How Financial Intermediation impacts brazilian econômics ativities: the Miyazawa Expansion Factor applied to financial flows

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Abstract

This article aims to verify the effects of shocks in the financial intermediation on the production of Brazilian economic sectors. We compared the product multiplier (Leontief, 1941) applying the Miyazawa Expansion Factor (1976) on the endogenosuss financial flows of the Brazilian Financial and Social Accounting Matrix (FSAM), with the SAM multiplier, which the financial flows are exogenouss. The work contributes to the understanding the role of financial intermediation. We show that the greater impact was in the crisis and in post-crisis period (2008 and 2009). This effect was differently felt in each sector. The most affected sectors are Trade, Information Services and Business services and the least affected sectors are: Public Education and Health, Iron ore and Tobacco products, in the role of financial services, and for funding are Construction, Trucks and buses, and Maquinary and Equipment.

Keywords: Input-Output Multiplier, Financial and Social Accounting Matrix, Financial Intermediation, Flow of Funds, Industry.

Introduction

The amount of funds in Brazilian financial market has expanded in the last decade. There was a widening of credit supply, the targeted and free segments, and also, increased use of the bond market by Brazilian companies and most dynamic stock market.

The performance of financial institutions and financial intermediaries is crucial to the reallocation of resources in the economy, so, this work seeks to understand how the financial intermediation sector affects the production of other Brazilian economic sectors.

For this, we calculate Input-Output Multipliers, wich indicates the impact of exogenous variation of a currency in demand from the financial intermediation sector over the final output of the other sectors, over the years 2005 to 2009, from the Financial and Social Accounting Matrix (FSAM), with include the Brazilian Production Accounts,

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Income and Financial Account. These multipliers are compared with those multipliers that do not include the financial account, the SAM Multiplier, which includes only the Production and Income Accounts.

The difference between these multipliers indicates the portion of the impact that is due to the inclusion of the Financial Account. And thus highlights the role of financial intermediation in the allocation of resources in the economy.

The FSAM provides a data set, with show the interrelations between the agents in an economy. Unifies the flow of production of input-output methodology (IP) with income distribution, from the Social Accounting Matrix (SAM), and extends by entering financial flows (range of financial assets and liabilities), showing their contributions to the product, income, investment and financing in the economy.

In the following topics we present the Brazilian FSAM, the methodology, a description of sectoral behavior and financial flows in the Brazilian economy, from Brazilian FSAM, and the differences between the SAM and FSAM multipliers, highlighting the sectors that suffer most and least, financial flows impact. The final remarks presents the main conclusions and make suggestions for future work.

Brazilian Financial and Social Accounting Matrix - FSAM

A Financial and Social Accounting Matrix (FSAM) can be defined as a tool to evaluate all transactions of an economy because it can capture the circular flow of income in full, showing in detail the structure of interrelations between agents and institutions in the economy.

FSAM are extensions of Social Accounting Matrices (SAM). According to Pyatt (1999), SAM are square matrices that integrate input-output accounts (IP), which refer to the interindustry flow of goods and services, increased with the income accounts. The FSAM add to production and income flows, the flows of financial assets and liabilities.

In these matrices, the columns represent debts (expense/ uses) and the line representes credit (income/ resources). Each line (income accounts) and each column (expense accounts) show in detail, transactions and transfers in the various markets for each activity and economic agent. The double entry principle makes all transactions been computed by a record in the intersection of the corresponding accounts. This means that,

for all agents, the total income (sum of the line) should be equal to the total expenses (sum of the column).

According to Wong et al. (2009), the great contribution of a FSAM is the integration of Capital Account with the Financial Account. A separate Capital and Financial Account for each agent, allows to identify details of investments in different assets (physical and financial) and funding (savings and financial liabilities) presenting the details of the nature and structure of financial resources and their use by economic agents.

The FSAM built for the Brazilian economy for the period 2005 to 2009, have seven (7) main groups of accounts, whose identities are highlighted:

I.1 - Production Account: Production = Intermediate consumption + Final Consumption + Investment + Exports

I.2 - Consumption Account: Production = Intermediate consumption + Value Added + Imports

I.3 - Factors Account: Value Added paid by the productive sectors = Value Added received by economic agents

I.4 - Current Account: Added Value received by institutional sectors + Income Property and Income Received from Current Transfers + Transfers Received Exterior = Final Consumption + Transfer Payment Chains + Savings + Transfers Sent Abroad I.5 - Capital Account: Savings + Capital Transfers received + Change in Financial Liabilities = + Capital Investments Transfer paid + Financial Assets Change

