

THE SOCIAL IMPACT OF THE BANKING SECTOR IN COLOMBIA, 1995 - 2002*

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ABSTRACT

This document studies the impact of the banking sector on social variables in Colombia, and tries to identify how the difference in banking institutions' development at the municipal levels influences economic and social prosperity of low income households and firms. One part of the literature emphasizes the role of the financial system in promoting this type of agents' economic performance as long as it attracts them to the use of financial intermediation, making available to them the use of financial services and technologies, both in deposits and credit. Another trend in the literature studies specific characteristics of liquidity constrained agents. This study empirically identifies how bancarization influences poverty and investment on education, in the case of families; and economic performance and the number of firms, in the municipal level in Colombia for the period 1995-2002. When studying these effects we control for local variables such as public spending in investment, homicide rate and guerrilla conflict. The period of study was characterized by the end of an economic boom and recession, which influences our econometric results. This study shows that banking developments affect households' education decisions and firms' performance at the municipal level; it was also found that non performing loans are associated with the decrease in the number of firms, but a relationship between loans and the creation of firms was not present.

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1. Motivation

There is a whole group of academic and public policy literature that focuses on understanding the channels through which the economic system and the state's actions can help the less favored sectors of society. Social development and efforts to alleviate poverty are essential concerns in this line of research. From another point of view, there is also a big group of literature that studies the channels through which the good functioning of the financial system has a positive effect over the allocation of resources in a society, over its capacity to discriminate between investment projects, evaluate potential clients and allow them to take advantage of opportunities, increase productivity and achieve higher growth rates. However, there is not enough research and literature on the point where these two sides meet, which is, the impact of the financial system on social development, the increase of productivity, the possibility of creating new firms and independent entrepreneurial initiatives coming from the least favored sectors of society. This document seeks to contribute to the understanding of some of the channels through which the functioning of the banking sector has an impact on social development and the possibilities of the least privileged to reach economic prosperity.

The traditional perspective in economics highlighted the fact that markets allocate resources efficiently considering that every individual has the possibility of trading his own resources as well as his products, and borrow against his future economic performance. To understand the action of agents in more realistic economic and institutional environments, from the 1980's the specialized literature started to center attention on the fact that many individuals might be "liquidity constrained" on the basis that they are not considered as credit worthy by financial intermediaries; or are quickly extracted from the credit flow when there are slight changes in their risk perception by the intermediaries. In fact, if one of banks' main roles is to discriminate amongst individuals and firms according to their means to pay a debt, and this information is expensive and liable to be imperfect, it is very likely that many individuals and firms will be in a disadvantageous position when trying to have access to credit since it will be harder for them to prove their credit worthiness.

Banking activities are also subject to the imperfect monitoring of their clients, which can lead them to maintain preventive policies in their credit provision, leaving aside potential clients that are willing and in capacity of honoring their debts. Another problem that worsens this situation is the one known as "moral hazard", according to which in activities where agents are insured against some kind of risk, they tend to be more inclined to incur in it. In the financial system this problem is present in the case of banks, who lend to riskier agents than it is advisable because they can rely on governments (i.e. through deposit insurance or capitalization lines provided by the state) to come to their aid when things turn out bad. It is also present from the side of the borrowers, who once they acquire a debt may be inclined to incur in riskier projects than what the loan was approved for, deviating from the original intention put forward in the loan application.

It is natural that these problems become more acute as banks try to advance towards the least favored sectors of society, in which it is harder to have a guarantee that endorses the debt and it is more expensive to acquire information on payment records of past obligations. Additionally, the cost of each transaction increases considering that

information processing, the evaluation of the loan and later follow up are basically the same, if not more, than any other lending operation, but the average sum lent is smaller. It is for this reason that the returns on this type of transactions are less, which in turn can partially explain the fact that there is less supply of these financial services for the population with lower income.

There also some elements from the deposit side of the financial intermediaries and the asset side of lower income clients that may be obstacles for the spread of financial services to all strata of the population. These elements refer to the use of the intermediaries as the entities in which savers place their trust. The opening and handling of a bank or savings accounts represent some costs for the client, such as the provision of information, the monthly service fees, the deposit and withdrawal fees, etc. If the amount saved is small it may not be enough to merit the adoption of “financial technologies” by small savers or families, that is, to adopt the different services provided by the intermediaries. This problem has been treated recently by the name of “bankarization”. Later on we do a survey on current literature on the subject.

In sum, there are factors both on the supply and demand side of financial services that evidence the difficulties present when trying to connect the poorest agents of the population with the financial system. However, this is only one aspect where the financial system affects the poor masses of a society. There are other indirect aspects through which the actions of the intermediaries may have positive effects. That is the case of the improvement of resource allocation through the intermediaries’ capabilities to discriminate amongst private investment projects and consumption plans. Indeed, a society with a solid financial system does a better job in allocating productive resources to its best uses, raises its levels of productivity and employment, and with these contributes to higher levels of social welfare. Even if the direct beneficiaries of an increase in employment may not be conscious of the fact that this was possible thanks to a better allocation of lendable funds, this is still crucial for their economic development.

This study’s objective is to measure the effect the banking system has had over social development variables, in the context of Colombia for the period 1995 – 2002. For this purpose we follow a methodology inspired by the one proposed by Guiso, Sapienza and Zingales (2003), which intends to identify the impact of the financial system’s relative regional development, based on a group of variables that comprise the economic development and potential for growth of a specific region. The strategy seeks to control for a series of additional variables that can explain relative regional development, such as violence, availability of physical infrastructure, public expending, presence of armed rebel groups, etc.

2. Bancarization, a survey of international literature

This section presents a survey of international literature on bancarization with the purpose of identifying what types of variables influence the access and use of financial services.

2.1 United States

In the United States the estimates of the number of households that are unbanked range between 10 and 22 million, which comprise 25 to 56 million adults (Carr, 2004). This sector of the population's main characteristics are that they are either latin or black; the heads of these households are usually young adults, unemployed or women with low income, low levels of education and who live in a rented place. According to Michael Stegman, from the *Center for Community Capitalism*, the US government is oriented towards asset-based social policies. That is why these policies are rewarding work and giving homes incentives for taking more responsibility for their financial future and retirement security. To achieve this purpose it is essential that people be banked, since it has been found that in that country ***people with bank accounts are twice as likely to keep savings as people who are unbanked, and more likely to increase these savings over time***. Besides, the differences in wealth are becoming larger than the differences in income. Actually, even though 90% of low income people receive 60% of the economy's income, they possess less than 20% of all financial assets (Stegman, 2004).

According to the Fannie Mae Foundation, in the United States the main reasons for being unbanked are related mainly with: the ***absence of financial education***, the high costs of financial services; the lack of products that are appropriate for low income homes; the insufficient number of bank offices in low income communities; the lack of credit history or the poor quality of it; the requirement of identification and specific documents, which many recent immigrants don't have; cultural and language barriers; and distrust towards mainstream financial institutions.

Next to these reasons is also the easy access to ***alternative financial services***, an example of these are pawn shops, payday lenders and check cashiers, who offer several services, such as currency exchange, private check and government check cashing, sending of remittances and others, all of these make them far more attractive than the formal financial system. These establishments have grown considerably during the last years. While ten years ago there were no payday lending centers, today there are approximately 10.000 places of the kind (Stegman, 2004). The reasons why 25% of the unbanked are this way can be attributed to their lack of financial education and to banks inaccessibility. Another 25% of the unbanked are this way because of motives that push them towards fringe banking centers, and the 50% left is composed of people who don't have enough money, don't need to pay with checks or have a bank account.

Despite the fact that unbanked homes represent a very large portion of the population, this problem may be aggravated since most of this portion of the population belongs to rapidly growing minorities. One of the most rapidly growing is the latinamerican population, the least banked, which by 2015 will represent 25% of the total United States' population. Furthermore, it has been seen that the number of home buyers that belong to a minority

went from 640.000 in 1991 to 1.3 million in 1999; the number of first time home purchases went from 1.4 million in 1991 to 2.3 million in 1999, and 53% of this increase was due to minority buyers (Carr, 2004). Consequently, this ***represents a growing and interesting market for the formal financial system***. There have been different initiatives for banking low income people, they have focused on particular characteristics of this sector of the population and prove that this market can be profitable.

The *Individual Development Account* (IDA) was an initiative designed by Michael Sherraden in 1991, developed in his book “*Assets and the Poor*” and legalized by the United States’ Congress in 1996 through the “*Personal Responsibility and Work Opportunity Reconciliation Act*”. This measure seeks to create IDA programs promoted by the states and based on the communities. In these programs both financial institutions and community organizations participated. Low income people who wish to buy a home, pay for education or training, or start a business are the ones that can join this program, with the condition that they receive financial education. ***IDAs are bank accounts in which people save what they can and the public or private institutions that support the program deposit in the accounts two or more dollars for each dollar saved***. Currently, 36 states have IDA programs, there are about 500 of these and over 10.000 people are now saving money through them.

According to James Carr, the results of the IDA programs, although limited, are positive in relation to multiple social and economic welfare indicators. A study done by the *Center for Community Capitalism* that focuses on the impact of these programs on savings and asset accumulation by families, finds that ***those who have been part of one of these programs save more than what they would have saved if they hadn’t joined***. This study recurred to the *Survey of Consumer Finances*, which contains information about American families’ savings and assets, to build a sample of the homes which resemble those that could be part of an IDA program. This study calculated a “savings path”, which represents what a family would save outside an IDA program and it was compared to the accounts’ balances of the families who belong to these programs. Results show that the median participant of the programs saves \$117 more than families outside of it and the average participant saves up to \$285 more; and it was also found that participants who were banked before joining the program save more than those who weren’t, banked participants have a median balance of \$361, while for the unbanked it is only \$151 (Stegman et al., 2001).

