How much do SMEs borrow from the Banking System in Argentina?

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Abstract

Using data from the Argentine Central Banks' Central de Deudores, we study bank lending to SMEs and to larger firms over the period July 1998 to 2000. We consider three definitions of SMEs: system wide debt of less than $2.5 million, less than 200 workers, and a bivarate definitions that combines those two ones.

We compare lending to SMEs by banks in groups determined by geographical and ownership characteristics and find little bias against SMEs from bank consolidation or from increased international ownership. We did find that during the business downturn delimited by our data, that large firm borrowing crowded out SMEs in the early period and government borrowing crowded out private borrowing over the whole period.

Credit quality of bank portfolios has been worse than portfolios of larger firms and has worsened during the downturn. Portfolios of government owned banks have had worse credit quality than private banks for both small and large firms.

JEL Classification : G21, E51

Resumen

Utilizando la información de la Central de Deudores del BCRA, estudiamos el crédito bancario a las PyMEs durante el período Junio1998-Junio 2000. Clasificamos a las empresas en PyMEs y grandes utilizando tres criterios: deuda con el sistema financiero, número de empleados y un criterio bivariado, que combina los anteriores.

Diferenciando a los bancos según su alcance geográfico y según el origen del capital, evaluamos los efectos de la consolidación y la internacionalización bancaria sobre la oferta de crédito a PyMEs. No encontramos evidencia de un sesgo anti-PyMEs en ambos procesos.

Encontramos evidencia de un desplazamiento del mercado de crédito por parte de las firmas grandes sobre las PyMEs durante la desaceleración de la economía que predominó en los años bajo análisis, aunque el rasgo más distintivo del período parece haber sido el desplazamiento del mercado de crédito del sector privado por parte del sector público.

Clasificación JEL: G21, E51

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1. Introduction

There is considerable agreement in the banking literature that bank lending to small and medium firms (SMEs) is special. Aside from theoretical arguments relating to asymmetric information problems present in the lender –borrower relationship which are typically more intensive for SMEs, there is an extended empirical literature for developed countries that provides ample evidence about the particular characteristics of lending to SMEs. This literature has mostly concentrated on issues such as the fraction of bank lending that goes to SMEs, the differences in lending to SMEs by large and small banks, the number of banks from which SMEs borrow from, and the effects of the cyclical movements of the economy on the access of SMEs to banks financing.

This paper is an attempt to address some of these issues for Argentine SMEs making use of a data set that contains valuable information about lender and borrower characteristics. More specifically, because we have had access to data on the number of workers by debtor firms we are able to construct three different SME definitions and compare them with the one that is most widely used in the literature, which is linked to the amount of loans from individual banks, rather than to debtor firm characteristics. [1] This restricted definition has been imposed by lack of data availability, but most authors using this definition recognize that it includes many loans to large firms and misses some larger loans to small firms, and find themselves without data to resolve this problem. Restricting ourselves to data on private non financial firms, we consider three definitions of SMEs: total debt with the financial system, number of workers, and a bivariate definition that combines these two. We compare these three definitions with the conventional one, based on individual bank lending, and evaluate how they differ in determining the measured fraction of total financial system lending that goes to SMEs. Finally, we provide a measure of the divergence between them.

We also develop a descriptive analysis of lending to Argentine SMEs for the period June 1998-June 2000. This is a rich period to study the behavior of credit to SMEs, since it encompasses the end of an economic expansion and a recession, a cyclical movement of the Argentine economy mainly driven by external financial and real shocks, such as the Russian crisis and its consequences, the Brazilian devaluation of January 1999 and a negative terms of trade shock, all of which had a strong negative effect on domestic demand, and in particular, on investment. Aggregate figures of bank lending indicate a strong crowding out effect by the public sector, which was severely restricted to its access to international markets financing during much of this period.

Focusing on the issue of credit to SMEs vs. credit to large firms, we also analyze the evolution of credit to SMEs and large firms over the period and the behavior of credit to SMEs within economic sectors.

During the period under consideration the banking sector was subject to a process of consolidation and internationalization, initiated after the banking crisis that followed the Mexican devaluation of December 1994. To study the impact to this process on lending to SMEs, and to investigate the relationship between lender characteristics and bank credit to SMEs, we classify banks by geographical coverage and type of ownership. We then analyze the nexus between lenders' characteristics and what we call a "pro SMEs" bias by banks. We look at market shares

and credit portfolio allocation to SMEs and how they evolved over the period, to evaluate the impact of consolidation and internationalization on credit to SMEs.

The credit quality of SMEs is also an issue of interest. The literature suggests that their relative opaqueness could make it more difficult to evaluate and monitor them. For this reason credit portfolios allocated to SMEs are expected to be of poorer quality than those allocated to large firms. We study the differences in the credit quality of both types of borrowers and also look at how they behaved among different groups of banks. Finally, we also look at the credit quality of SMEs and large firms by borrowers' economic sector.

After analyzing credit to private firms we resent a broader picture of credit supply including the public sector and look at the way in which credit to the three sectors: SMEs, large firms and the public sector behaved over the business cycle, we find evidence of a strong crowding out effect by the public sector, driving out private firms of the bank credit market, over the whole period and a crowding out effect by large firms driving out SMEs, during the first year of the recession.

2. Classifying firms as large and SMEs.

Exactly when a firm is a SME is not precise, not just from the point of view of credit, but in general. Depending on the country, firms are classified as SMEs using such measures as the number of workers, the volume of sales, total assets, or combinations of these three. Univariate criteria based on the use of a resource such as capital or labor can be misleading because of differences in technologies across firms. These technological differences can also extend to credit needs so that two firms that appear similar under one definition can have very different credit profiles.

Firms with similar characteristics may use the financial system to different degrees for different reasons. Some are able (and choose) to deal with many banks while others deal with one or few banks. Having access to or choosing different types of lenders: small or large, public or private, local or regional banks could also influence firm borrowing from the banking system. Our data set permits us to consider this question once we have taken firm size (as measured by number of workers) and firm sector into account.

We consider three definitions of a small and medium firm. These three definitions are based on the number of workers in the firm, total firm borrowing from the banking system, and a combination of these. We then compare them with the most widely used definition, based on lending from individual banks.

1.Workers: Firms reporting 200 or fewer workers are defined as SMEs. Note that this number can include both full time and part time workers.

2.Total borrowing from the banking system: Firms with less than $2.5 million in lending from banks and financial institutions are defined as SMEs.