I.6 - Financial Account: Financial Assets Variation domestic + Variation of Financial Assets Exterior = Financial Liabilities Variation domestic + Change in Financial Liabilities Exterior

I.7 - Account Rest of the World: Imports + Remuneration sent abroad + Current Transfers sent + Capital Transfers sent + Change in Financial Liabilities = + Income Received Exports from abroad + Transfers received Chains + Capital Transfers received from abroad + Range financial assets

Each main group is detailed using the information of Make and Use Tables (TRU) from the Regional Center of Economic Research (NEREUS/ USP), for productive transactions (goods and sectors) and the Integrated Economic Accounts (CEI) from the Brazilian Institute of Geography and Statistics (IBGE) to detail the generation of flows and allocation of income (institutional agents) and Financial Account is disagregated in financial instruments, published by IBGE and by the Central Bank of Brazil (BCB).

The Production Account was broken down into 110 Goods and Services, Consumption Account was detailed in 56 Productive Sectors. The production factors were broken down into: Compensation, Gross operating surplus, Taxes. The Current Account and the Capital Account are broken down in the following domestic agents: non-financial corporations, financial corporations, households and government. The Financial Account is also detailed in 7 financial instruments: monetary gold, currency and deposits, bonds, loans, stocks, insurance and accounts receivable and payable. The account Rest of the World presents all economic transactions occurring between the Brazilian economy and the rest of the world with which it has relationship (external sector). The structure of Brazilian FSAM is shown in Figure 1.

Methodology

Initially, we analyze the Production Account from the Financial and Social Accounting Matrix (FSAM) for Brazil for the years 2005-2009. We did a brief description of economic activity sectors, highlighting the 10 sectors with the highest Gross Value of Production (output), their generation and distribution characteristics, Value Added, and its potential to raise the output, observed through the Input-Output Multipliers (MP) of each sector.

These multipliers were calculated by applying the Miyazawa External Factor (1997) on the financial flows of the FSAM. The MP indicates what would be the effect on total output of the economy if that particular sector suffered an exogenous shock on it´s demand. In a comparative analysis, the MP indicates which sectors would generate higher and less impact on economic output.

In addition to the overall effects on the economy, you can identify the indirect effect that each sector would have on other sectors. The total effect (direct plus indirect) of a particular industry is evidenced by the amount corresponding to the sum of the column of this sector in the Multipliers Matrix, and the indirect effect is evidenced by each intersection in this column with the lines that represents the other sectors. We highlight the column 45, referring to the financial intermediation sector. The total value of this column indicates the effect of an exogenous shock in demand from the financial intermediation sector on the total output of the economy.

Figure 1: Simetric Brazilian FSAM, endogenous and exogenous accounts.

	Input/Output			Production	Factors	Endogenous Current Account	Capital Account	Financial Account	Exogenous Fact.	Curr.	Cap.	ROW	Total
				1 - 56	57 - 58	59 - 61	62 - 64	65 - 71	1	2	3	4	75
Endogenous	Production	1 - 56	Industry	Intermediate Consumption		Final Consumption	FBCF			Gov. Consump.		Export	
	Factors	57	Wage	Vallue Added									
		58	EOB										
	Current Acc.	59	Non Financial Firms		Production Income	Current Transfers						Foreign Income	
		60	Financial Firms										
		61	Household										
	Capital Acc.	62	Non Financial Firms			Savings	Capital Transfers	Change in Liabilities					
		63	Financial Firms										
		64	Household										
	Financial Acc	65	Gold				Change in Assets					Change in Assets	
		66	Cash										
		67	Bonds										
		68	Loans										
		69	Shares										
		70	Technical Securities										
		71	Others										
Exogenous	Fact.	72	Taxes	Tax									
	Curr.A.	73	Gov.		Tax								
	Cap.A.	74	Gov.			Tax							
	ROW	75	Row	Import		Transf.		Change in Liabilities					
	Total	76	Total										

Source: Elaborated by authors.

The values at the intersection of column 45 with the 56 first lines of Multipliers Matrix, indicate what would be the effect of an exogenous shock in demand from Financial Intermediation sector on the output of each of the 56 sectors of the economy. We call these multipliers: Sectoral Financial Multipliers (MFS).

We calculated the MFS for FSAM and also calculated the MFS to the Social Accounting Matrix (SAM), which excludes the Financial Account. Then we observe the difference between them. As the SAM capture production and income and the FSAM capture production, income and financial flows, the difference between them indicates how financial flows contribute to the impact on sectoral output.

