 23 per cent restrain dividend payments.

In the case of bond covenants in Chile, Araya (1998) studies a sample of 100 public bond issues, which is the full sample of outstanding bonds by the end of 1997, taking all the issues made in the period 1987-1997. In 97 per cent of the cases there were covenants that restrain changes in the structure of debt payments, 88 per cent constrain the financing policy, 80 per cent restrain the investment policy, 71 per cent require bonding activities by the company's management and only 4 per cent restrain the dividend policy. Taking the constraint on the investment policy, 56 per cent of the contracts require keeping a minimum level of working capital and 39 per cent prohibit selling operational assets.

In terms of the financial policy, in 81 per cent of the bond contracts there are explicit constraints to issue additional debt by controlling some financial ratios and 70 per cent require not to use assets as collateral. In bonding activities he finds that in 67 per cent of the issues the company is forced to insure operational assets.

5 Summary and Conclusions

This paper analyzes the determinants of loan repayments in Chile. There are some important features of the Chilean financial market that make this economy a unique case study. Although the legal Chilean framework is based on the French Civil Law, the economy outperforms the rest of the economies (classified in the same category) in terms of low level of non-performing credits and capital market development. In addition, there has been increasing competition over the nineties in the financial system, characterized by a banking disintermediation process. This reduced margins and it led banks to look for new market higher-risk niches (households and small business). However, this has not increased the number of arrears in the banking system.

We grouped the plausible explanations that could enable us to understand this performance in terms of macroeconomic environment, legal framework and private solutions. Using monthly data for 1986-1997 we conclude that good macroeconomic performance and the introduction of white information sharing is negatively related with overdue loans. Moreover, the information sharing reduced the sensitiveness of unpaid loan respect to the business cycle. In addition, using yearly data we find that good macroeconomic performance plus major financial market reform and white information

39 See Jensen and Meckling (1976) and Myers (1977).

sharing are positive related to credit market development. Again the white information sharing reduce the impact of the economy growth rate on credit market development.

There are other important factors that could explain the low level of arrears in the credit market, which are difficult to include in the regression analysis. Short time series, public data availability, some measurement problem and so on cause this problem. However in section 4 we conducted a conceptual analysis using some stylized fact to show the importance of access to credit, bankruptcy code, judicial system, prescreening technique, collection technology and design of private contracts.

Considering the high increase of loans per capita during the last 20 years, limited access to credit can hardly be an explanation for the low level of arrears in the financial system. The amount of collateral required by the banks from households may be perceived as "excessive", because it exceeds the collateral required from companies. Such a large collateral requirement could be a signal of limited access to credit for households. However, banks are not the only institution that provides credit to households: two other intermediaries are very active in this segment, the finance companies and department stores. The formers are slightly more selective than the latter, since they apply a stricter prescreening process. The department stores are less selective but operate by providing small amounts of credit guaranteed by the purchased good. As stores' clients have limited access to the financial system, they are "good" debtors on account of the fact that they crucially depend on the department store for their credit line.

The second group of explanations has to do with the quality of enforcement. La Porta et al. found that French Civil Law countries have poorer law enforcement. Chile is no exception. Banks are reluctant to take unpaid loans to court and prefer to reschedule the loan (except at the time of a generalized crisis), which is a signal of an inefficient judicial system. Also the length of lawsuits is almost two years and the bank only recovers something when there exists some collateral. On the other hand, the cost of attorneys is around 10 per cent of the recovered amount. Therefore, considering the time required recovering the payments, the direct cost of a lawsuit, and the number of more efficient alternatives to recover a loan, banks have almost no incentive to go to court.

We compared the old bankruptcy code to the new law enacted in 1982. The new code accelerates the proceedings as compared with the old one, and also compared with more developed countries, since it sets a one-year limit for asset liquidation. Another important feature is that unsecured creditors have the right to participate in the creditors' committee and to vote during the process, which enables them to protect their rights. The creditors' committee designates the bankruptcy receiver, who is a private agent that manages the firm during the proceedings, determines who the debtors are, liquidates the assets and pays the creditors.

The third group of explanations includes what we called private solutions. The first one is information sharing, which in Chile started as a private initiative in 1979, but only in 1989 the system began to handle private black and white information on banks' debtors. This information is only available to the banks. This had a positive impact on both the banking system development and in the reduction of non-performing loans. On the other

hand, black information is available to everybody. It seems important to clarify that Department Stores are reluctant to share white information, and consequently they do not have any information of their clients' debt with the banking system. However, they do not display high levels of arrears. In our opinion, the reason for this is that stores' debtors have limited access to the credit market, so if they do not pay they are barred from it.

The prescreening technique in the case of firms has performed well, especially due to the close supervision exerted by the Superintendency of Banks and Financial Institutions. In the case of households, they are applying the scoring technique, which has performed well in reducing arrears, but tends to reject too may debtors who are good payers.

Another element is collection technology, which has been improving in Chile, given the reduction in the telecommunications cost and technological development. This has made collection from households more efficient with banks outsourcing it to specialized collection agencies. In the case of firms, banks use a different strategy. They have an internal "normalization department" that seeks to negotiate an agreement with the firm. Only after all renegotiations has failed or the debtor has turned out to be dishonest, the case is taken to the court, where proceedings are very slow. Even when collateral exists, banks need a special order from the court to liquidate the assets.

Finally we analyzed the case of bond financing. Here, the dispersed nature of debtholders make them more exposed to the danger of dilution by the debtor than in the case of bank debt. To help the bond market overcomes this potentially greater obstacle arising from moral hazard, the Chilean law has granted to the holders of public bond issues a special protection that obliges the issuer to disclose all relevant information that may affect the interests of bondholders. In addition, bondholders invariable protect their interests further by inserting in bond contract covenants that limit the borrower's discretion.

In summary, reform of the bankruptcy code, information sharing, collection technology, financial market regulations and macroeconomic environment seem to play a key role to explain the performance of the financial system in terms of low default rate. To the contrary, the performance of the judicial system does not contribute to explain such performance.

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