3.Bivariate definition combinating the number of workers and total borrowing: The Argentine legal definition of a SME is a multivariate definition, constructed as a weighed average of number of workers, total assets, and total annual sales:

$$\left(10\frac{\#employees}{employee\ weight}\cdot 10\frac{total\ assets}{asset\ weight}\cdot 10\frac{annual\ sales}{sales\ weight}\right)^{\frac{1}{3}},$$

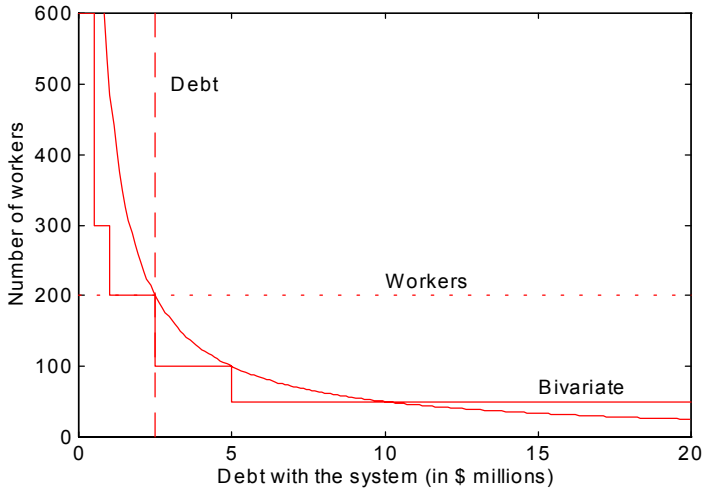
where a SME is a firm with a weighted average less than 10. Since we do not have data on the last two of these criteria, we substitute total borrowing and use:

$$\left(10\frac{\#employees}{employee\ weight}\cdot 10\frac{total\ debt}{total\ debt\ weight}\right)^{\frac{1}{2}}.$$

as a bivariate definition. For the workers weight, we use 200, an average of the weights used in the legal definition. Firm surveys in Argentina show that those near the frontier of the legal definition have total debt with the financial system equal to about 25% of their assets. Given that the asset weight in the legal formula is $10 million, we use $2.5 million as the total debt weight. In practice when we deal with the population, we use a step function that approximates the curve defined above.

Our three definitions are three different ways of dividing the same information space: that of total borrowing and number of workers. Figure 1 shows how the three definitions differ in partitioning into SMEs and large firms.

Figure 1 –Partitioning of total borrowing space according to different SMEs definitions.



These three SMEs definitions can be compared with the most widely used in the literature on borrowing SMEs, which considers loans to individual firms that total less than $1 million from an individual bank as loans to SMEs. In this case the SMEs definition is linked to borrowing characteristics from a single bank rather than to firms characteristics. This is the definition used by the SBA in the United States (among others) when it reports bank lending to SMEs.

2.1. The data

The data used here to separate firms according to the criteria described above come from the "Central de Deudores del Sistema Financiero del Banco Central de la República Argentina" and

correspond to the period June 1998-June 2000. However in this section we restrict our analysis to June 2000. This data base contains reports from all banks and financial institutions on all debts of $50 or more going back to the beginning of 1998. For firms, the information includes the tax identification number, firm name and address, the amount of outstanding debt, the situation (1, normal, to 5, irrecoverable), the activity of the firm, the number of workers. While the information on outstanding debt, situation, and guarantee are of reasonably high quality, the data on number of workers and activity are of lower quality.[2] After purging records with suspicious or incomplete data, we were left with a sample of 20751 complete records out of an original 108.405. This complete set is biased towards the larger firms. Banks have been reporting on Principal Debtors (those with debts of more than $200,000 with the financial system) for a longer period and are asked to meet additional data requirements for them, so coverage on larger firms is more complete. On average, larger firms operate a larger number of banks and therefore are more likely to have dealt with a bank that is reporting the number of workers and activity in an acceptable way. While Principal Debtors make up only 12.5% of the population in the "Central de Deudores", they make up 32.2% of the sample.

Table 1 - Participation of SMEs in the debt of the Non Financial Companies according to alternative definitions.

	1. Number of workers	*2. Total debt*	*3. Debt per bank*	*4. Combined definition*
Fraction of firms defined as SMEs	94.9%	92.5%	n.a.	93.8%
Fraction of debt to SMEs (sample)	44.3%	18.2%	23.1%	25.1%
Fraction of debt to SMEs (population or expansion to population)	52.0%	28.6%	31.2%	35.2%

Source: Based on data from the Central de Deudores for June 2000

The three definitions of SME: number of workers, total debt and the bivariate definition result in approximately the same fraction of firms being classified as SMEs.[3] The first line of results in Table 1 presents these figures. The picture is quite different if we consider the fraction of debt assigned to SME according to the different definitions, since significant differences appear in some of the cases depending on which definition is used. We present two calculations for the fraction of debt going to SMEs: one comes from the sample and can be calculated for each of the four definition and the other comes form the population and can only be calculated for definitions 2 and 3.

The results for the population come from a projection of the sample onto the full data set in an effort to correct for the above mentioned bias. This projection was done by first assigning firms to one of ten categories determined by their total borrowing and then summing the total borrowing in each category. From the sample, we estimate a distribution of firms by number of workers for each loan category and distribute the total loans from the full population according to that distribution. From this projection we calculate the fraction of loans going to SMEs. The third line of Table 1 presents the fraction of loans going to SMEs for definitions 1 and 4 as calculated from this projection of the distribution of the sample onto the population.

The information presented in Table 1 supports the conjecture that the sample under represents the fraction of financial system debt that goes to SMEs. By every one of our definitions, the

sample results in a fraction of lending to SMEs that is on the order of 8 to 10 percentage points less than when the population (or projection onto the sample) is used.

Ordering our four definitions by the importance they give to financial system lending to SMEs, Table 1 shows that the least inclusive is our choice of total debt followed by, in ascending order: loans of $1 million or less, the combined, and number of workers. The difference between number of workers and total debt is more than 23 percentage points whether the sample or the projection onto the population is used. One would need to increase the cutoff of total lending to 15.7 millions with the financial system in order for the fraction going to SMEs be equal to that given by the number of worker definition. The result given by total debt is quite close to that given by total loans of less than $1 million: the difference is only 2.6 percentage points.

2.2. Comparisons between definitions

One of the principle concerns of this paper is to measure the divergence between the four definitions in separating firms into large and small. In order to do so, we work by pairs, calculating the "error" made by one definition compared to another. Table 2 indicates how to interpret the results of the calculation of this errors, presented in Tables 3 and 4. Tables 3 and 4 shows the fraction of loans counted as going to SMEs under each definition that are excluded under the other definitions (are counted as loans to large firms). Table 3 presents results based on the sample and Table 4 those based on the population (which can only be done for the definitions based on total debt with the financial system and loans under $1 million). For example, data in the first solid box of Table 3 indicates that loans which make up 27.2% of total lending are counted as going to SMEs in the definition by workers but are excluded in the definition by total debt. At the same time, loans that total 1.1% of total debt are counted as going to SMEs in the definition by total debt but are not included in the definition by workers.