According to Leung and Secrieru (2012), the relation between the SAM and FSAM multiplier can be visualized by the partition FSAM into 4 blocks, as visualized in Equation 1:

$$\mathrm{A}^{\mathrm{FSAM}} = \begin{pmatrix} \mathrm{A}^{\mathrm{SAM}} & \mathrm{A}_{12} \\ \mathrm{A}_{21} & 0 \end{pmatrix}, \qquad (1)$$

where $\mathrm{A}^{\mathrm{SAM}}$ is the FSAM without financial flows, excluding the rows and columns for the government and the external sector, which are exogenous, all elements weighted by the respective totals of the columns. In the Brazilian FSAM, sector by sector, shown in Figure 1, the rows and columns is 1 to 64.

A_{12} and A_{21} are the headquarters of the edges of the Brazilian MCSF. A_{12} brings together financial liabilities (incurrence of liabilities) of all agents (columns 65-71) and A_{21} brings together the investment accounts in financial assets of all agents (lines 65-71). All the elements are normalized to total columns.

The Leontief inverse of the FSAM is: $(I - \mathrm{A}^{\mathrm{FSAM}})^{-1}$, the partition can be written by Equation 2 below:

$$(\mathrm{I} - \mathrm{A}^{\mathrm{FSAM}})^{-1} = \begin{pmatrix} (\mathrm{I} - \mathrm{A}^{\mathrm{SAM}}) & -\mathrm{A}_{12} \\ -\mathrm{A}_{21} & \mathrm{I} \end{pmatrix}^{-1} \qquad (2)$$

To simplify, the displayed Equation 2, will be denoted by the terms of Equation 3 below, and will be called the Leontief inverse of the FSAM:

$$(\mathrm{I} - \mathrm{A}^{\mathrm{FSAM}})^{-1} = \begin{pmatrix} \mathrm{F}_{11} & \mathrm{F}_{12} \\ \mathrm{F}_{21} & \mathrm{F}_{22} \end{pmatrix}^{-1} \qquad (3)$$

This equation keeps some important relationships. Proposition 1 shows how the FSAM multipliers are related to the SAM multipliers (LEUNG and SECRIERU, 2012):

Proposition 1: the Leontief inverse of the FSAM, $(I - A^{FSAM})^{-1}$, is related to the Leontief inverse of the SAM, $(I - A^{SAM})^{-1}$, by equations 4 -7 , following:

$$F_{11} = [I - (I - A^{SAM})^{-1}A_{12}A_{21}]^{-1}(I - A^{SAM})^{-1} \quad (4)$$

$$F_{22} = [I - A_{21}(I - A^{SAM})^{-1}A_{12}]^{-1} \quad (5)$$

$$F_{12} = F_{11}A_{12} \quad (6)$$

$$F_{21} = F_{22}A_{21}(I - A^{SAM})^{-1} \quad (7)$$

Proposition 1 shows how the FSAM multipliers can be achieved through operations between it´s partitions (A^{SAM}, $A_{12}A_{21}$). Equation 4 shows that financial multipliers are obtained by expanding the SAM multipliers matrix, $(I - A^{SAM})^{-1}$, by a factor $[I - (I - A^{SAM})^{-1}A_{12}A_{21}]^{-1}$, this is referred to as Miyazawa External Factor (1976). The outer multiplier shows the effect of changes in assets and liabilities, A_{12} and A_{21}, in the real economy $(I - A^{SAM})^{-1}$, calculated by the identity matrix minus the SAM Leontief inverse multiplied by the coefficient matrices of changes in financial assets and liabilities $(I - A^{SAM})^{-1}A_{12}A_{21}$.

The row vector generated by the sum of multipliers matrix of the columns, calculated by Equation 4, shows the Input-Outpu Multiplier (MP) of each sector. And the vector formed by the column 45 of the multiplier matrix reflects the effect of the financial intermediation on other sectors, that we called Sectoral Financial Multiplier.

Brazilian Economy Sectoral Behavior (2005-2009)

The economic activity, observed from the Production Account for 2005 to 2009 Brazilian FSAM, we highlight the most important sectors in terms of output (gross production value) and income generation. Table 1 shows the 10 sectors, in descending order of participation in the Gross Value of Production (Annex 1 contains this information for the 56 sectors). It also shows the participation in Total Value Added (VA), Paid Wages, Gross Operating Surplus (EOB), Taxes (Tax.), Imports, Exports, Investments and the Input-Output Multiplier (MP), obtained from the FSAM.