The Union Bank of California, located in a region that receives many immigrants has created transition products meant to attract clients to the bank’s traditional products. The bank has, for example, cash cards or prepaid debit cards; basic checking accounts, to open them the client needs only \$1, it includes 5 checks a month and a debit card, which charges a very small administration fee; “Nest Egg” savings accounts, that require only \$10 to be opened; special savings accounts for children, students and senior citizens, which have lower or no fees and try to promote a savings culture, specially in children and young people. They have also created an IDA program, financial education courses, and to attract immigrants, they have reduced identification requirements, now immigrants can open an account with the consular card (only for Mexicans) or with the individual tax number. Finally, besides having regular bank branches, the bank has created “*Cash & Save*”, which are small offices where people can cash checks and have access to the bank’s basic and

transition products. These offices serve to attract clients and help them familiarize themselves with the bank. The use of all these resources has helped the bank increase its clientele and their fidelity, help the clients have better account balances and improve their credit history, have more publicity and better relations with the communities.

In Chicago, the Harris Bank has focused on entering the Hispanic market resident in Illinois, which is one of the largest in the country and is in constant growth. To do this, the bank divided this potential market in three segments, according to level of rooting and number of years lived in the country. This segmentation is important because every group presents specific characteristics that determine the ways the bank should approach them and the products it should offer them. While the ***main approach to reach those not yet established in the US is to offer products such as prepaid debit cards, basic checking accounts and remittances services to Latin America***, usually Mexico, the best approach for those firmly established in the country is to offer basically the same products as those offered to regular clients. To the recently established, segment between the not yet established and the firmly established, the bank offers checking and savings accounts, investment programs and short term loans for the creation of micro or small firms, assistance for tax filing, online bank services and check cashing services. Besides offering these services, the bank also offers financial education courses, which is provided in conjunction with community organizations and which helps to promote saving among costumers.

Some other initiatives from the private sector are, for example: money transfer services, with prices lower than the ones charged by “Western Union”; ***“second chance” accounts, meant for people with problems in their credit history***, and which allows them to rebuild their record; loans similar to those provided by “payday” lenders, with short terms and low amounts of money; and the chance for employers to pay their payroll with prepaid debit cards. The new technologies have also contributed to increase the access to financial services, some of these are: check cashing machines, ATMs with a teller that receives checks and deposits, with this the money is instantly deposited in the account and available for the client to use, and prepaid debit cards, which are also used for remittances and by the government to pay social security.

3. How to measure the social impact of the banking sector

3.1 The allocation of assets, production and welfare in a market economy

The “social impact” of the banking sector goes beyond the effect over variables directly related to income distribution, social equality, decrease in poverty or access to essential services, such as health, education, drinkable water, etc. Indeed, in a market economy the financial system’s main contribution is done through a better allocation of scarce resources to its best alternative uses. In such manner, the financial system contributes to making the social structure reach the highest degree of productivity and the highest level of use of factors like labor, land, physical and human capital and knowledge. No social assistance program that is targeted to specific sectors of society can replace the access of these sectors to productive jobs in which each individual has the incentive to use his own laboriousness and creativity in the search for products that the market wants. A productive job will not

only give sustenance to this individual's family in the present, it will also provide him with opportunities for economic growth and human development, which can't be replaced by any assistance program.

The social institution named by economists as "the market" works as a telecommunications media between those who have and those who want. Messages in themselves are transmitted to individuals through a daily and known to everybody fact, the price. The price of one thing in relation to another is basically a bartering rate that shows the sacrifice a person (natural or legal) is willing to make to receive something in exchange (a good or a service). Prices mediate between a buying action and a selling action. In principle, every individual can stand on either side of that relation. He can be a seller depending on the knowledge he has of the goods others are willing to buy, his skills, access to techniques and technologies, and other favorable circumstantial or planned conditions that are related to the exchange. If the seller is in a competitive position that allows him to deliver after producing or simply by intermediating a good at a lower cost than other sellers do, this will enable him to appropriate a part of the market. Generally, a person is a supplier of a limited number of goods and services, and a demander of all other products he uses in his personal or productive activities. Equally, his buying position will depend on the acknowledgement that others produce what he needs with cheaper costs and, consequentially, that it is better to appropriate their productivity through exchange, instead of trying to copy them. In this decision the knowledge of one's own technology, knowledge, skills, access to cheap resources, and one's own valuation of leisure time.

Prices tell individuals what they can buy and what they can sell. In other words, when comparing market prices with what the cost would be if one produced a specific good or service, each person will decide on what side of the transaction he wants to be. Indeed, firms and individuals choose one or a few activities in which they can definitely be more productive than others, and specialize in them. This implies that they will buy those other goods and services in which other people decided to specialize in. When doing this, each individual is contributing to the social division of labor. These decisions oriented towards the division of labor are the most important institutional structure that exists for social prosperity. The reason why is that specialization allows for the development of knowledge, skills and technologies that increasingly make individuals more productive, and through this channel, society as a whole.

For these circumstances to materialize it is necessary that the mentioned elements be inserted in the best way possible in the daily lives of individuals and firms: that each person can be free to choose the activities in which to focus his laboriousness and creativity, and to associate with or be hired by other people for such task. Likewise, that every person can be free to acquire the goods and services offered by others in the market, without intervention or coercion proceeding from a third party. Individual freedom, freedoms of association and of enterprise are basic requirements for a market to function.

In second place, it is essential that those prices used by individuals and firms as guidelines for personal and economic decisions, be true transmittals of the productive capacity of other individuals, and of the rates by which they are willing to buy or sell. Only in this way can they make accurate decisions in relation to where to focus their efforts and in what step of

the division of labor to situate themselves. It is important to remember that these decisions are crucial for society to employ every individual in the occupation in which he is more skilled, imaginative and productive. In effect, only through freedom of prices will there be a distribution of land, labor, physical and human capital and knowledge that is coherent with a higher degree of prosperity and social welfare.

Distorted or controlled prices that don't transmit well information between economic agents, lead them to take erroneous decisions about what to produce and sell and what to buy. If some producers are faced with extremely high prices, which are a result of the intervention of third parties, this signal will tell them to specialize in productive sectors that have skills, technologies or ingeniousness higher than what they possess. They will temporarily believe it was the right choice to produce what they chose, but this would be wrong once the distortions are eliminated. This on the contrary will guide them away from those sectors in which they could actually be more productive than others. Also, if prices are excessively low they will make individuals believe that they shouldn't produce that which exists in abundance and for a price lower than what they could sell for; on the contrary, this would promote an excessive consumption of those fictiously cheap goods and resources. The result of these "interventions" of prices will be a waste of the labor, land, capital and knowledge of a society. This in turn would redound on less goods and services available for consumption, unemployment and frustration. Even worse, the same individuals will be confused about the cause for the level of employment and their low productivity, and will think more intervention is necessary, instead of less.

In all societies, and more importantly, in low or medium¹ income economies, there are segments of the population that face considerable difficulties and obstacles to connect to the market and exploit its opportunities. The reason for this may lie in the fact that there is a minimum of physical or human capital needed to exploit a market opportunity; or in being disconnected from the channels that transmit the information about the possibilities of access to inexpensive productive resources that can be acquired (or sold). In this case the most frequent approach is the adoption of social assistance strategies, that offer these agents a group of goods and services at lower prices. This strategy is considered to be completely justified because it reflects a transfer from the prosperous segment of the population and the more closely associated with the market economy, to the less prosperous and more detached from market activities. Even if an intervention in favor of the poor is justified, the distortion of prices is the wrong vehicle to do this. This is explained because such system of intervention will distort the decision processes in the entire society, and this has a high cost in terms of generation of employment, productivity and welfare. It is possible that this type of distortions will end up producing more poverty than that it intends to solve, with the additional cost of making very difficult to identify who is paying for the policy, and who is really benefiting from it. Additionally, it's frequent that the more privileged classes be the ones that benefit from the policies meant for the poor. This is the case of the subsidy to gasoline. Another example of a pernicious price control policy that ended up having a negative effect on the poorest and a positive one on the middle and high classes is the

¹ The definition of high, middle and low income countries is always subject to debate. A practical way to differentiate middle income economies is to consider them as those where per capita GDP, measured in PPP, is between \$5,000 and \$10,000 per year. Colombia is within this range.

constitutional control on the housing credits interest rates. This measure had a social motivation but its consequence has to severely limit housing credit and focus it on the middle and high classes.

There are less socially expensive and easier to focalize ways to help the most needed. They consist, on the side of the state, in direct subsidy programs for low income households. And on the side of the financial system, in making their services accessible to the parts of the population that are usually relegated from this type of transactional technologies. In effect, there exist considerable groups of the population that are excluded from access to the deposit side as well as the credit side of financial activities. The financial system intermediates between agents who have surpluses and those who have deficit, and also across time, between moments when an agent has a deficit and acquires a debt, and others when he expects to have a surplus and repays that debt, or becomes a credit supplier. Therefore, economic agents who are excluded from access to financial technologies will find it difficult to bring resources from the future to employ in consumption or investment activities in the present. In this manner they will leave unexplored selling and purchasing opportunities that would have contributed to his personal and familiar wellbeing, as well as to social prosperity.

In sum, the true contribution of the financial system must be looked for in its role in the proper allocation of a society's productive resources and in institutional development², and not only in its involvement in certain strictly "social" programs. However, there is also another crucial aspect through which the financial system must contribute to the welfare of the poorest, and that is in making accessible their deposit and credit products and their transactional management technologies to those portions of the population that still don't have it yet. This document intends to measure in what way does access to financial services may be related to higher levels of social welfare, household consumption, family's investment in the accumulation of human capital, short term economic activity, creation and destruction of firms.

3.2 Measuring the social impact of the banking sector

This document tries to identify the social impact of the banking sector through statistically measuring to what extent the presence and volume of banking activities are associated with higher levels of prosperity. To do this it's essential to identify different social groups or groups of individuals with different levels of access to deposits and credits, and try to measure if that affects certain variables that refer to their social and economic performance. This kind of problem has recently been studied through surveying individuals with the purpose of measuring their access to financial transactions and their personal and economic performance. In Colombia only recently has this type of survey become available, with the Consumption Survey done by Fedesarrollo. Since we only had data for a few months, the results obtained from the study of these were not significant and didn't allow inferring any conclusions about the problem at hand. For this reason we don't present those results in this document.

² See Levine (1997), Rajan and Levine (1999) for the relation between growth and financial development and Fergusson (2004) for a survey on the literature about institutional development and the financial system.