Table 2 - How to interpret the results

	SME according to definition B	***LEs according to definition B***
SMEs according to definition A	*Fraction of loans going to SMEs according to both definitions*	*Fraction of loans counted as going to SMEs by definition A but not by definition B*
LEs according to definition A	*Fraction of loans counted as going to SMEs by definition B but not by definition A*	*Fraction of loans going to LEs according to both definitions*

A first observation is that, not surprisingly, the definition by number of workers is least likely to include large firms based on any of the other definitions in its measure of loans going to SMEs. The definition by total debt is least likely to count as loans to SMEs loans that go to large firms based on the other definitions. In the case of the sample (Table 3), the combined definition and that by bank debt of $1 million or less are the most similar in total but this occurs because of fairly large countervailing errors (measured against the amount of lending that both count as

going to SMEs). Calculating "errors" for the population (or projections to the population), indicate that the definition by total debt with the financial system is closest to that by bank debt of $1 million or less. An interesting observation is that the four definitions differ significantly less when identifying large firms than small firms.

Table 3 - Comparing Definitions based on Sample

	SME by total debt	*LE by total debt*	*SME by bank debt*	*LE by bank debt*	*SME by combined*	*LE by combined*
SME by workers	*17.1%*	*27.2%*	*19.6%*	*24.7%*	*24.9%*	*19.4%*
LE by workers	*1.1%*	*54.6%*	*3.4%*	*52.3%*	*0.2%*	*55.5%*
SME by total debt			*15.9%*	*2.3%*	*17.3%*	*0.9%*
LE by total debt			*7.2%*	*74.6%*	*7.8%*	*74.0%*
SME by bank debt					*17.7%*	*5.4%*
LE by bank debt					*7.4%*	*69.5%*

Source: Calculations from the Central de Deudores of June 2000

Table 4 - Comparing Definitions based on Population

	SME by bank debt	*LE by bank debt*
SME by total debt	*24.7%*	*3.9%*
LE by total debt	*5.5%*	*65.9%*

Source: Calculations from the Central de Deudores of June 2000

3. How much do SMEs borrow from banks?

We present in this section a descriptive analysis of banking system credit from the to SMEs. Our sample consists on three points in time: June 1998, June 1999 and June 2000. For these three points we have the amount of outstanding debt of each firm by bank, the activity of the firm and the situation of the debt. This information relates to private non financial firms. We also able to identify the banks each firm operates with. This information allows us to study: i) the evolution of credit to SMEs and large firms over the period of analysis; ii) the behavior of credit to SMEs that belong to different sectors, iii) groups of banks and credit to SMEs; iv) credit portfolio quality of SMEs and large firms by bank group and v) credit portfolio quality of SMEs and large firms by sector. After analyzing credit to private companies we also present a broader

picture of credit supply including the public sector and then look at the way in which credit to the three sectors: SME, large firms and the public sector behave along the business cycle. We find evidence of a crowding out effect.

3.1. Credit to SMEs vs Large firms

Our period of analysis encompasses the end of a cyclical expansion of the economy (from June 1998 to September 1998) and a larger sub-period (from October 1998 to June 2000) corresponding to a recessionary phase of the economic cycle, associated to external financial and real shock to the Argentine economy (a negative shock in the terms of trade, the Russian crisis and the Brazilian devaluation of January 1999), that severely hurt domestic demand, and in particular private sector investment. Table 5 shows that total credit to private firms, which was U$S 43963 millions in June 1998, decreased 5.4% over the period of analysis. This fall in credit to private firms was, however, more than compensated by a tremendous increase in credit to the public sector, which grew by 128% and by an increase of 25.3% in credit to individuals between June 1998 and June 2000. [4] This crowding out effect well be discussed in more detail later, when we look at how credit to SME evolved over the business cycle.

How did credit to SMEs behaved over this period? The answer to this questions depends on which definition of SMEs we adopt. According to the debt definition, credit to SMEs decreased by 4.1% between June 1998 and June 2000, less than credit to large firms, which declined by 5.9% over the same period. One the other hand, the bivariate, as well as the number of workers based definition, indicate a larger decrease in credit to SMEs, 7% and 6.4% respectively, that in credit to large firms (4.6% and 4.3% respectively). Consistently with these results, SMEs lost relative importance in total credit granted to firms, according to the debt definition, but gained relative importance considering the bivariate and the "number of workers" definitions.

How credit to SMEs and large firms participate in total lending to non-financial companies? The three definitions show a quite different picture. While the definition of workers indicates than a bit more than 50% of credit to firms goes to SMEs, the debt definition indicates that the proportion is significantly lower (around 28%) and the bivariate one is closer to the debt definition.

Table 5 - Total Credit to SMEs

	% to SMEs			% Change in Credit to SMEs		
	June 1998	*June 1999*	*June 2000*	*June 1999 / June 1998*	*June 2000 / June 1999*	*June 2000 / June 1998*
Workers	52.6%	50.8%	52.0%	-3.2%	-3.3%	-6.4%
Debt	28.2%	27.2%	28.6%	-3.4%	-0.7%	-4.1%
Workers-Debt	35.8%	33.4%	35.2%	-6.5%	-0.4%	-7.0%
Total Credit to Non Financial Companies in millions	43963	44063	41583	0.2%	-5.6%	-5.4%

3.2. Credit to SMEs by sector

According to June 2000 figures (see Table 6), credit to SMEs mainly develops in manufacturing (26.2%), commerce (21.8%), and agriculture and fishing (21.7%). Credit to large firms distributes more uniformly across sectors, but mainly concentrate in manufacturing (36.8), services (13.9%), mining, electricity and water services (12.1%).

Looking within sectors, SMEs are relatively important in agriculture (62.8%) and commerce (43.9%) (see Table 6), while large firms have high relative importance in mining, electricity and water services (93.2%), construction (80.1%) and manufacturing (78.2%).

Table 6 - Economic Sector and Credit to SMEs

	Credit by Sector		*Credit within Sectors*		
Sector	*% in Total Credit to SMEs**	*% in Total Credit to Large Firms*	*% to SMEs**	*% to Large Firms*	
	June 2000		*June 2000*		
Agriculture and Fishing	21.7%	5.0%	62.8%	37.2%	100%
Min. Elect. Gas and Water	2.0%	12.1%	6.1%	93.9%	100%
Industrial Manufacturing	26.2%	36.8%	21.8%	78.2%	100%
Construction	6.8%	10.7%	19.9%	80.1%	100%
Commerce	21.8%	10.9%	43.9%	56.1%	100%
Services	9.9%	13.9%	21.9%	78.1%	100%
Other Services	11.5%	10.5%	30.1%	69.9%	100%
	100.0%	100.0%			

**Debt definition*

Table 7 shows the evolution of credit to SMEs and large firms by sector as well as the corresponding change in GDP. First, sectors producing goods rather than services were the most affected by the recession, with a 18% annual decrease in construction real GDP a 13.5% annual fall in industrial manufacturing real GDP, and 3% in agriculture real GDP. Credit to two of those three sectors decreased, although much more severely in the case of agriculture. Services were less affected by the recession, which the exception of commerce, and there is also a similar behavior in credit to services.