In the period, around 8% of Brazilian economic output derives from the Trade sector. This is also the most important sector in generation of Total Value Added, with relevant participation in remuneration (wage payments), and in operating surplus. The Trade output grew over the years 2005 to 2009, one of the five sectors that grew most in the period. However, it does not have a great ability to increase economic growth, compared to other sectors. The Trade MP is one of the smallest (5th position in ascending order). So, even considering the entire production flow, the flow of income and financial flows, external shocks in Trade sector (income transfer or increased foreign demand for this sector) have little effect on total economic output relative to the effect that can be generated by other sectors.

Table 1: Brazilian Sectoral Indicators.

	Industry	VBP	VA	Wage	EOB	Tax.	Imp.	Exp.	Inv.	MP
I42	Trade	8,44	11,42	11,26	12,74	6,57	3,61	6,35	9,93	3,16
I56	Public Administration	7,79	9,74	17,69	2,84	5,28	2,97	0,24	0,08	3,41
I6	Foods and Drinks	6,53	2,86	2,87	2,01	7,43	3,97	9,59	-0,01	3,93
I45	Financial Intermediation	5,48	6,96	5,61	8,65	4,57	1,57	0,56	0,01	3,21
I43	Transportation, storage and mailing	4,84	4,93	4,62	5,11	5,48	3,83	3,32	1,46	3,35
I41	Building	4,64	4,87	3,65	6,24	3,99	2,96	0,33	44,16	3,34
I46	Real State and Rental	4,52	7,95	0,61	15,79	0,48	0,27	0,55	0,99	2,74
I49	Bussiness Service	3,95	4,75	5,75	4,02	4,10	1,55	5,01	0,44	3,29
I44	Information Service	3,69	3,85	2,72	4,60	5,40	2,53	0,22	-0,02	3,25
I40	Electric., gas, water, sewage, cleaning	3,26	3,59	1,55	5,17	4,55	2,27	0,10	0,01	3,18

VBP = Total Output, VA = Added Vallue, EOB = Gross Operation Surplus, Tax. = Taxes less subsidies, Imp. = Imports, Exp. = Export e Inv. = Investments (Gross Fixed Capital Formation). The vallues representes the percentual share, mean to 2005 -2009. MP = Product Multiplier = Input-Output Multiplier, the vallue is the total vallue for each industry.
Source: Elaborated by authors, from Brazilian FSAM.

Participation of Public Administration and Social Security in the production and generation of added value, especially in compensation to employees (wages), emphasizes the great importance of the sector in generating income for families. There was continued growth at increasing rates over the years 2005 to 2009. Analyzing the FSAM Current Account, we found that over 50% of family income was originated from transfers during this period, 55% of those coming from the Public Administration (employee benefits from government). Adding the income generated by transfers to wealth generated in production (sectors of Public Administration and Social Security, Public Education and Public Health), not counting the large share of final consumption, there is a picture of an

economy extremely dependent on government transfers. This structure may be critical to the long-term economy.

The third sector in order by Production Gross Value is the Food and Drinks industry. This sector has the highest share in the payment of taxes, among the 56 sectors, and contributes significantly to the wages and generating gross operating surplus. It is an industry that uses many imported inputs, and, also, sends much of the output to the external sector (it is the sector with the largest share in exports of the Brazilian economy). We highlight the highest MP. Food and Drinks is the sector with the greatest ability to generate increased economy output. However, despite having shown growth over the years, this growth was lower than the economy mean.

The Financial Intermediation is the fourth leading economic activity in terms of production gross value, with significant participation also in the generation of added value, both in wages payments and surpluses, as in taxes (especially on income). The sector showed growth over the years 2005 and 2009. Financial Intermediation is an important sector to support the development of other productive sectors, since facilitates transactions, import and export, and especially allocates resources and provides funding, to provide the necessary resources to finance the growth of investments in the productive sectors. Due to its special character, we will return to the impact of Financial Intermediation ahead.

Transportation, Storage and Mailing, is the 5th largest economic sector. It is also important in generating income, and relevant participation in wages and operating surplus, but mainly in taxes payment (3rd largest share). Its growth was continuous and increasing rates over the years, higher than the mean economy growth. Moreover, their product multiplier is slightly below the industry mean.

Construction, sixth largest sector in the Brazilian economic output. It is the sector that most contributes to the gross fixed capital formation (FBCF). About 45% of the total investments in the economy are produced by the Construction sector. It contributes to income generation, with gross operating surplus proportionally higher than that of other sectors, but wages and taxes payments relatively lower. Maybe because of this, its multiplier effect is not so relevant.