Apart from individual information, it is interesting to study if social groups that share certain characteristics but because of geographical or institutional conditions within a country, have a different performance due to their different levels of access to financial transactions, whether it be on the deposit or credit side. To identify the effects of the access to financial intermediation municipal performance information was used, based on the assumption that towns with different access to this intermediation will have a different performance in their social and economic variables. The measurement of access to the banking sector will be the level and annual variation of deposits and loans per capita in each town. This will be an indicator of the level of municipal “bancarization”. The period under observation is 1995-2001.

The social performance variables chosen are: 1) to measure social performance relative to the incidence of poverty, the Unsatisfied Basic Needs Index (NBIs) is used as a proxy for it; 2) secondary gross enrolment ratios to measure households’ investment in human capital; and 3) to measure short term economic performance of productive activities we used the Industry and Commerce tax revenue, which is a municipal tax.

As bancarization variables both bank deposits and loans are used, these are reported by banks to the *Superintendencia Bancaria de Colombia* (Colombian Banking Superintendence) and provided by the *Asobancaria* for the municipal level. Furthermore, the financial system may have positive effects on the booming periods of bancarization, on the passive side as well as the asset side, and negative in periods where there is a higher risk perception and banks restrict their loan supply.³ To evaluate this channel, the proxies used are non performing loans, in their commercial, mortgage and consumption varieties. For the studied period this channel is of special importance, given that during this period Colombia lived one of its worst recessions in decades.

A problem faced in this kind of exercises is the direction of causality. In effect, it could be argued that banks open more branches and supply more loans per capita to those towns that are more prosperous, measuring prosperity with similar variables as those mentioned previously. According to this, banking activities would be endogenous to municipal performance. In the present study we tried to measure the opposite causality, the effect of banking activities over social and economic performance of towns in Colombia. To definitely solve the endogeneity problems of the variables considered to be “independent” it would be needed to have access to a variable highly correlated with the presence of banks in a town, or with the levels of per capita loans and deposits, but not with municipal performance variables. As it is obvious, this variable is not easy to find. In fact, this problem permeates all of financial development and economic growth literature.

Our argument to go forward with the chosen methodology has to do with the fact that throughout the period under consideration, 1995 – 2002 the banking sector maintained a similar regional structure, in which it didn’t substantially redefine its regional presence. Additionally, the variables chosen to measure local performance may not be variables

³ See Echeverry and Salazar (1999) and Barajas and Steiner (2001) where periods with credit constraints are studied, which are known in specialized literature as *credit crunch*.

traditionally used by financial intermediaries to decided presence and level of activity in a region. Where the endogeneity problem may be more severe is in the use of the variable “Industry and Commerce tax revenues”. It could be argued that in this case there’s a clearer causality relation towards the levels of loans and deposits. Future work could shed light on how to solve this problem, being the lack of data an insurmountable obstacle at the moment.

From a different side, economic and social performance variables may have determinants besides banking activities, and the regression analysis should “control” for other effects. The control variables used were of two different types: 1) local public sector activities, given that a higher per capita expense may affect, *ceteris paribus*, the town’s performance in relation to the dependent variables we used. This variable will be introduced as public expenditure per capita, in total as well as in investment. 2) The incidence of violence, given that *ceteris paribus*, those towns with higher levels of violence and conflict may present less economic and social development. To approximate this effect the local homicide rates were used.

A third exercise performed recurred to the data provided by DANE about increase in the number of industrial establishments at the municipal level and associated it with the level and growth of loans in each town. Net creation of firms is another interesting variable to measure the incidence of the banking sector in the regions.

3.3 Description of the variables used

The information used includes social, fiscal, violence and financial system variables, the data comes from de *Centro de Estudios sobre Desarrollo Económico* (Center for the Study of Economic Development - CEDE) and from the reports banks make to the *Superintendencia Bancaria de Colombia* in reference to their deposits and loans, and which was processed and supplied by *Asobancaria*. This information is available for 1059 municipalities, for the period 1995-2002.

3.3.1 Dependent Variables

According to the **Unsatisfied Basic Needs Index** (NBI, for its name in Spanish) people are poor if the place they live in meets at least one of the following conditions: the house is inadequate because of the materials it was made of; the house is critically overcrowded (more than three people per room); if it is a rural house and lacks a water supply and sanitation, or if it’s an urban house if lacks a water supply or sanitation; households where there is high economic dependence, which means, if there are more than three people per employed person; the head of the household approved only up to two years of formal education; and households with children with ages between 6 and 12 that don’t attend school (Lora, 1991). The information available per municipality corresponds to the percentage of households with at least one unsatisfied basic need.

The **Industry and Commerce tax revenues** variable correspond to the per capita revenues a municipality received each year due to this tax. In this case this variable constitutes a proxy for the short term economic performance of the municipalities.

The **secondary education gross enrolment ratio** corresponds to the total number of secondary education students divided by the total population aged 12 to 17.

For the study of net firm creation we used the data provided by DANE from the *Encuesta Anual Manufacturera* (Annual Manufacture Survey). The municipal data correspond to the period 1995-2001. In this survey, which is really a census, the unit of analysis is the industrial establishment, according to the International Standard Industrial Classification Rev. 2. Besides being industrial establishments, they must meet at least one of two requirements: to have 10 or more people employed in the establishments; and the value of production must be over COP (constant pesos of 1998) 70.5 million a year. With this, micro establishments are excluded from the survey. Therefore, the variable is the **change in the number of establishments** per year in every municipality.

3.3.2 Independent Variables

The first independent variable is the total amount of **deposits per capita** received by banks in each municipality. **Net loans per capita** per municipality are also taken as independent variable. Loans per capita are also taken in their disaggregated versions. In sum, we have: **performing and non performing commercial, consumption and mortgage loans**. These variables are introduced after applying logarithms to them.

3.3.3 Control Variables

To control the effects of the public sector and the levels of violence in the municipalities we introduced the following variables: **total per capita public expenditure** in the municipality and the fraction of it dedicated to **investment**, these variables are introduced in thousands of pesos; and as indicator of the level of violence we introduced the **homicide rate** of each municipality. From now on when we refer to public expenditure, Industry and Commerce tax revenues and banking sector variables they will be in per capita terms.

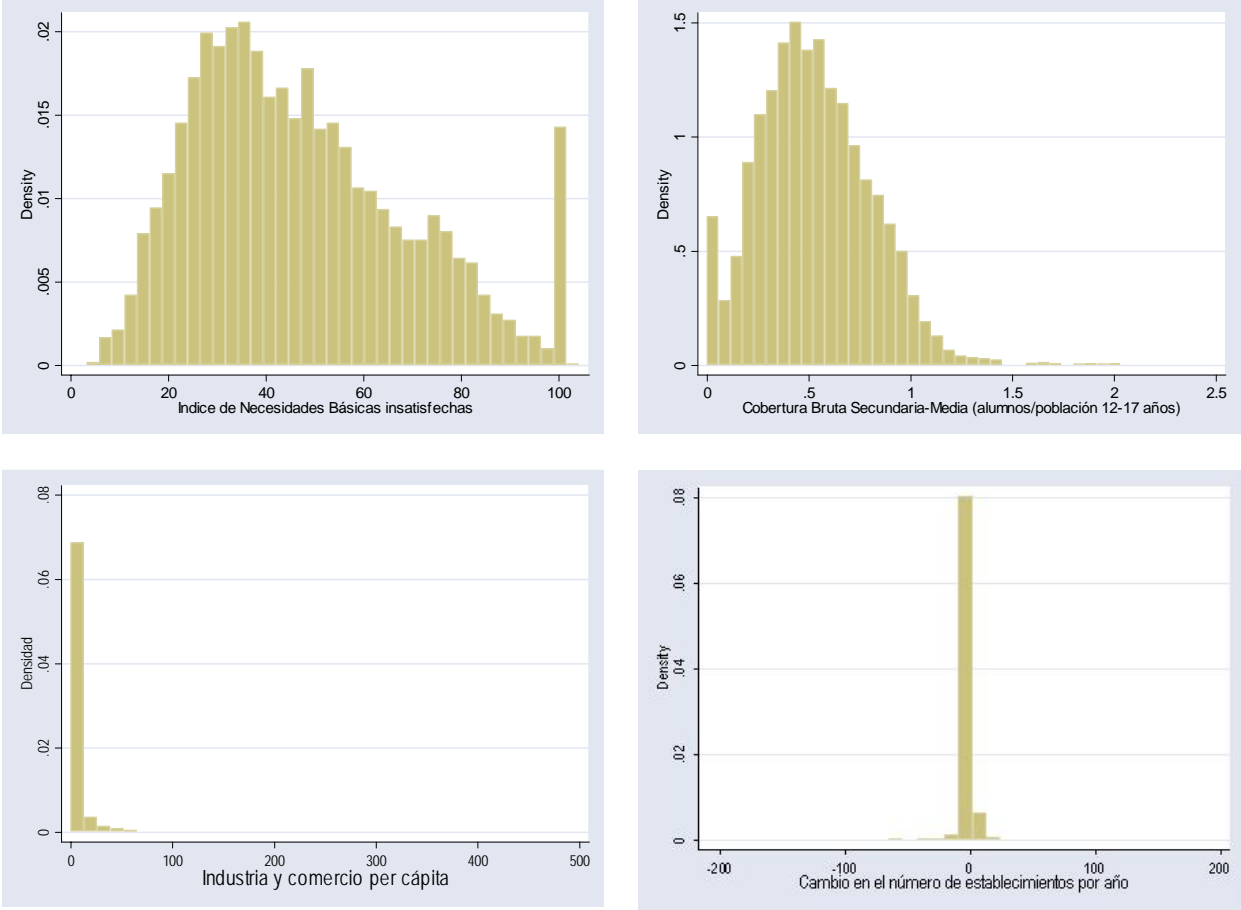
Table 1. Summary statistics of the variables used, 1995 - 2002