Table 7 - Credit to SMEs by Sector and GDP

	% Change - June 2000 / June 1998			
Sector	*SMEs**	*Large Firms*	*Total Non Financial Companies*	*GDP*
Agriculture and Fishing	9.7%	-35.7%	-13.1%	-3.0%
Min. Elect. Gas and Water	19.0%	10.4%	10.9%	9.1%
Industrial Manufacturing	-0.9%	-10.9%	-8.9%	-13.5%
Construction	-3.1%	34.7%	25.0%	-18.0%
Commerce	-4.2%	-7.5%	-6.1%	-12.6%
Services	8.8%	31.1%	25.5%	1.1%
Other Services	-35.6%	-36.3%	-36.1%	1.8%

**Debt definition*

3.3. Groups of Banks and Credit to SMEs: The Effects of Consolidation and Internationalization on Lending to SMEs

The ability to overcome the asymmetric information problems between borrowers and lenders is particularly relevant in the case of lending to SMEs, given their relative opaqueness compared to large firms. What type of financial institution suits best to deal with lending to small firms, given these particular characteristics, is an issue that has been extensively discussed in the literature on bank lending to SMEs. The theory suggest that small bank are probably best suited than large financial institutions to deal with small business borrowers for different reasons related to their organizational structure, their procedures to extend and monitor credit, or their local nature, which can probably facilitate the development of closer monitoring of small and local firms. An important block of research supports this hypothesis, giving evidence that SMEs tend to borrow from small financial institutions. [5]

Another issue of interest connected with this is that of consolidation and its impact on lending to SMEs. This is of particular relevance in the case of the Argentine banking sector, which experienced a deep restructuring process over the last five years, particularly in the aftermath of the Tequila crisis, including not only consolidation of local banks but also the entrance of an important number of international banks.

With respect to consolidation, the theory suggests that the large banks resulting from consolidation processes would be less inclined to lend to SME, because of some of the reasons previously enumerated. However, the empirical results are mixed. Peek and Rosengreen (1998), for example, find evidence that in half of the mergers between small banks in the US over the last years, credit to SMEs increased. They also find that the probability of an increase in lending to SMEs as a result of a consolidation process increases if the participating banks are small. Strahan and Weston (1998) find, also for the US, that mergers and acquisitions among small banks resulted in more credit to SME, while for large banks the results are not very clear. On the other hand, Berger et. al. (1998) find that while there is a negative impact effect of consolidation in lending to SME, second order effects due to increases in competitors supply, or to the entrance of new competitors to the market in response to consolidation can increase the availability of credit to small business as a consequence of a consolidation process.

To study the relationship between banks characteristics and lending to SME we classified Argentine banks in an effort to capture the relevant characteristics of the industry. We classified banks in two ways, responding to some questions we are trying to answer: I) Do local and in general small banks tend to lend more to SMEs? ii) Did the consolidation process reduce the availability of credit for small firms' iii) Did the internationalization process affect lending to SMEs?

A first distinction which is common to the two classifications is between private versus public ownership, given that public financial institutions are not always profit maximizers. Among public banks we also distinguish between banks that have a nationwide coverage (Nación and Provincia) and public provincial banks, that act as financial agents of provincial governments and whose coverage is basically limited to their respective provinces. The other group that remains invariant across the two classifications is that of non-bank financial institutions.

We first classify banks according to their geographical coverage, distinguishing between regional and nationwide banks. Among those with a nationwide coverage we separate the 5 largest from the rest. This classification only holds for retail banks, that depend on a network to expand their activity, while it is not relevant for wholesale bank, mainly concentrated on lending to large firms for which the lender location is rather unimportant.

Table 8- Market Share in the SME Credit Market by Bank Geographical Coverage

	Workers		***Debt***		***Workers - Debt***	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	16.7%	18.9%	20.4%	23.1%	18.2%	20.9%
Public Provincial Banks	6.0%	3.6%	7.7%	4.8%	7.3%	4.5%
5 Largest Nationwide Retail Banks	28.5%	35.4%	23.9%	30.5%	24.7%	31.4%
Other Nationwide Retail Banks	29.5%	24.5%	26.1%	21.7%	28.5%	23.6%
5 Largest Regional Retail Banks	8.1%	9.1%	11.6%	12.4%	10.5%	11.5%
Other Regional Retail Banks	2.8%	2.0%	3.7%	2.6%	3.4%	2.5%
Wholesale Banks	6.2%	5.0%	3.8%	2.9%	4.7%	3.7%
Other Financial Instituions	1.7%	0.6%	2.1%	0.9%	2.1%	0.8%
Total System	99.5%	99.1%	99.4%	98.9%	99.4%	98.9%

Note: Shares do not exactly sum up 100% because some banks given credit to consumer are not included in the sample.

We present the results of this first classification in Tables 8 and 9 . Table 8 presents the market share of each group of banks in both, the SMEs and the large firms credit markets, while Table 9 shows how the different groups of bank allocate their credit portfolio into credit to SMEs and large firms. In both cases we present the results for the three classification criteria of SMEs.

Table 8 indicates that in June 1998 and for the three definitions of SMEs, the largest market share in the SME credit market corresponded to the group of the other nationwide coverage retail banks, closely followed by the 5 largest nationwide retail banks. This situation reverts in June 2000, being the 5 largest nationwide retail banks the first, followed by the other nationwide retail banks. This change in market share is basically explained by the consolidation process. Nación and Provincia were the third group in importance in June 1998 and gained relative importance during the period. The other group that gained importance over the period was that of the 5 largest regional bank and again, there increase in market share is mainly due to consolidation.

In Table 9 we look at how the credit portfolio of the different groups of banks is allocated between small and large firms, for the three SME definitions. We distinguish here between what we call pro SME banks, in the sense that they allocate more than the average bank to small firms, from the others. A general regularity that appears at first sight, with the exception of the 5 largest regional retail banks, is that the pro SME banks have a relatively low market share in SME market. Table 9 shows that the group of other financial institutions is the one that allocates the most of its portfolio to SMEs. However, the group itself is insignificant in terms of its relative importance (1%) in total credit to SMEs. The 5 largest regional banks follow, whose market share for June 2000 in the SME credit market was closer to 10%, depending on the SME definition. The groups that follow it in importance are the other regional banks and the public provincial banks, which again, are of little importance in terms their market share in the SME credit market. Then the non pro SME groups follow: 5 largest nationwide retail banks and other nationwide retail banks. Going back to Table 8, those last two groups have the largest market shares in credit to SMEs.