Following the importance of economic sectors, the Services (Real Estate and Rental Services - 7th; Business Services - 8th; and Information Services - 9th). These three services sub-sectors grew above the average for the economy over the five years analyzed. The Real Estate and Rental Services is highlighted because their greater participation in

generating gross operating surplus over the period. Business Services is highlighted because its highest growth. Information services, is highlighted because it showed the lowest growth in 2009. As characteristics of these sectors, we observed that the share of gross operating surplus is proportionally greater than the share of the wages payments, and they are sectors with low MP. In particular, Real Estate and Rental Services have the lowest MP among all economic sectors over the five years analyzed.

In 10th place of the largest Brazilian economic sectors, it is the Electricity, Gas, Water, Sewage and Urban Cleaning, which is also a sector with low MP. This sector is important in generating income, and relatively more important in generating gross operating surplus than in wages and tax payments.

To the economic sectors maintain their production capacity and growth, there must be investment; and to have investment is needed financing sources. Analyzing Capital Account and Financial Account of Brazilian FSAM, it is clear that non-financial companies are the agents that most invest in fixed assets, about 60% of fixed investment in the economy are performed by them. Physical investment companies are represented by investments in mobile, real estate, machinery and equipment, which are the basis for economic growth, as will form the structure, tecnology and modernization required to secure production capacity and generate future income.

Both the economic production as the fixed investment grew, throughout 2005 to 2009, with the highest level 2008, and a sharp reduction in the growth rate of these aggregates in 2009.

How these investments are financed? It is observed that the main source of funds for non-financial firms investment is saving. More than 50% of the financing of investments in the productive activity comes from savings. Recalling that corporate savings refers to the portion of income not used for consumption, which is reinvested in itself. This feature (retained earnings), coupled with the participation of shares, indicates the significant share of equity in financing the investments of Brazilian companies, which shows that Brazilian firms are very conservative in their capital structure decisions. The average leverage does not reach 20%. This is positive for not exposing businesses to excessive financial risks, but also negative by limiting investments to the ability of internal cash generation. As less than 10% of the income generated in the economy is not consumed, this behavior may indicate a constraint to economic growth. Table 2 shows the flow of investment and financing of non-financial Brazilian companies, mean and standard deviation for the period 2005-2009.

Table 2: Brazilian Non-Financial Firms Investment and Financing Distribution, mean and standart deviation between 2005 to 2009.

ASSETS	Mean	SD	LIABILITIES	Mean	SD
Cash and Deposits	8,89	5,75	Cash and Deposits	0	0
Bonds	4,87	7,04	Bonds	2,09	1,52
Loans	-2,49	10,87	Loans	16,32	10,44
Shares	22,48	2,86	Shares	25,84	4,98
Tecnhical Security	0,21	0,03	Tecnhical Security	0	0
Others Deb./Credit	15,99	5,57	Others Deb./Credit	1,17	8,82
FBCF + VE	50,05	8,6	Saving	54,57	7,96

Source: Elaborated by authors, from Brazilian FSAM.

Thus, some questions arises: Brazilian firms use preferably internally generated funds because these features are high enough to cover their investment needs, or are there restrictions in the financial market that limit their access to other sources of funding? These companies would be working with lower levels of investment because of the existence of financial constraints? Is Financial Intermediation being efficient in allocating resources to the important sectors of the Brazilian economy?

When we check the aggregate behavior in the economy, we observed that most of the funds are sourced via acquisition of financial liabilities, small portion comes from the savings. Noteworthy is the significant growth of total supply, especially in loans, depending on the inherent role of financial intermediation. Figure 2 shows the graph with the evolution of the Brazilian economy funding sources, showing the variation of savings and financial liabilities between 2005 and 2009 for the aggregate economy.

There was an increase in the total amount of funds during the period and a big jump in 2007. Growth is observed in all financial instruments and proportionally less in savings. In 2008, there was increase of Loans and Bonds, with the concomitant sharp decrease in Cash and deposits. The issue of Shares has a somewhat more constant behavior over time.

The allocation of these funds to economic activity sectors depends crucially on the effectiveness of Financial Intermediation activity. In its two spheres, according to Carvalho (2000): the intermediated activity and disintermediated activity. The first involves the role of raising funds from the surplus economic agents, assuming the obligation to honor the payment of these funds and lend them to deficit economic agents. The second activity is performed directly between economic agents and the role of financial institutions is to promote securities brokerage. In both roles, the smooth

functioning of financial intermediation will foster economic growth, but mainly the development of intermediated activity will highlight the role of financial intermediation as financing of economic growth.