Variable	Mean	Standard Deviation	Median	Min	Max	Observations
NBI	47.4	22.1	43.6	3	104	8438
Secondary Education Gross Enrolment Ratio	0.5	0.3	0.5	0	2	8434
Industry and Commerce Tax Revenues*	6.4	22.7	1.2	0	499	7161
Deposits*	142.8	252.2	59.4	0	3846	8447
Net Loans*	95.1	229.4	35.2	0	4996	8454
Performing Commercial Loans	45.3	128.5	7.4	0	2814	7398
Non Performing Commercial Loans	5.5	18.7	0.3	0	938	7398
Performing Consumption Loans	28.9	52.5	4.6	0	635	7398
Non Performing Consumption Loans	5.7	17.2	0.4	0	734	7398
Performing Mortgage Loans	7.5	42.4	0.1	0	1261	7398
Non Performing Mortgage Loans	1.4	8.9	0.0	0	266	7398
Homicide Rate	68.9	73.6	48.3	2	1341	6893
Public Expenditure in Investment*	0.2	0.2	0.1	0	4	6357
Change in the number of establishments	-0.8	9.8	0.0	-210	135	1296

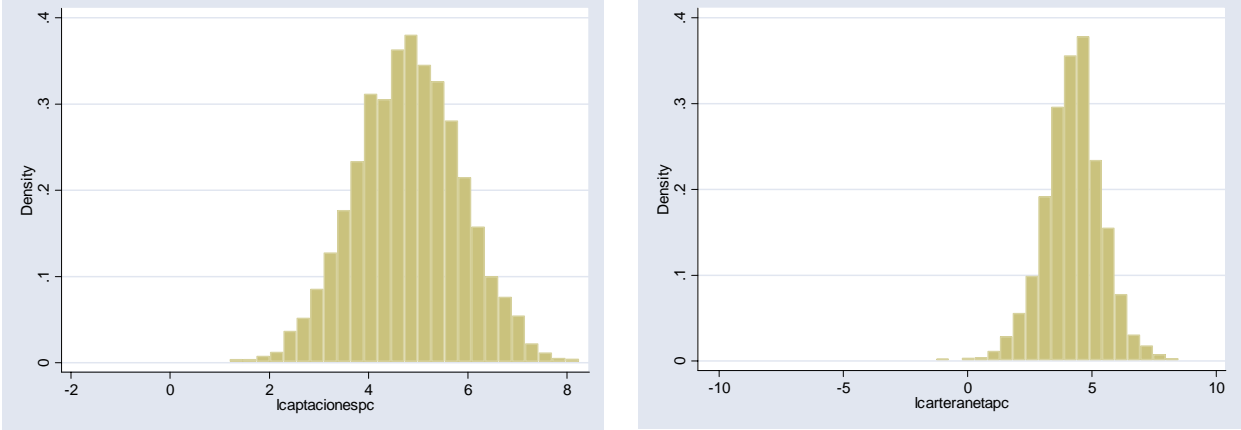
* The data for these variables are per capita and in current thousands of COP

According to table 1 it is evident that the values of the variables present a relatively high variance between years and municipalities. Most municipalities have low levels of deposits and loans, the deposits median is at 59.360 pesos, while the median for net loans is 35.150. It is important to note that the means and medians of the banking sector variables have very pronounced differences, being the means considerably higher than the medians, this indicates that there are a few municipalities with very high levels of deposits and loans in relation to the rest of the sample, which has very low values. Another variable that presents a very high deviation is the homicide rate, it is 73.6, and this in turn shows that violent acts are not evenly distributed across the country. Finally, the fact that the data are in current pesos does not affect the econometric results, considering that all variables would be deflated by the same index.

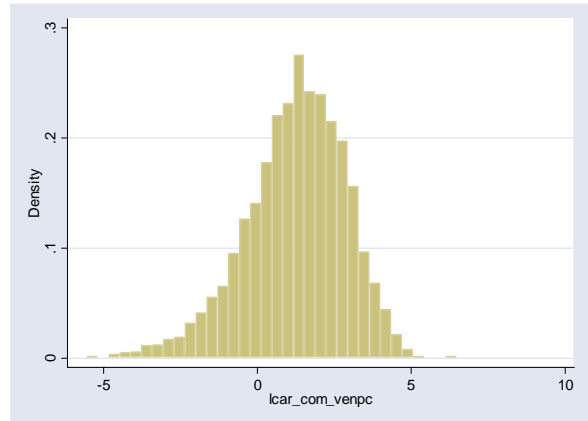
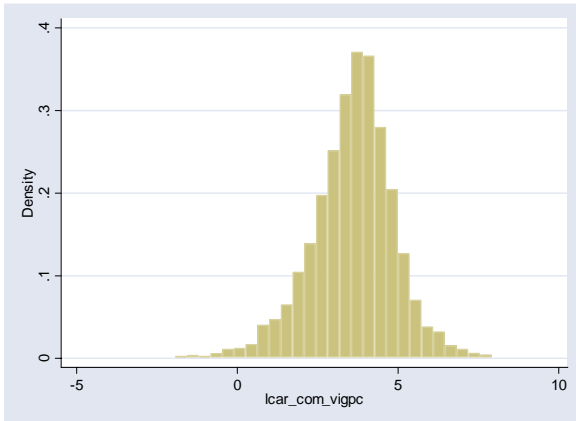
Graph 1. Density Functions of the Unsatisfied Basic Needs Index, secondary education gross enrolment ratio, Industry and Commerce Tax Revenues and change in the number of establishments, in the 1059 municipalities for the period 1995-2002



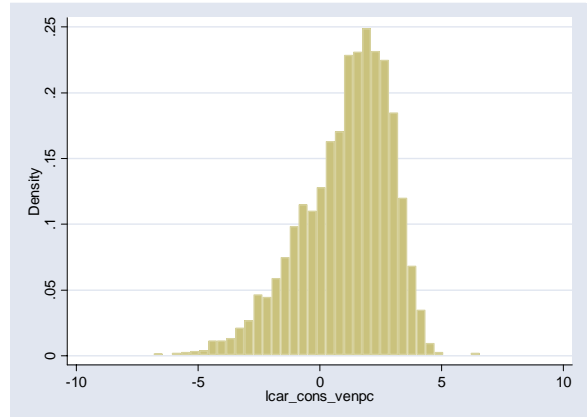
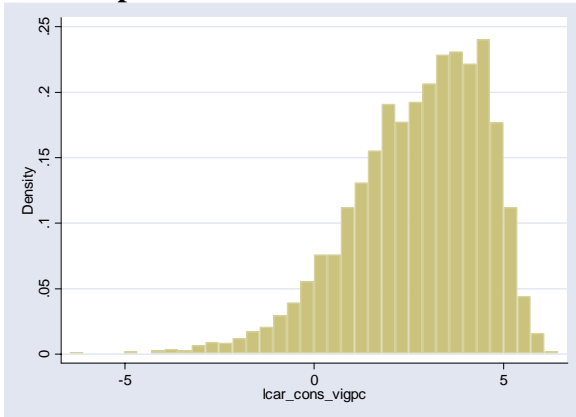
Graph 2. Density Functions of the Logarithm of Deposits and Net Loans



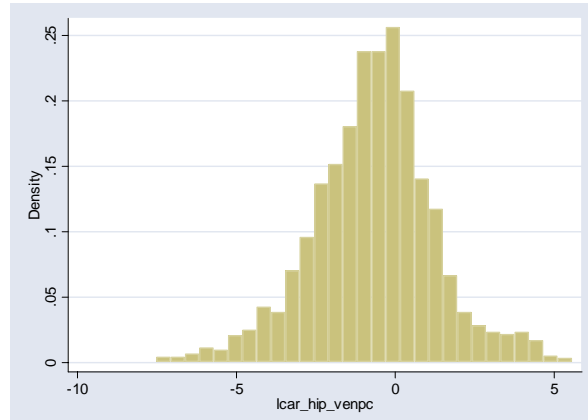
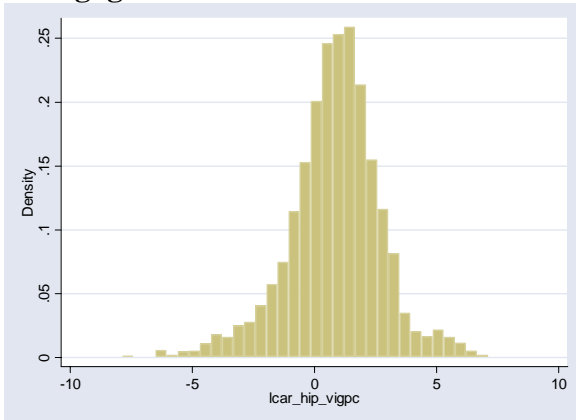
Graph 3. Density Functions of the Logarithm of Performing and Non-Performing Commercial Loans



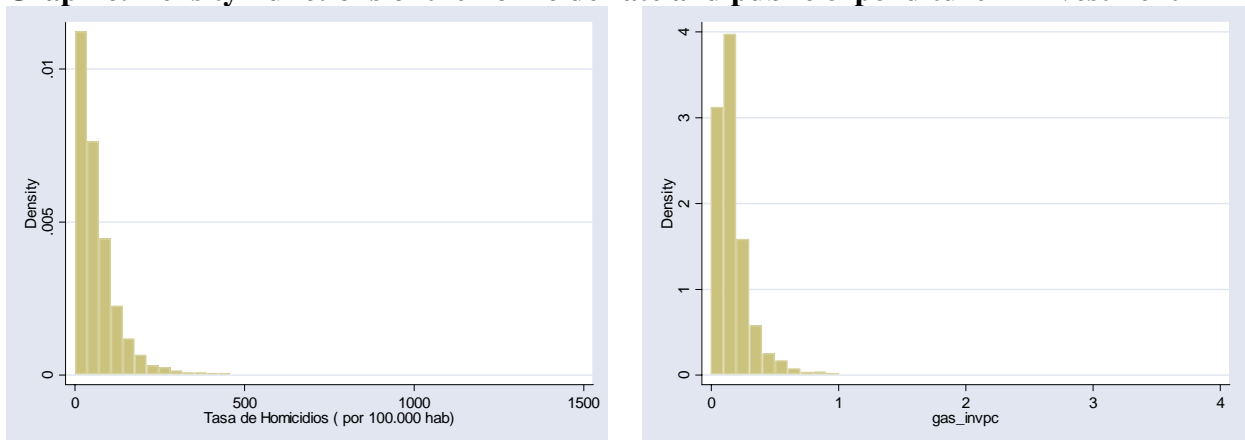
Graph 4. Density Functions of the Logarithm of Performing and Non-Performing Consumption Loans