In Tables 10 and 11 we present figures for the classification according to bank ownership, that can shed some light about the effects of internationalization on credit to SME.

Table 9 - % of Credit Portfolio allocated to SME by Bank Geographical Coverage

	Workers			Debt			Workers - Debt		
	June 1998	June 2000	% Change in Credit to SME	June 1998	June 2000	% Change in Credit to SME	June 1998	June 2000	% Change in Credit to SME
Nación and Provincia	54.7%	55.6%	6.0%	35.7%	37.3%	8.7%	40.5%	41.5%	6.8%
Public Provincial Banks	72.4%	73.8%	-43.8%	49.8%	54.0%	-40.3%	60.1%	62.6%	-42.6%
5 Largest Nationwide Retail Banks	44.2%	45.5%	16.1%	19.9%	21.6%	22.3%	26.0%	27.3%	18.5%
Other Nationwide Retail Banks	53.8%	52.5%	-22.1%	25.6%	25.5%	-20.4%	35.5%	34.2%	-23.1%
5 Largest Regional Retail Banks	79.4%	72.6%	5.0%	61.0%	54.7%	2.9%	69.9%	62.2%	2.1%
Other Regional Retail Banks	69.4%	75.1%	-32.0%	49.1%	53.1%	-32.1%	57.8%	63.3%	-31.3%
Wholesale Banks	41.3%	42.0%	-25.7%	13.6%	13.3%	-28.7%	21.1%	21.0%	-27.6%
Other Financial Instituions	81.4%	85.0%	-66.1%	53.8%	69.3%	-58.2%	70.0%	78.3%	-63.6%
Total System	52.6%	52.0%	-6.4%	28.2%	28.6%	-4.1%	35.8%	35.2%	-7.0%

Note: Shaded figures indicates mean values higher than the average for the System.

Table 10 shows markets shares in the SME credit market for June 1998 and June 2000. The highest market share for both points in time corresponds to the foreign owned retail banks, followed by the domestic retail banks and Banco Nación and Provincia. The branches of foreign banks also have a relatively high market share. But the most remarkable observation is that, under the three definitions, foreign retail banks increased their market share in the SME credit market, between June 1998 and June 2000. If we look at changes in the absolute values we see that while the most of the groups reduced their financing to SMEs, the branches of foreign banks increased their financing to SMEs very significantly (% changes range between 19% and 40% depending on the SME definition).

Table 11 helps to distinguish the pro SME bias of bank groups according to ownership. Foreign owned banks are close to having 50% of their credit portfolio in SMEs, according to the workers definition but not to the other two. It can be observed from the Table that although foreign retail banks do not have, in general, a pro SME bias, the proportion they allocate in credit to SMEs increased between June 1998 and June 2000.

Table 10 - Market Share in the SME Credit Market by Bank Ownership

	Workers		Debt		Workers - Debt	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	16.7%	18.9%	20.4%	23.1%	18.2%	20.9%
Public Provincial Banks	6.0%	3.6%	7.7%	4.8%	7.3%	4.5%
Domestic Retail Banks	24.7%	22.4%	28.5%	25.5%	27.7%	24.8%
Foreign Owned Retail Banks	33.8%	35.5%	29.7%	31.4%	31.5%	33.3%
Branches of Foreign Banks	10.4%	13.1%	7.1%	10.4%	7.9%	11.0%
Foreign Owned Wholesale Banks	3.2%	2.5%	1.3%	0.9%	1.9%	1.3%
Domestic Wholesale Banks	3.0%	2.5%	2.5%	2.0%	2.8%	2.3%
Other Financial Institutions	1.7%	0.6%	2.1%	0.9%	2.1%	0.8%
Total System	99.5%	99.1%	99.4%	98.9%	99.4%	98.9%

Note: Shares do not exactly sum up 100% because some banks given credit to consumer are not included in the sample.

Summing up it seems that the internationalization process did not have an against pro SME bias and moreover, foreign owned retail banks as well as branches of foreign retail banks gained market share in the SME credit market and moved to a more pro SME bias, with the group of branches of foreign banks being the only group that shows a remarkable increase in lending to SMEs, over a period in which lending to SMEs decreased on average.

Table 11 - % of Credit Portfolio allocated to SMEs by to Bank Owned

	Workers			Debt			Workers-Debt		
	June 1998	June 2000	% Change in Credit to SME	June 1998	June 2000	% Change in Credit to SME	June 1998	June 2000	% Change in Credit to SME
Nación and Provincia	54.7%	55.6%	6.0%	35.7%	37.3%	8.7%	40.5%	41.5%	6.8%
Public Provincial Banks	72.4%	73.8%	-43.8%	49.8%	54.0%	-40.3%	60.1%	62.6%	-42.6%
Domestic Retail Banks	62.6%	59.6%	-15.3%	38.7%	37.3%	-14.3%	47.8%	44.7%	-16.9%
Foreign Owned Retail Banks	49.6%	49.6%	-1.7%	23.4%	24.1%	1.2%	31.5%	31.5%	-1.7%
Branches of Foreign Banks	40.0%	42.9%	18.5%	14.8%	18.7%	40.0%	20.7%	24.3%	29.8%
Foreign Owned Wholesale Banks	35.1%	34.6%	-27.2%	7.7%	6.7%	-35.4%	14.0%	12.7%	-33.1%
Domestic Wholesale Banks	50.7%	53.6%	-24.1%	22.7%	23.6%	-25.3%	32.1%	33.9%	-24.0%
Other Financial Institutions	81.4%	85.0%	-66.1%	53.8%	69.3%	-58.2%	70.0%	78.3%	-63.6%
Total System	52.6%	52.0%	-6.4%	28.2%	28.6%	-4.1%	35.8%	35.2%	-7.0%

Note: Shaded figures indicates mean values higher than the average for the System.

3.4. Credit portfolio quality of SMEs and large firms

A relatively accepted assessment in the literature on bank lending to SMEs is that, due to their relative opaqueness compared to large firms, credit to SMEs suffers more intensively from the typical asymmetric information problems that generally characterize the bank-borrower relationship and for this reason the credit quality of SME loans tends to be significantly lower than that of large firms.

To evaluate the extent to which Argentine data support this assessment, we look at non-performing as well as non recoverable loans to SMEs vs. large firms by bank group, using the same classifications as in the previous sub-section.

The aggregate figures, as can be seen from Table 12 strongly support this assessment, since the credit quality of credit to SMEs is considerably worst than that of credit to large firms, in both non-performing and non-recoverable loans.