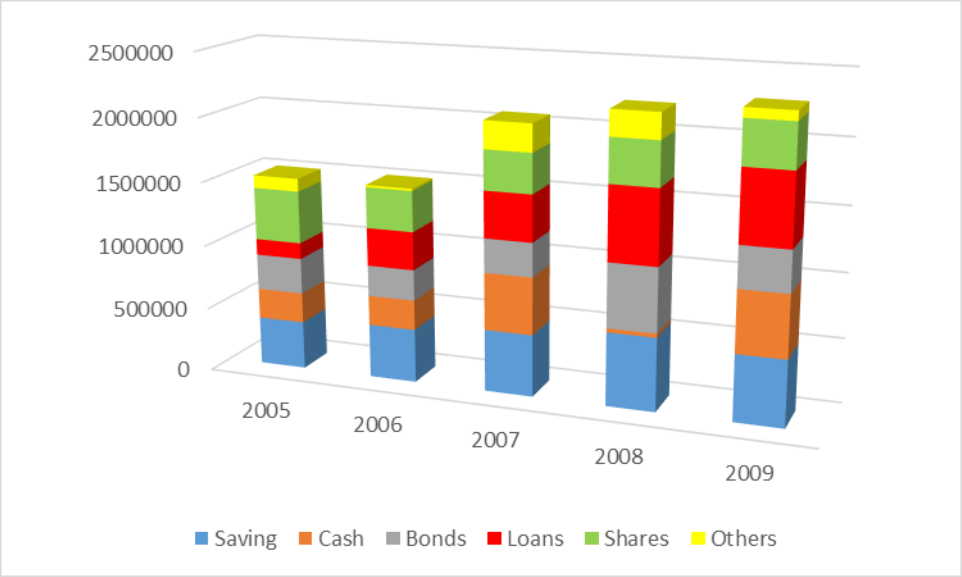

Figure 2: Saving and Financial Liabilities Evolution, Brazil, 2005 to 2009 (Em R$1.000.000)
Source: Elaborated by authors, from Brazilian FSAM.

The flow of Loans in the economy is related to intermediated activity, while the issuance of Shares and Bons with disintermediated activity, despite the financial intermediation (especially banks) also play an important role in the placement and underwriting of corporate bonds in Brazil (TORRES and MACAYBA, 2012). In aggregate, there was an increase of total resources and increase in the total amount of Loans. How are those resources being allocated among economic agents? Figure 3 shows the flow of Loans in the economy detailing by economic agents. It is observed that there was continued growth in these flows over the period, but the same can not be said as to the funding of these Loans by non-financial firms. The big trend observed corroborates the information contained in Banking and Credit Economics Reports (BCB, 2005-2010), indicating increase in credit supply: the proportion Credit/GDP cames from 23% in 2005 to 47% in 2009 (BCB, 2005-2010). These reports also point to stronger growth in the housing credit from loans to individuals. We emphasize that, despite the reduction in the SELIC rate from 18% in 2005 to 8.65% in 2009, we can not detect drop in interest rates for firms over the period: from 31.7% to 42.7% per year (mean vallues). At least, it was

revealed a widening on the payment term, although still low: from 218 to 283 days (mean vallues).

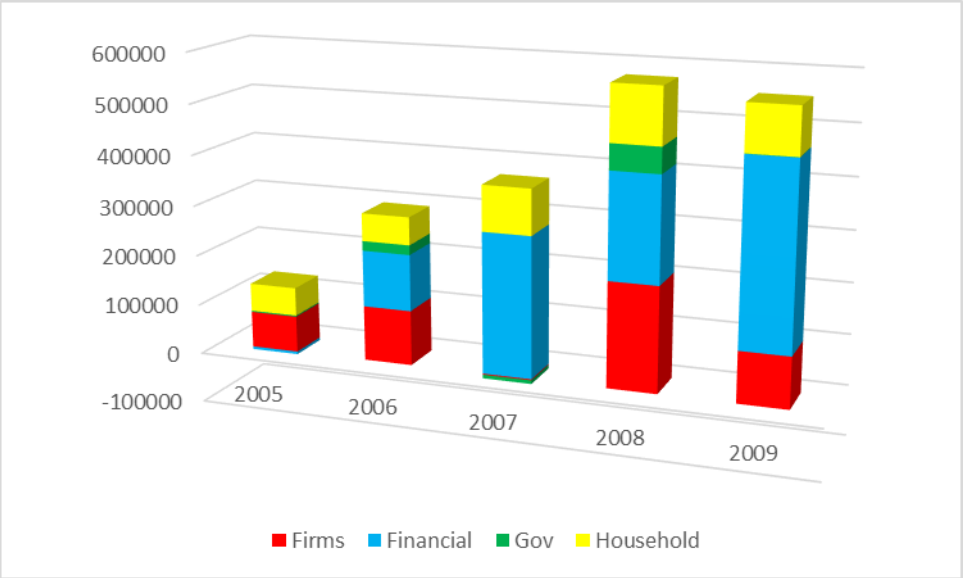

Figure 3: Loans Flows Evolution, by Agents, Brazil, 2005 to 2009. (R$1.000.000)
Source Elaborated by authors, from Brazilian FSAM.