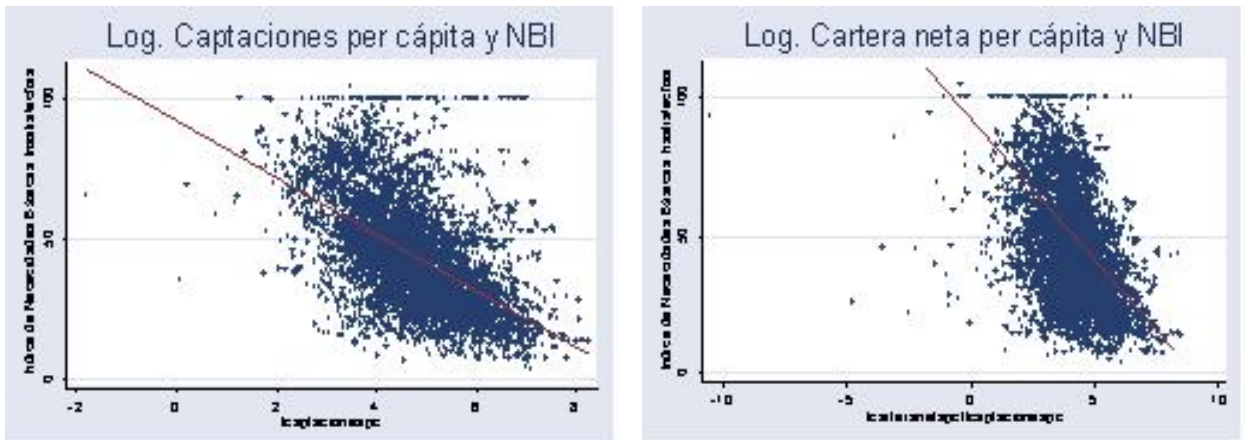
Graph 5. Density Functions of the Logarithms of Performing and Non-Performing Mortgage Loans



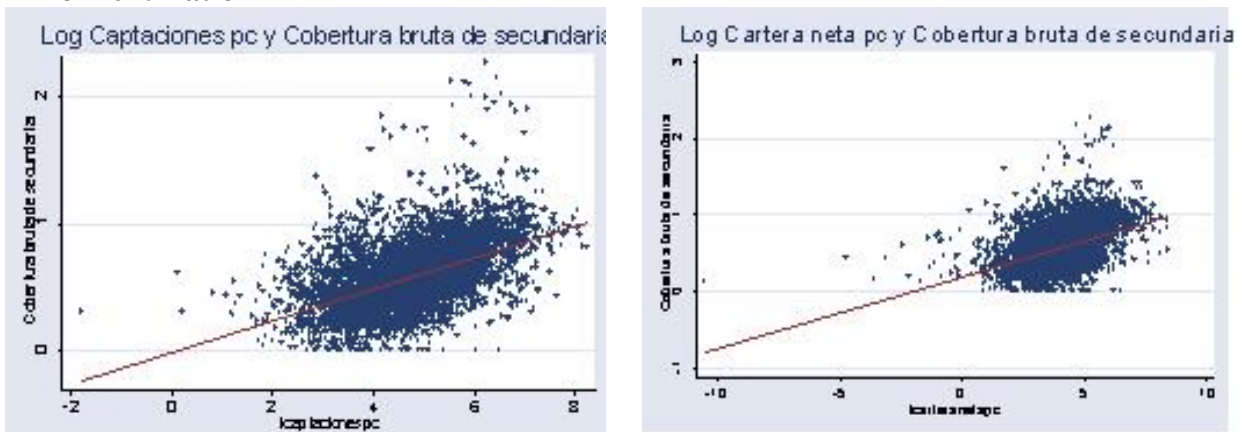
Graph 6. Density Functions of the homicide rate and public expenditure in investment



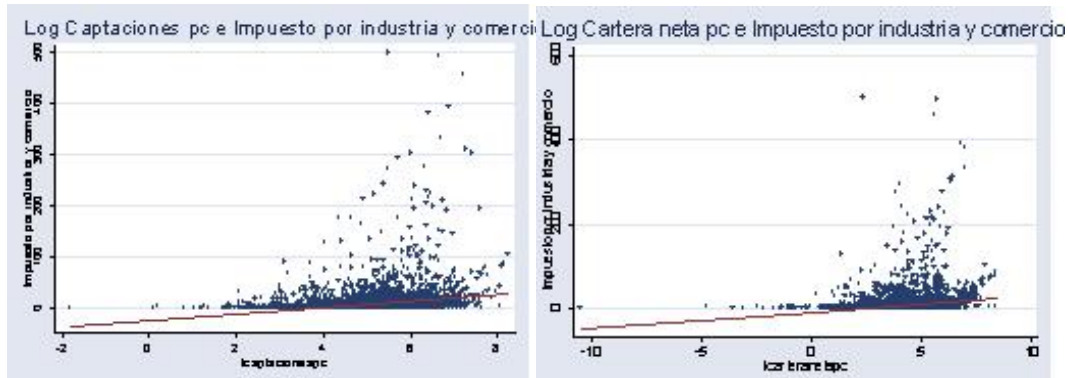
Graph 7. Scatter Plots of the Logarithm of Deposits and NBI and of the Logarithm of net loans and NBI



Graph 8. Scatter Plots of the logarithm of Deposits and Secondary Education Gross Enrolment Ratios and of the logarithm of Net Loans and Secondary Education Gross Enrolment Ratio



Graph 9. Scatter Plots of the logarithm of Deposits and Industry and Commerce Tax Revenues and of the logarithm of Net Loans and Industry and Commerce Tax Revenues



3.4 Econometric Results

The data base employed is a panel, in other words, we have data for the same municipalities (1059) for the period 1995-2002. The models employed are: a fixed effects model, an instrumental variables model in which the instrument is the same variable with a one year lag and a first differences model. The fixed effects model was used to eliminate unobserved factors that are constant across time and affect the dependent variable. This model is explained in the following way:

(1) $y_{it} = \beta_1 x_{it} + a_i + u_{it}$ where i refers to municipality and $t = 1995, \dots, 2001$. Then, the variables' means across time are taken for this equation, which leaves this new equation:

$$(2) \overline{y_{it}} = \beta_1 \overline{x_{it}} + a_i + \overline{u_{it}}$$

To get the fixed effects model, equation (2) is subtracted from equation (1)

$$(3) \begin{aligned} y_{it} - \overline{y_{it}} &= \beta_1 (x_{it} - \overline{x_{it}}) + (u_{it} - \overline{u_{it}}) \\ \ddot{y}_{it} &= \beta_1 \ddot{x}_{it} + \ddot{u}_{it} \end{aligned}$$

As it can be seen above, this procedure eliminates the fixed effect. This same purpose can be accomplished with the first differences model. In this case, the model takes the changes in the variables (dependent and independent) from one year to the next. That is why instead of identifying the relation between the levels of the variables, the model identifies the relationship between the changes each of the variables goes through across time.

The instrumental variables model is used when it is very likely that a certain independent variable is endogenous. When instrumenting a variable, this is replaced by another that determines it in some way or they are correlated. Since in this case the problem has to do with simultaneity between the dependent and independent variables, it is worth using an instrumental variable. However, finding a good instrumental variable, which is not correlated with the dependent variable, is a difficult task, considering the reasons mentioned above. Because of this, instead of using a new variable we used the same variable we wanted to instrument with a one year lag. This allowed us to see how the banking development in a certain year influences social variables of the following year.

3.4.1 Unsatisfied Basic Needs Index (NBI)

According to table 2, the level of financial development on the municipal level, measured with indicators from the side of the assets, does have a considerable influence over the unsatisfied basic needs index. For example, a 1% growth of performing commercial loans would result in a 0.0523 decrease of the NBI. It is important to note that the coefficient for public investment in road infrastructure is positive and statistically significant, which means that an increase in investment would determine an increase in the percentage of homes with unsatisfied needs, which goes against what was expected. The same thing happens with the homicide rate, although, in this case it can be argued that the incidence of crime is higher in more prosperous municipalities, because of the guerrillas (see Bottia, 2003) as well as the paramilitaries.

In relation to performing mortgage loans, according to the first model, in which this variable was instrumented how it was previously explained, if this variable increased 1% it would result in a 0.0114 decrease of the NBI. This regression also presents a positive coefficient for public investment in road infrastructure, as well as all regressions with performing loans and NBI, and it is statistically significant. With a fixed effects model, a 1% increase in this kind of loans would determine a 0.0033 decrease of the NBI.

Table 2. Banking sector loans and Unsatisfied Basic Needs Index (NBI)

Dependent Variable: Unsatisfied Basic Needs Index (NBI)

	1	2	3	4	5	6
	IV	Fixed Effects	Fixed Effects	IV	Fixed Effects	IV
Log performing commercial loans (1)	-5.2364* (0.6712)					
Log non performing commercial loans (1)		0.1454* (0.0416)				
Log non performing consumption loans (1)			0.5366* (0.0314)	1.3099* (0.0975)		
Log performing mortgage loans (1)					-0.3253* (0.0442)	-1.137* (0.1019)
Controls						
Homicide rate	-0.0045** (0.0018)	-0.0024** (0.0010)	-0.0016*** (0.0009)	-0.0007 (0.0010)	-0.0029* (0.0011)	-0.0032* (0.0012)
Public expenditure in investment (1)	-9.7044* (0.8409)	-9.1104* (0.4768)	-11.2151* (0.6409)	-6.2927* (0.8853)	-8.4934* (0.5013)	-9.1702* (0.6444)
Constant	61.8971* (2.6648)	42.5031* (0.1199)	41.4432* (0.1218)	39.8052* (0.2170)	42.0629* (0.1166)	42.7549* (0.1566)
Prob (F-test)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-square		0.1426	0.2787	0.0432	0.1617	0.0670