Table 12 - Credit Portfolio Quality of Non Financial Companies

	1998	1999	2000
Non performing Loans			
*SMEs**	23.5%	26.0%	28.9%
Large Firms	8.5%	8.9%	10.3%
Total	12.7%	13.6%	15.6%
Non recoverable Loans			
*SMEs**	12.7%	14.9%	17.6%
Large Firms	3.8%	4.2%	5.1%
Total	6.3%	7.1%	8.6%

**Debt definition*

Table 13 presents credit quality, distinguishing between small and large firms by bank group differentiated according to their geographical coverage. Notable is the very poor quality of public banks credit portfolios, even worst for public provincial which stands over 50% of their portfolio in the case of non-performing loans and does not differ very much between SMEs and large firms. A possible explanation for this poor behavior is that credit decisions by public banks do not really face a failure risk, given that they have an implicit government guarantee. The other groups with poor credit portfolios, but in this case with significant differences between the SMEs and the large firms credit portfolios are the other financial institutions and the group of other regional retail banks.

Differentiating by bank ownership (see Table 14) the worst SME credit portfolio quality, apart from public banks, corresponds in June 2000 to other financial institutions, followed by foreign owned retail banks, in the case of non performing loans and by foreign owned wholesale banks, in the case of non recoverable loans.

Table 13 - Credit Portfolio Quality by Geographical Coverage

Non Performing Loans

	*SMEs**		*Large Firms*		*Total*	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	35.6%	47.8%	21.0%	28.1%	26.2%	35.5%
Public Provincial Banks	50.4%	53.5%	59.1%	56.9%	54.8%	55.1%
5 Largest Nationwide Retail Banks	13.5%	17.3%	2.5%	3.1%	4.7%	6.1%
Other Nationwide Retail Banks	20.9%	26.6%	6.8%	10.6%	10.4%	14.7%
5 Largest Regional Retail Banks	14.9%	19.0%	5.9%	4.8%	11.4%	12.6%
Other Regional Retail Banks	17.1%	32.5%	7.2%	29.3%	12.1%	31.0%
Wholesale Banks	20.1%	21.8%	3.2%	5.4%	5.5%	7.6%
Other Financial Institutions	17.2%	36.8%	4.5%	23.1%	11.3%	32.6%
Total System	23.5%	28.9%	8.5%	10.3%	12.7%	15.6%

Irrecoverable Loans

	*SMEs**		*Large Firms*		*Total*	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	19.5%	31.0%	11.8%	15.5%	14.5%	21.2%
Public Provincial Banks	31.2%	37.9%	34.2%	34.1%	32.7%	36.2%
5 Largest Nationwide Retail Banks	8.1%	10.6%	0.7%	1.7%	2.1%	3.6%
Other Nationwide Retail Banks	9.8%	13.6%	2.2%	3.9%	4.1%	6.4%
5 Largest Regional Retail Banks	8.1%	11.6%	2.2%	1.6%	5.8%	7.1%
Other Regional Retail Banks	8.2%	15.3%	1.2%	7.5%	4.6%	11.6%
Wholesale Banks	9.2%	11.5%	0.7%	2.1%	1.9%	3.3%
Other Financial Institutions	6.8%	23.1%	2.0%	11.2%	4.6%	19.5%
Total System	12.7%	17.6%	3.8%	5.1%	6.3%	8.6%

Note: Shaded figures indicates mean values higher than the average for the System.

**Debt definition*

Table 14 - Credit Portfolio Quality by Bank Ownership

	Non Performing Loans					
	*SMEs**		*Large Firms*		*Total*	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	35.6%	47.8%	21.0%	28.1%	26.2%	35.5%
Public Provincial Banks	50.4%	53.5%	59.1%	56.9%	54.8%	55.1%
Domestic Retail Banks	16.7%	19.8%	6.6%	9.8%	10.5%	13.5%
Foreign Owned Retail Banks	19.3%	23.8%	4.4%	5.7%	7.8%	10.0%
Branches of Foreign Banks	7.9%	16.8%	2.5%	3.2%	3.3%	5.8%
Foreign Owned Wholesale Banks	17.3%	21.8%	1.6%	2.7%	2.8%	4.0%
Domestic Wholesale Banks	21.6%	21.7%	6.1%	10.6%	9.6%	13.2%
Other Financial Institutions	17.2%	36.8%	4.5%	23.1%	11.3%	32.6%
Total System	23.5%	28.9%	8.5%	10.3%	12.7%	15.6%

	Irrecoverable Loans					
	SMEs		*Large Firms*		*Total*	
	June 1998	*June 2000*	*June 1998*	*June 2000*	*June 1998*	*June 2000*
Nación and Provincia	19.5%	31.0%	11.8%	15.5%	14.5%	21.2%
Public Provincial Banks	31.2%	37.9%	34.2%	34.1%	32.7%	36.2%
Domestic Retail Banks	7.7%	11.0%	2.3%	3.9%	4.4%	6.5%
Foreign Owned Retail Banks	10.9%	13.5%	1.4%	2.3%	3.6%	5.0%
Branches of Foreign Banks	3.9%	9.5%	0.2%	1.8%	0.8%	3.2%
Foreign Owned Wholesale Banks	10.2%	15.0%	0.8%	2.0%	1.5%	2.9%
Domestic Wholesale Banks	8.7%	9.9%	0.7%	2.1%	2.5%	4.0%
Other Financial Institutions	6.8%	23.1%	2.0%	11.2%	4.6%	19.5%
Total System	12.7%	17.6%	3.8%	5.1%	6.3%	8.6%

Note: Shaded figures indicates mean values higher than the average for the System.

**Debt definition*

A very surprising and counterintuitive finding is that, when we look within SMEs, differentiating between micro, small and medium size firms, we find that particularly for the two groups of public

banks, and with less intensity in the case of other regional banks and wholesale banks, credit portfolio quality increases with the size of firm (see Table 15).

Finally all figures indicate a clear deterioration in credit portfolio over the period, a not very surprising finding for a recession.

In Table16 we present the figures of credit quality by economic sector, separating SMEs and large firms. The poorest quality in the case of SMEs corresponds to the manufacturing industry, followed by construction and other services. In the case of large firms the worst credit quality corresponds to agriculture. The table also presents figures for the credit quality of total loans by sector, calculated as a weighted average. This average figures indicate that the poorest credit performance corresponds to credit to agriculture, followed by commerce and manufacturing.