Detailing the financial liabilities flow to non-financial firms, it is observed that the supply of credit and financial market flows, does not flow steadily for them, as can be seen by the high volatility of resources. Figure 4 shows the variation of financial liabilities of Brazilian firms, excluding financial firms. In 2007, Stocks (Shares) were the main financing instrument and there have been few Loans. In 2008, Loans were most used, followed by Stocks. In 2009, in the wake of the crisis, there is a reduction of the two main financing instruments by Brazilian firms.

It is clear in Figure 4 the large increase in the supply of funds for Brazilian firms in 2008. Also visible is the high volatility in the Loan flow. In addition to the small share of corporate Bonds to finance Brazilian firms and more stady financing by Stocks. Given the low range of corporate bonds and limiting sources of long-term funds market (LEAL and SILVA, 2007), financial intermediation plays a more important role in the allocation of resources in the Brazilian economy, necessary to foster the continuity of economic activities and funding new investments. The structure of the Brazilian financial market is reflected in the flow of investments and financing occurring in the economy and generate direct effects on firms output.

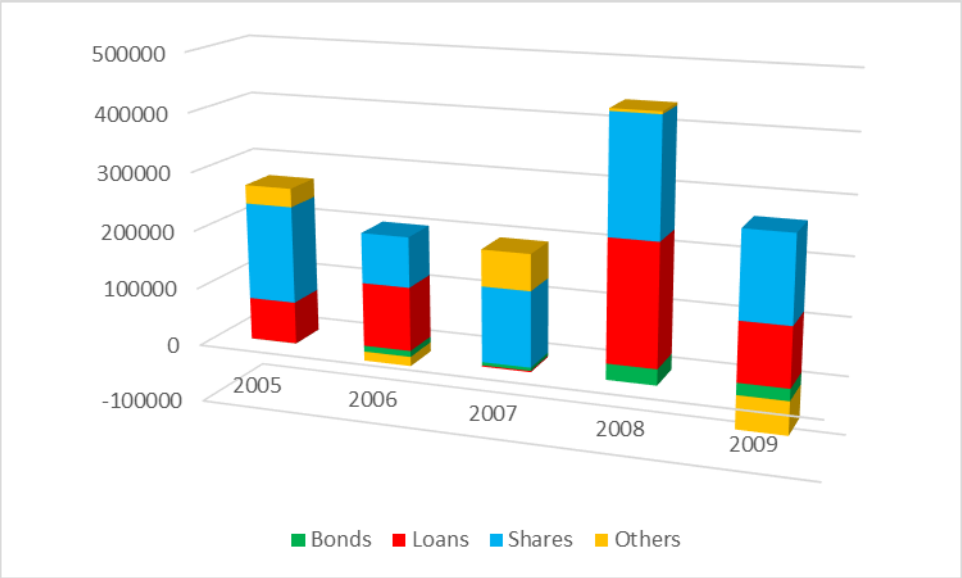

Figure 4: Financial Liabilities Evolution from Brazilian Non-Financial Firms between 2005 to 2009. (R$1.000.000)
Source: Elaborated by authors, from Brazilian FSAM.

In the following section we present the Sectoral Financial Multipliers (MFS) wich shows the impact of a shock in the financial intermediation sector on the others economic activity sectors, under the approach of the SAM and the FSAM. The difference between them, demonstrate the ability of financial intermediation to alocate the flows of financial assets and liabilities in the economy.

Financial Intermediation Impact

Table 3 shows the MFS for the years 2005 to 2009 (average per sector over the 5 years). A Little change was observed in MFS over the years. The financial sector is a real sector, because it has a production function and generate added value through the compensation of its employees and investors. The financial sector, as a real sector, has its production technology that gradually evolves, as well as other economic sectors. Although little variation, you can see that the MFS reduces its value from 2005 to 2007; in 2008, MFS increases slightly, and in 2009, further increases, reaching a value above the level of 2005.