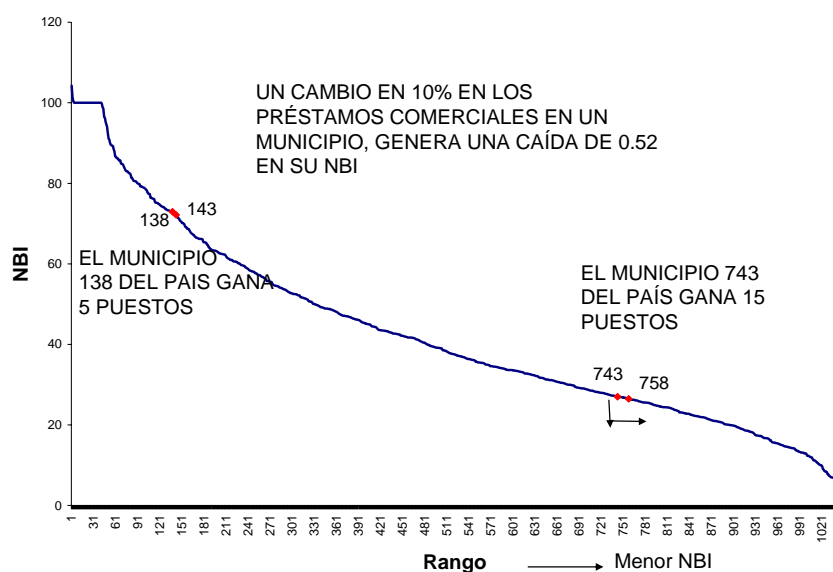
(1) These variables are in per capita terms

* 1% significance, ** 5% significance, *** 10% significance

The coefficients without asterisk are not statistically significant

However, the growth of the different types of non-performing loans, which is a characteristic of financial crises, induces the NBI to grow, as was expected. Therefore, if local financial development may contribute to reduce poverty, its decline or deterioration can also increase it. This can be seen in the second column in table 2, according to which a 1% growth of non-performing commercial loans results in a 0.0015 increase of the NBI. The effect of non-performing consumption loans on poverty is considerable higher, according to the fixed effects regression if these loans growth 1% the NBI increases 0.0054; this model has the highest R². The variable homicide rate systematically presents negative coefficients, which means, if the rate increases the NBI would decrease; and these coefficients are statistically significant for all regressions, except for number 4.

Graph 10. The effect of performing commercial loans on the NBI



Note: the data for NBI correspond to the year 2002.

Graph 10 shows the 1059 municipalities of the sample organized according to their NBI levels, where municipality number 1 has a 100% of unsatisfied needs. According to the regression in which the variable performing commercial loans is instrumented, it is shown here how it influences the level of a municipality’s NBI when this kind of loans grow by 10%. The decrease is shown relative to the change in placing or range within the total simple of municipalities. For example, the municipality placed 138, with an NBI of 77.34, after the increase in performing commercial loans moves to be placed 134, with a 76.82 NBI; while the municipality placed in the 743 spot with a 38.14 NBI would improve 15 places, ending up with a 37.62 NBI.

The first differences model shows the change in the unsatisfied basic needs index determined by the change in the logarithms of the different types of loans, and the change in the control variables. Again, it can be seen that the change in the index depends negatively on the change in the different types of loans and positively on their non-performing versions. Hence, a 1% growth of performing commercial loans determines a 0.0024 decrease of the NBI, while if the growth corresponds to performing mortgage loans the NBI would decrease only 0.0013. Non performing commercial loans have a smaller effect on the NBI, if these loans grow by 1%, the NBI increases only in 0.00071. Non performing consumption loans have a stronger effect on the index, a 1% growth of them results on an increase of 0.0015 of the NBI. As with the results presented in table 2, in table 3, with the first differences model the coefficients for the variables homicide rate and public investment are negative and statistically significant.

Table 3. First differences: loans and the Unsatisfied Basic Needs Index

Dependent Variable: change in the Unsatisfied Basic Needs Index (NBI)

	1	2	3	4
	First Differences			
$\Delta(\text{Log performing commercial loans (1)})$	-0.2479* (0.0473)			
$\Delta(\text{Log non performing commercial loans (1)})$		0.071* (0.0225)		
$\Delta(\text{Log non performing consumption loans (1)})$			0.1539* (0.0203)	
$\Delta(\text{Log performing mortgage loans (1)})$				-0.1287* (0.0269)
Controls				
$\Delta(\text{Homicide rate})$	-0.0017* (0.0005)	-0.0013* (0.0005)	-0.001* (0.0005)	-0.0013** (0.0006)
$\Delta(\text{Public expenditure in investment (1)})$	-3.1371* (0.3377)	-3.0708* (0.3365)	-2.9646*** (0.3800)	-2.9059* (0.3585)
Prob (Chi2)	0.0000	0.0000	0.0000	0.0000
R-square	0.1005	0.1390	0.2494	0.1159

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

On the side of the liabilities, considering the logarithm of deposits, in the fixed effects regression as well as in the instrumental variables regression, deposits have an important and negative effect on poverty. From column 1 in table 4, it can be said that a 1% increase of deposits contributes to a decrease in the NBI level in 0.024. In this model the R^2 has a high value and all coefficients are statistically significant at 1%. Again, public investment in road infrastructure has a positive coefficient, while for the homicide rate it is negative.

Table 4. Banking Sector Deposits and the Unsatisfied Basic Needs Index (NBI)

Dependent variable: Unsatisfied Basic Needs Index (NBI)

	1	2
	Fixed Effects	IV
Log deposits (1)	-2.4312* (0.1105)	-5.6439* (0.2268)
Controls		
Homicide rate	-0.0027* (0.0009)	-0.0016* (0.0009)
Public expenditure in investment	-8.0754* (0.3924)	-3.7895* (0.4842)
Constant	54.4802* (0.5356)	69.5327*** (1.0954)
Prob (F-test)	0.0000	0.0000
R-square	0.3086	0.1403

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

In column 2, table 4, the instrument used is the level of deposits from the previous year. It shows the regression of the NBI against deposits, and determines that a 1% increase in bank deposits reduces de NBI for the following year in 0.056.

Table 5. First Differences: deposits and the Unsatisfied Basic Needs Index (NBI)

Dependent Variable: Change in the Unsatisfied Basic Needs Index (NBI)

	First Differences
$\Delta(\text{Log Deposits (1)})$	-0.8205* (0.0638)
Controls	
$\Delta(\text{Homicide rate})$	-0.0009** (0.0004)
$\Delta(\text{Public expenditure in investment (1)})$	-3.6227* (0.2526)
Prob (Chi2)	0.0000
R-square	0.2770

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

According to the first differences model presented in table 5, the change in local financial development, measured with bank deposits negatively influences the unsatisfied basic needs index. These results show that a 1% increase in the size of them determines a 0.0082 reduction of the NBI. This result is consistent with the level regressions (where we took the variables in levels instead of changes) documented before.

3.4.2 Human Capital Investment: secondary education

Table 6. Banking sector loans and secondary education gross enrolment ratio

Dependent Variable: Secondary education gross enrolment ratio

	1 IV	2 Fixed Effects	3 IV
Log performing commercial loans (1)	0.0869* (0.0207)		
Log non performing consumption loans (1)		-0.0024 (0.0016)	
Log performing mortgage loans (1)			0.0106** (0.0042)
Controls			
Homicide rate	-0.0001 (0.0001)	-0.0001* (0.0000)	-0.0001 (0.0000)
Public expenditure in investment (1)	0.1678* (0.0260)	0.205* (0.0328)	0.169* (0.0268)
Constant	0.2835* (0.0822)	0.6126* (0.0062)	0.5946* (0.0065)
Prob (F-test)	0.0000	0.0000	0.0000
R-square		0.0252	0.0226

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

Secondary education gross enrolment ratios are vulnerable to economic crises and poverty, since these promote entrance into the job market at an early age, and for low income households, the opportunity cost of educating their children has a higher cost. But precisely, higher education levels are essential tools for families to overcome poverty. In this sense, Maldonado et al. (2003), in their study of the effects microfinances have on Bolivia's rural households' demands for education, find that they have a positive effect over the demand of secondary education. This is based on the idea that microfinances improve the households' income generating capacities and their abilities to face adverse shocks, that is have better risk management. However, this study also finds that microfinance programs that promote agriculture and small firm development in very low income sectors may have a negative effect on the demand for secondary education. This happens because when having better perspectives for the firm or agricultural production, these households face higher potential profits from child labor today than from the profits that would be obtained in the future as a result of giving these children a better education.

Therefore, according to the results in table 6, it can be said that access to credit, in particular access to performing commercial and mortgage loans, does have a positive effect over the demand for education. Column 1, in which performing commercial loans are instruments, shows that a 1% growth of this variable generates a 0.0009 increase in secondary education gross enrolment ratios. If the growth in loans were 10%, the increase in enrolment would be 1.56%; for the average municipality, with a population of 4435 with ages between 12 and 17, this increase would mean 39 more children would attend secondary school.

In this model a higher homicide rate generates smaller enrolment ratios, but the estimation is not statistically significant; the same happens with public investment in road infrastructure, which has the expected sign but it is not statistically significant. Column 3 shows that a 1% increase in performing mortgage loans results in a 0.0001 increase in secondary enrolment ratios. This estimator is significant only at the 5% levels, in addition, the estimators for the homicide rate and public investment in road infrastructure are not significant.

According to what was expected, results in column 2 in table 6 show that the relationship between secondary education gross enrolment ratio and non performing consumption loans is indeed negative, which indicates that financial crises have a negative influence over households' investment in human capital. However, the estimator for this variable is not significant.

When considering the results from the side of the liabilities it is evident that a household's level of savings is positively related with keeping their children in school for a longer period of time. This can be seen in table 7, according to it a 1% increase in the level of deposits generates a 0.00033 increase in the secondary education gross enrolment ratios. Nevertheless, it is important to notice that the model's capacity to explain the problem is rather low, which is evident in low R squareds.