Table 15 - Credit Portfolio Quality of SME's - June 2000

By Geographical Coverage

	Non Performing Loans			***Irrecoverable Loans***		
	Micro	*Small*	*Medium*	*Micro*	*Small*	*Medium*
Nación and Provincia	29.4%	46.6%	54.4%	16.4%	30.0%	36.2%
Public Provincial Banks	27.4%	46.3%	62.3%	19.7%	29.8%	46.3%
5 Largest Nationwide Retail Banks	20.8%	18.5%	16.0%	16.7%	12.2%	8.9%
Other Nationwide Retail Banks	29.1%	27.0%	26.2%	20.9%	14.0%	12.7%
5 Largest Regional Retail Banks	18.1%	21.1%	17.1%	13.7%	14.1%	8.4%
Other Regional Retail Banks	26.1%	35.6%	31.0%	19.1%	22.1%	10.2%
Wholesale Banks	18.6%	21.4%	22.0%	13.9%	16.2%	9.6%
Other Financial Instituions	41.9%	40.7%	33.5%	30.2%	20.9%	24.2%
Total System	24.6%	30.9%	28.4%	16.9%	19.4%	16.5%

By Bank Ownership

	Non Performing Loans			***Irrecoverable Loans***		
	Micro	*Small*	*Medium*	*Micro*	*Small*	*Medium*
Nación and Provincia	29.4%	46.6%	54.4%	16.4%	30.0%	36.2%
Public Provincial Banks	27.4%	46.3%	62.3%	19.7%	29.8%	46.3%
Domestic Retail Banks	17.2%	21.1%	19.3%	12.5%	13.2%	9.2%
Foreign Owned Retail Banks	29.2%	25.4%	22.3%	23.3%	15.4%	11.3%
Branches of Foreign Banks	18.5%	16.4%	16.9%	13.3%	9.3%	9.1%
Foreign Owned Wholesale Banks	24.0%	31.2%	18.3%	19.9%	26.1%	10.9%
Domestic Wholesale Banks	16.9%	17.2%	23.7%	12.0%	11.9%	9.0%
Other Financial Instituions	41.9%	40.7%	33.5%	30.2%	20.9%	24.2%
Total System	24.6%	30.9%	28.4%	16.9%	19.4%	16.5%

Note: Shaded figures indicates mean values higher than the average for the System.

**Debt definition*

Table 16 - Credit Portfolio Quality by Economic Sector

Sector	Non performing Loans					
	SMEs*		Large Firms		Total	
	June 1998	June 2000	June 1998	June 2000	June 1998	June 2000
Agriculture and Fishing	20.3%	25.9%	15.5%	23.0%	17.9%	24.9%
Min. Elect. Gas and Water	19.3%	18.9%	3.5%	0.5%	4.4%	1.7%
Industrial Manufacturing	25.2%	34.1%	10.9%	15.0%	13.8%	19.2%
Construction	24.4%	33.4%	5.3%	8.4%	10.2%	13.4%
Commerce	21.8%	28.2%	7.1%	13.4%	13.4%	19.9%
Services	17.3%	16.7%	4.1%	4.0%	7.4%	6.8%
Other Services	29.6%	32.5%	7.6%	5.0%	14.2%	13.3%

Sector	Irrecoverable Loans					
	SMEs*		Large Firms		Total	
	June 1998	June 2000	June 1998	June 2000	June 1998	June 2000
Agriculture and Fishing	10.8%	14.9%	6.8%	14.3%	8.8%	14.7%
Min. Elect. Gas and Water	12.0%	11.8%	3.5%	0.4%	4.0%	1.1%
Industrial Manufacturing	14.0%	22.3%	4.8%	7.3%	6.6%	10.6%
Construction	10.7%	17.6%	2.8%	3.9%	4.8%	6.6%
Commerce	12.2%	16.5%	2.9%	4.0%	6.9%	9.5%
Services	7.4%	8.5%	0.6%	1.4%	2.3%	2.9%
Other Services	17.5%	22.3%	3.3%	3.7%	7.6%	9.3%

*Debt definition

3.5. A Broader picture of Credit to SMEs: Credit to the Public Sector, the Crowding Out Effect and the Business Cycle.

Here we put credit to SMEs in a broader framework, one which includes credit to the public sector and its evolution over a period which is mainly one of decreasing economic activity.

There is empirical evidence in the literature, principally coming form the US, that SMEs are more affected by the cyclical movements of the economy over the cycle. The possible theoretical explanations for this phenomenon are related to the deeper asymmetric information problems they face with respect to large firms, which have more access to capital and debt markets for financing. [6] SMEs are , in this sense, more dependent on bank credit. The cyclical downturns of the economy exacerbate these difficulties. On the one hand, when the economy enters a recession, the value of firms' assets tend to decrease and large firms find more difficulties in financing through the capital or debt markets, displacing SMEs form the bank credit market. On the other hand, the value of SMEs' guarantees decreases, making harder for them to access bank financing.

As above, our sample here contains three points in time. June 1998 corresponds to an expansion and June 1999 and June 2000 to a recession. Table 17 presents the shares of

SMEs, large firms as the Public Sector in total credit to the non financial sector for these three points in time. The most remarkable event is the crowding out effect by the public sector, which doubled its share in total bank financing over the period, due to an increase of 128% in its financing from the banking sector. During this period, particularly after the Russian crises and the Brazilian devaluation of January 1999, the government found difficulties in financing in international markets and then turned to finance locally, through banks loans.

Table 17 - Total Credit to the Non Financial Sector

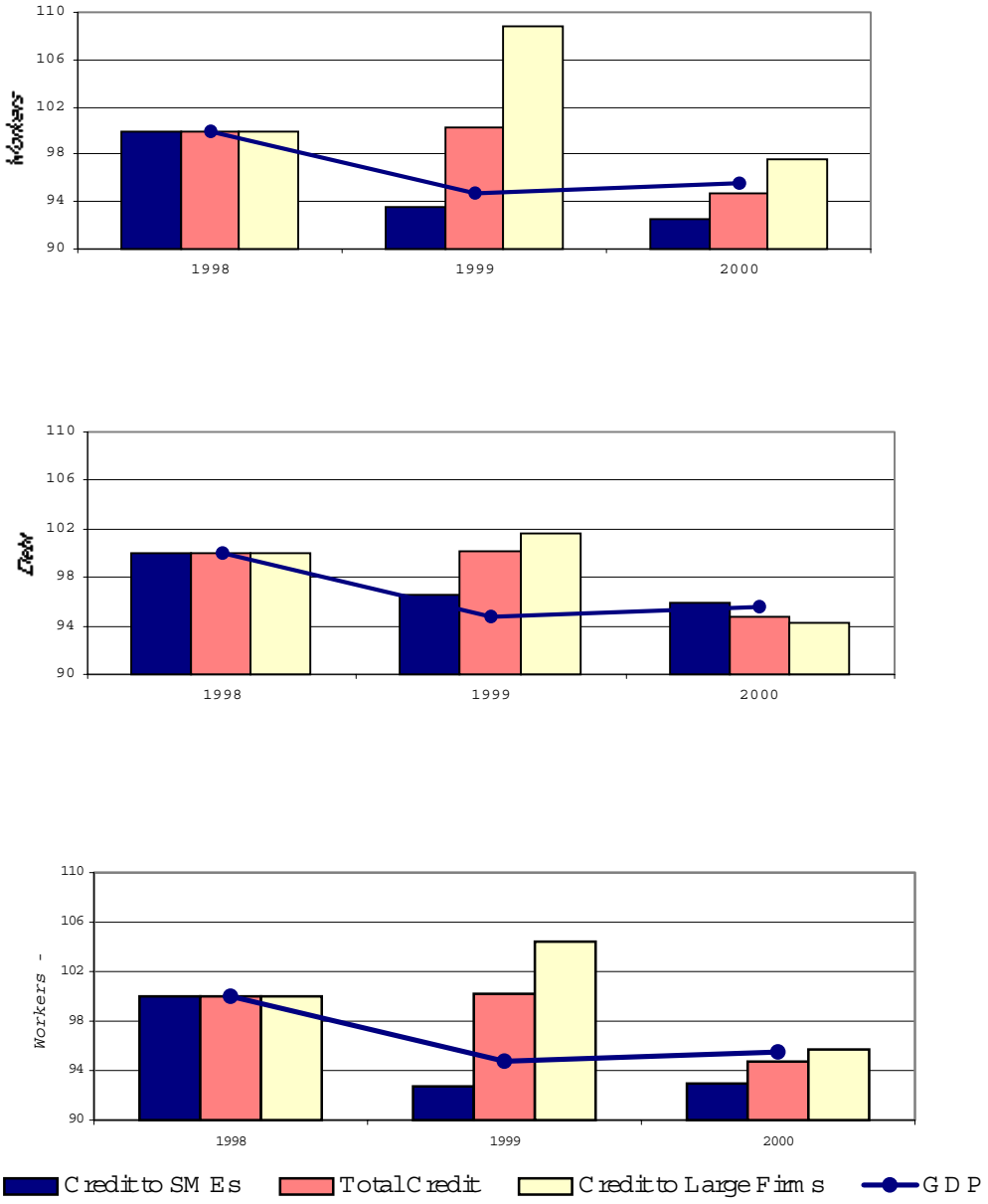
	% of Total Credit			% Change in Credit		
	June 1998	*June 1999*	*June 2000*	*June 1999 / June 1998*	*June 2000 / June 1999*	*June 2000 / June 1998*
*SMEs**	25.4%	23.2%	22.5%	-3.4%	-0.7%	-4.1%
Large Firms	64.6%	62.2%	56.3%	1.7%	-7.5%	-5.9%
Public Sector	10.0%	14.6%	21.2%	54.1%	47.9%	127.9%
Total Credit to Non Financial Companies in millions	48863	51613	52751	5.6%	2.2%	8.0%

**Debt definition*

Aside form the crowding out effect by the public sector, we also want to look at probable crowding out effect by large firms, driving SMEs out of the bank credit market. Figure 2 shows the evolution of real GDP, credit to large firms and credit to SMEs for the three definitions of SMEs. Between the second quarter of 1998 and the second quarter of 1999 real GDP dropped by 5.3%. while credit to private non financial companies grew slightly, by 0.2%. If we differentiate between large and small firms we observe that for the three SMEs definitions there was a crowding out effect by large firms. Considering the debt criterion, credit to SMEs fell 3.4% between June 1998 and June 1999, while credit to large firms increased by 1.7%. The workers definition indicates a decrease of 3.2% in credit to SMEs and an increase of 4.1% in credit to large firms and, finally, the bivariate definition, combining workers and debt, shows a significant decrease 6.5% in credit to SMEs and an important increase of 4% in credit to large firms.

Between the second quarter of 1999 and the second quarter of 2000, there was a slight recovery in economic activity, and real GDP grew 0.8%. During this period total credit to private non-financial companies decreased by 5.6 %, giving evidence of a lagged effect of economic activity on bank financing. Although both credit to SMEs and credit to large firms decreased, credit to large firms fell more than credit to SMEs, independently of the SMEs definition adopted. According to the debt criterion, credit to SMEs decreased by 0.7%, while credit to large firms fell 7.5%. The bivariate definition indicates a 0.4% decrease in credit to SMEs and a 8.2% decrease in credit to large firms. A possible explanation for this result is that the slight recovery of economic activity favored access to capital and debt markets financing by large firms.

Figure 2: Economic Activity, Credit to SMEs and Credit to Large Firms



4. Conclusions

This paper studies the behavior of bank lending to SMEs in Argentina. Due to the availability of rich information about the number of workers of firms we are able to construct three definitions of SMEs: one based on total debt with the financial system, an other based on the number of workers in the firm, and a bivariate criteria that combines the two previous ones. We study how these three definitions classify firms into SMEs and large firms, and compare them with the conventional definitition based on firm debt with individual banks, measuring how they diverge.

We then provide a descriptive analysis of how credit evolved over the period of analysis which the economy passed from the end of an economic expansion to the first two years of a prolonged recession.

Looking at the broad picture of bank lending, we observe a crowding out of lending to SMEs by larger firms at the beginning of the downturn and a general crowding out of lending to private firms by lending to the government.

We analyze and compare the credit quality of bank portfolios of lending to SMEs and to larger firms for different groups of banks, differentiating by geographical coverage and by ownership. Smaller financial institutions tended to have lower quality portfolios than larger ones and, somewhat surprisingly, foreign owned banks tended to have portfolios with somewhat worse credit quality than domestically owned banks. The poorer credit quality of the portfolios of public banks is notable for both lending to SMEs and to larger firms, probably reflecting lending motivated by other than profit interests. Loan quality of portfolios to SMEs have been uniformly poorer than to larger firms for all economic sectors, although the difference is much less in the Agricultural and Fishing sector.

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[1] DeYoung, Goldberg, and White (1999), Peek and Rosengren (1998a and b), Strahan and Westen (1998)and the SBA (1996) are examples of studies where the fraction of loans to SMEs is determined by lending of less than $1 million.

[2] A fairly large number of banks, including some very large ones, do not report the number of workers and others have reported clearly false information. For example, one provincial bank reported all firms as having 40,404 workers. The firm with the most workers in Argentina, the Postal System, has something over 16,000 workers. A number of banks reported one worker for all firms. Such reports were removed from the sample. Details of the data cleaning process can be found in Escudé et al (2001).

[3] One cannot classify *firms* as SMEs according to the definition of loans of less than $1 million.

[4] We are conscious that part of credit to individuals might be financing SMEs activities. However, we are not able to measure it in an appropriate way and for this reason we concentrate on credit to firms.

[5] See for example Williamson (1988), Berger and Udell (1993) and (1996) Berger et. al.. (1998) Peek and Rosengreen (1996), Strahan and Weston 1996 and 1998.

[6] See Bernanke et. al. (1996).