Table 7. Bank Deposits and secondary education gross enrolment ratios

Dependent Variable: Secondary Education Gross Enrolment Ratio

	IV
Log deposits (1)	0.0328*
	(0.0085)
Controls	
Homicide rate	-0.0001*
	(0.0000)
Public expenditure in investment (1)	0.1376*
	(0.0182)
Constant	0.4443*
	(0.0412)
Prob (F-test)	0.0000
R-square	0.0392

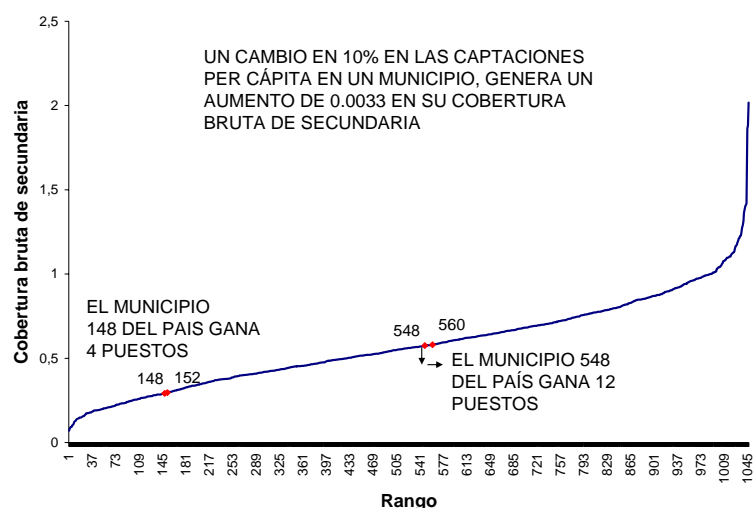
(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

Graph 11 presents the municipalities of the sample organized by their enrolment ratios and two examples of how these ratios would increase given increases in deposits. With the municipality ranked 148, with a 0.29 ratio, if its bank deposits increased a 10%, it would have a 0.3 enrolment ratio and would move up to the 152 place in the ranking. When considering the municipality ranked 548, with a 0.57 ratio, with the same increase in its bank deposits the new ratio would be 0.582. This increment in bank deposits for the average municipality, which has a population of 4435 aged between 12 to 17, would result in a 0.6% improvement in enrolment and 15 more children receiving secondary education.

Graph 11. Deposits and secondary education gross enrolment ratios



3.4.3 Economic Performance of Productive Units: Industry and Commerce Tax Revenues

The Industry and Commerce Tax Revenues (ICA) were used as indicators of the level of economic activity of the municipalities. When running the regressions of this tax against the different types of loans, it can be seen that it does depend on the level of local financial development. For example, according to table 8 a 10% increase in net loans generates an

increase in revenues of COP 340. It is important to note that the Industry and Commerce Tax revenues have a range between 0 and 498,933 COP, and the median municipality has revenues of 1,185 COP, considering this an increase of 340 COP is considerable. When disaggregating the loans it is evident that performing commercial loans are the ones that have the strongest effect over ICA; if it grows 10% revenues would increase 730 COP per municipality. The effect of performing mortgage loans is smaller than that of commercial loans; according to the fixed effects regression if it increases a 10% the revenues would go up 87 COP. According to the regression with the instrumental variable the effect of this kind of loans is higher, with a 10% increase the revenues would grow in 125 COP. For a 10% increase in non performing consumption loans, the decrease in the revenues for the average municipality (with per capita revenues of 7,836 COP) is only of 0.6178%, which is 48 COP.

Table 8. Banking sector loans and Industry and Commerce tax revenues

Dependent Variable: Industry and Commerce Tax Revenues

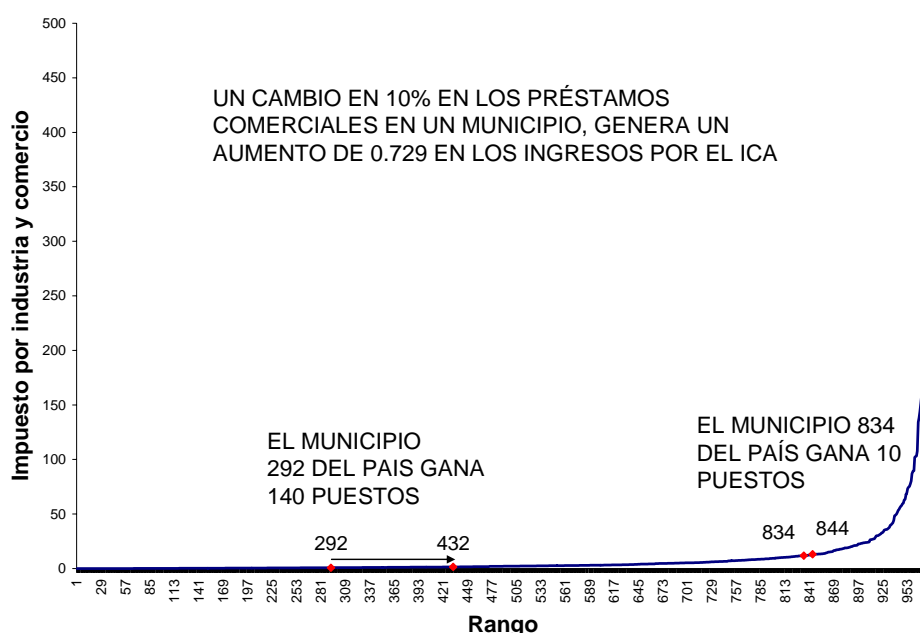
	1	2	3	4	5
	IV	IV	Fixed Effects	Fixed Effects	IV
Log net loans (1)	3.3513* (1.0326)				
Log performing commercial loans (1)		7.2927* (2.0068)			
Log non performing consumption loans (1)			-0.4837** (0.2172)		
Log performing mortgage loans (1)				0.7474* (0.2625)	1.2463* (0.4165)
Controls					
Homicide Rate	0.0032 (0.0051)	0.0066 (0.0053)	0.0032 (0.0060)	0.0026 (0.0064)	0.0047 (0.0049)
Public expenditure in investment (1)	14.388* (2.2000)	21.251* (2.5141)	18.1827* (4.4375)	-7.4068** (2.9781)	28.2789* (2.6327)
Constant	-7.7336*** (4.6086)	-22.3596* (7.9676)	7.1318* (0.8433)	9.0677* (0.6927)	2.948* (0.6400)
Prob (F-test)	0.0000	0.0000	0.0000	0.0055	0.0000
R-square			0.0134	0.0061	0.0722

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

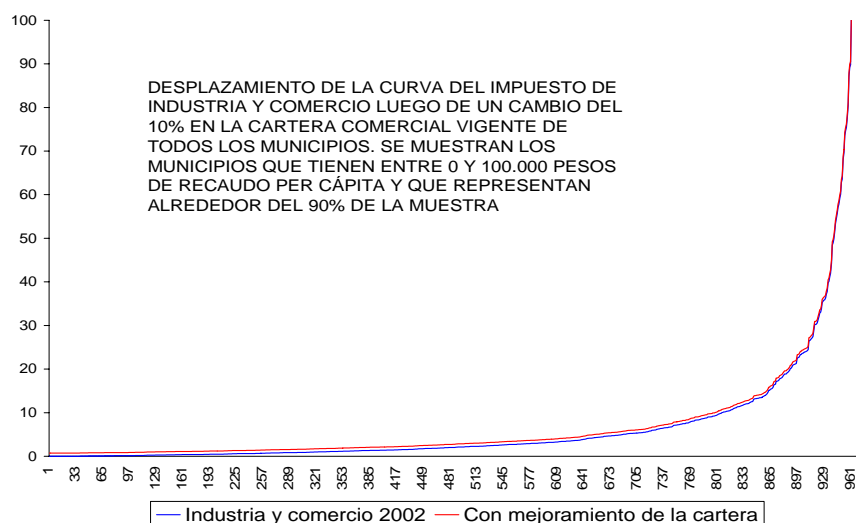
The coefficients without asterisk are not statistically significant.

Graph 12. Performing Commercial loans and Industry and Commerce Tax Revenues



Graph 12 shows the level of revenues derived from the Industry and Commerce Tax for all the municipalities and evidences the influence of performing commercial loans over these. If these loans were to grow a 10%, for municipality number 292 (with revenues of COP 860) the increase would make it improve 140 places, with revenues of COP 1,593. The change for the municipality number 834 would be of 10 places, with which it improves from revenues of COP 11,947 to 12,676. Considering the average municipality, which has revenues of COP 7,836, the increase would be 9.3%, ending with COP 8,565 revenues.

Graph 13. Performing Commercial loans and Industry and Commerce Tax revenues for each municipality



Notes: the ICA data are for 2002.

Graph 13 shows how the Industry and Commerce tax revenues curve moves when the growth in performing commercial loans happens in every municipality. This graph

evidences that municipalities with revenues from 0 to 100,000 COP are the ones that obtain the most benefits from this growth in loans.

Table 9. First differences: loans and Industry and Commerce tax revenues

Dependent Variable: change in the Industry and Commerce Tax Revenues	First Differences		
	1	2	3
$\Delta(\text{Log performing commercial loans (1)})$	1.0981* (0.3915)		
$\Delta(\text{Log non performing consumption loans (1)})$		-0.6552* (0.2422)	
$\Delta(\text{Log performing mortgage loans (1)})$			0.6065* (0.2017)
Controls			
$\Delta(\text{Homicide rate})$	0.0057 (0.0044)	0.0046 (0.0060)	0.0095** (0.0043)
$\Delta(\text{Public expenditure in investment (1)})$	-5.681** (2.7930)	-22.2497* (4.5355)	-0.8933 (2.6858)
Prob (Chi2)	0.0045	0.0000	0.0025
R-square	0.0064	0.0022	0.0028

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

To study the influence of the change in loans over the change in the Industry and Commerce Tax Revenues a first differences model was used. In accordance with the results from previous regressions in table 9 it can be seen that with the first differences model the revenues depend positively on performing loans, in this case commercial and mortgage loans, and negatively on non performing loans, specially the consumption kind. Performing commercial loans are the ones that have the strongest effect over the revenues: if they increase in 10%, the revenues in turn increase 110 COP, while if the performing mortgage loans are the ones that grow in the same proportion, revenues would only increase 61 COP. Now, when the 10% increase comes from the non performing consumption loans, the tax revenues decrease in only 70 COP. For these three regressions all the estimators are statistically significant, except for the homicide rate in columns 1 and 2 and public expenditure in investment in column three. Unlike what was obtained in the fixed effects and instrumental variables regressions, with the first differences model the effect of public expenditure in investment over tax revenues is negative, however, in this case the estimators are not statistically significant for the three regressions and the model used refers to the changes from one year to the next, and not annual levels.

Table 10. Banking sector deposits and Industry and Commerce tax revenues
Dependent Variable: Industry and Commerce Tax Revenues

	1	2
	Fixed Effects	IV
Log deposits (1)	4.8562* (0.6240)	9.4281* (1.2143)
Controls		
Homicide rate	-0.0035 (0.0049)	-0.0011 (0.0050)
Public expenditure in investment (1)	9.9702* (2.2153)	2.2885 (2.5926)
Constant	-16.3825* (3.0238)	-38.2396* (5.8648)
Prob (F-test)	0.0000	0.0000
R-square	0.0365	0.0190

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

The effect of local financial development on Industry and Commerce tax revenues was also seen from the side of the deposits, the results of the fixed effects regression show that a 10% increase in deposits determine an increase in revenues of 486 COP. With the instrumental variables regression, where the same local financial development variable lagged one period is used as instrument, it can be seen that a 10% increase in savings the revenues increase in 943 COP. For these two models it was found again that the estimators for the homicide rate are not significant and for public expenditure in investment they had the opposite sign from what was expected and were statistically significant.

Table 11. First differences: deposits and Industry and Commerce Tax Revenues
Dependent Variable: change in the Industry and Commerce Tax Revenues

	First Differences
$\Delta(\text{Log deposits (1)})$	3.5234* (0.7495)
Controls	
$\Delta(\text{Homicide rate})$	0.0049 (0.0047)
$\Delta(\text{Public expenditure in investment (1)})$	-6.0924** (2.9666)
Prob (Chi2)	0.0000
R-square	0.0147

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without asterisk are not statistically significant.

According to the results shown in table 11, which show a first differences model, the change in deposits exerts a strong and positive influence over the change in revenues. In effect, after a 10% growth in deposits revenues increase in 352 COP and the estimator is statistically significant. The same as with the first differences models that relate loans and

ICA revenues, the change in public expenditure in investment has a negative influence over revenues, and the estimator is significant at the 5% level.

3.4.4 Net Firm Creation

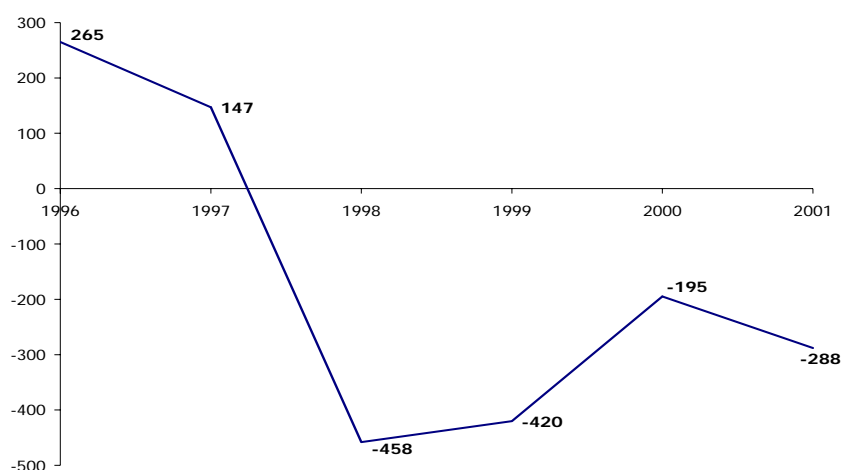
Lastly, we tried to identify how local banking development determines a higher or lower level of creation of firms per year. For this purpose we used the data provided by DANE which refers to the number of industrial establishments per municipality per year. From this data we obtained the net creation (or destruction) of firms per year in each municipality. For this study we only considered those municipalities that present at least one establishment each year, because even though DANE's survey is a census, we lacked information about whether the municipalities that presented no establishments indeed they had closed or the existent had not answered to the survey.

It is important to clarify that the period under study can be considered atypical in relation to firm creation. Besides being a time of economic and financial crisis the data show that between 1996 and 2001 instead of creating establishments, there were many destroyed (in net terms more establishments disappeared than were created). Only in the first two years of this period did the total number of firms increase in relation to the previous year, and in most municipalities the change was always negative. In graph 13 it can be seen the number of establishments created or destroyed per year at the national level.

In first instance, we wanted to see how the level of loans determined firm creation in the municipalities. We used both performing non performing loans and saw how each one, whether they were commercial, consumption or mortgage loans, influenced over the creation of firms. For this purpose a fixed effects model was used, where the dependent variable was the change in the number of establishments, while the independent variables were the different types of performing and non performing loans; and as control variables both the number of FARC attacks and public expenditure in investment were used. Unlike the case with the previously used models, the estimator for the variable homicide rate was not significant, while for FARC attacks it was. When using performing loans for the regressions, the estimators for these variables were negative. This seems counterintuitive, since it leads to believe that the higher the level of performing loans the level of firm creation is lower. However, these estimators are not statistically significant, except for mortgage loans; this is shown in table 12.

As it can be seen in table 12, the results of the regressions for non performing commercial and mortgage loans did report statistically significant estimators. For these loans the estimators are negative in both cases, this coincides with what was expected. This means that a higher level of non performing loans determines a lower number of firms in the municipalities (or a higher level of destruction compared to its creation). For the case of non performing consumption loans the estimator was also negative but it was not significant.

Graph 14. Establishment creation at the national level



Source: Annual Manufacturing Survey, DANE.

Table 12. The level of loans in the banking sector and net firm creation

Dependent Variable: change in the number of establishments

	1	2	3
	Fixed Effects		
Log non performing commercial loans (1)	-0.6516*** (0.3521)		
Log performing mortgage loans (1)		-0.8863* (0.3228)	
Log non performing mortgage loans (1)			-0.9768* (0.3076)
Controls			
Farc	0.5324* (0.1513)	0.5260* (0.1563)	0.5900* (0.1868)
Public expenditure in investment (1)	-21.5004* (7.4027)	-23.1015* (8.7403)	-26.8619** (11.2278)
Constant	1.7643*** (1.0689)	2.2192** (1.0960)	0.7660 (1.3489)
Prob (F-test)	0.0000	0.0000	0.0000
R-square	0.0321	0.0407	0.0535

(1) These variables are in per capita terms

* 1% Significance, ** 5% Significance, *** 10% Significance

The coefficients without an asterisk are not statistically significant.

In this section of the study we made special emphasis on the influence of performing and non performing commercial loans, because these are the most important variables for firms, since they reflect the access to idiosyncratic credit. Therefore, we tried to see the effect of the growth or decrease of these types of loans over the creation of firms. For this purpose we used a fixed effects model in which the change in performing or non performing commercial loans is the independent variable and as control variables, the number of FARC attacks and public expenditure in investment were used.

The results of the two regressions are shown in table 13 even though in neither case were the estimators significant for the local financial development variables. Nonetheless, it can be seen that in both regressions the estimators for these variables have the expected signs, in other words, they show that the growth of performing commercial loans contributes

positively to firm creation; while non performing commercial loans have a negative influence over this.

Table 13. The change in commercial loans of the banking sector and net firm creation

Dependent Variable: change in the number of establishments		
	1	2
	Fixed Effects	
$\Delta(\text{Log performing commercial loans (1)})$	0.1241 (0.5812)	
$\Delta(\text{Log non performing commercial loans (1)})$		-0.0105 (0.3206)
Controls		
Farc	0.5256* (0.1522)	0.5704* (0.1642)
Public expenditure in investment (1)	-26.2051* (8.2737)	-27.8398* (8.9735)
Constant	1.1327 (1.0489)	1.1868 (1.1224)
Prob (F-test)	0.0000	0.0000
R-square	0.0299	0.0309

(1) These variables are in per capita terms

* 1% Significance

The coefficients without an asterisk are not statistically significant.

According to what was stated above the results we obtained are not conclusive, this partially has to do with the fact that the period we considered is atypical. In this period there were drastic changes between years, in one year there were created 150 establishments, and in the next almost 400 were destroyed in the country. For the most part, this a period of net destruction of firms, so instead of seeing what contributes to the creation of establishments, we see what contributed to their elimination. However, data about the firms at the municipal level, that would allow to analyze what happens to them when from one year to the next the number of reported establishments in each municipality changes, was not available. In other words, it can not be seen if the decrease in the number of firms is due to their disappearance, their fusion with other firms, the fact that they moved to a different municipality or their neglect to answer the survey in time.

4. Concluding Remarks

The development of the financial system is considered a key element for the performance of economic agents and for the growth of the economy. This is not only a macroeconomic effect, since the access to mainstream financial services, from the side of deposits as well as the side of credit, is seen as determinant for the economic development of individuals and households, mainly those with a low level of income. In this study we tried to see how local financial development influences social variables, such as NBI, households' investment in the education of their children, defined as the decision to help them obtain secondary level education, the economic performance of productive units and firm creation.

The results confirm the positive effect the banking sector exerts on the variables considered. It was possible to show that access to credit and means to deposit savings in the banking system contributes to reduce the level of poverty. Likewise, the access to financial services has a positive influence over households' decisions to maintain their children in school. We were able to see that performing loans and deposits have a positive influence over Industry and Commerce Tax revenues, which reflects the influence of the access to these instruments on the activity and performance of firms. Lastly, the creation of industrial firms was found to be related to financial performance seen as the condition of loans at the municipal level; in other words, non performing commercial and mortgage loans have a negative influence over the creation of firms (or promote their disappearance).

It is important to emphasize that this type of study had not been done in Colombia until now and the data base created for this purpose is a big contribution for future studies on the subject, given that besides the variables that refer to the banking sector it includes information about social, economic, fiscal and violence indicators. However, in order to delve deeper in this area it is crucial to resort to sources of information that are not yet available. From Guiso et al. (2003) it was concluded that surveys that inquire about the relation of households and small firms with the financial sector and vice versa may contribute to a better knowledge of the impact the development of the financial system has over the growth and social conditions of municipalities.

The financial system's main contribution to social prosperity is the provision of more financial technologies to the neediest portion of the population. This requires a conscious strategy from the intermediaries. This a front through which the banking business should advance in the future. The survey created in association with Asobancaria can be useful to have a better knowledge of the strategies that can be used to increase this population's access to these technologies and to identify which are the obstacles and challenges the banking sector faces in order to achieve this.

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