Table 3: Sectorial Financial Multiplier, Brazil, 2005 to 2009.

	Industry	2005	2006	2007	2008	2009
I45	Financial intermediation and insurance	1,2418	1,2527	1,2557	1,2609	1,2699
I42	Trade	0,1771	0,1793	0,1855	0,1896	0,2216
I44	Information services	0,1430	0,1519	0,1454	0,1520	0,1505
I6	Food and Drinks	0,1368	0,1279	0,1264	0,1303	0,1368
I49	Business services	0,1346	0,1356	0,1306	0,1429	0,1540
I46	Real estate and rental	0,1205	0,1149	0,1127	0,1078	0,1208
I43	Transportation, storage and mailing	0,1149	0,1107	0,1086	0,1153	0,1249
I41	Building	0,1092	0,1036	0,0940	0,0926	0,1479
I40	Electric. and gas, water, sewage and cleaning urb.	0,0854	0,0826	0,0765	0,0746	0,0782
I14	Petroleum refining and coke	0,0681	0,0663	0,0610	0,0587	0,0628
I52	Services rendered to families and associations	0,0620	0,0601	0,0555	0,0545	0,0606
I1	Agriculture, forestry, logging	0,0605	0,0561	0,0573	0,0625	0,0608
I48	Accommodation and food services	0,0426	0,0458	0,0474	0,0456	0,0537
I13	Newspapers, magazines, records	0,0402	0,0359	0,0336	0,0343	0,0322
I2	Livestock and fisheries	0,0400	0,0358	0,0358	0,0382	0,0404
I51	Commercial health	0,0388	0,0389	0,0387	0,0368	0,0405
I3	Oil and natural gas	0,0347	0,0359	0,0287	0,0327	0,0271
I29	Machinery and equip., including maint. and repairs	0,0297	0,0298	0,0316	0,0333	0,0383
I35	Cars, Trucks and Utilities	0,0287	0,0305	0,0342	0,0347	0,0417
I16	Chemicals	0,0282	0,0238	0,0247	0,0265	0,0224
I39	Furniture and products of various industries	0,0278	0,0246	0,0233	0,0241	0,0260
I23	Rubber and plastic	0,0274	0,0259	0,0245	0,0247	0,0271
I28	Metal products - except machinery and equip.	0,0273	0,0233	0,0244	0,0249	0,0285
I50	Commercial education	0,0266	0,0278	0,0254	0,0234	0,0251
I26	Steel manufacturing and derivatives	0,0261	0,0231	0,0252	0,0284	0,0239
I12	Pulp and paper products	0,0259	0,0243	0,0237	0,0228	0,0212
I37	Parts and accessories for motor vehicles	0,0256	0,0231	0,0240	0,0248	0,0270
I47	Maintenance and repair services	0,0215	0,0222	0,0216	0,0225	0,0240
I9	Articles of apparel and accessories	0,0202	0,0187	0,0196	0,0194	0,0204
I8	Textiles	0,0201	0,0191	0,0184	0,0176	0,0177
I33	Electronic materials and equip. communications	0,0195	0,0173	0,0148	0,0121	0,0132
I32	Machinery, appliances and electric equipment	0,0168	0,0170	0,0163	0,0177	0,0200
I53	Domestic services	0,0155	0,0157	0,0152	0,0147	0,0179
I18	Pharmaceutical products	0,015	0,014	0,013	0,013	0,014
I25	Other non-metallic mineral products	0,014	0,014	0,013	0,014	0,018
I17	Resin manufacturing and elastomers	0,012	0,012	0,011	0,010	0,008
I56	Public administration and social security	0,011	0,011	0,013	0,012	0,011
I20	Perfumery, hygiene and cleaning	0,011	0,012	0,011	0,011	0,012
I10	Leather goods and footwear	0,011	0,010	0,010	0,010	0,010
I36	Trucks and buses	0,009	0,007	0,007	0,009	0,010
I27	Non-ferrous metallurgy	0,009	0,011	0,010	0,009	0,010
I11	Wood products - furniture exclusive	0,008	0,007	0,007	0,007	0,008
I31	Office machines and computer equip.de	0,008	0,010	0,009	0,009	0,011
I38	Other transport equipment	0,007	0,009	0,008	0,008	0,011
I22	Products and prepared several chemical	0,007	0,006	0,005	0,005	0,006
I15	Alcohol	0,006	0,007	0,008	0,009	0,009
I34	Appliances/ hospital medical/ optical instrum.	0,006	0,006	0,006	0,006	0,007
I30	Appliances	0,006	0,006	0,006	0,006	0,007
I19	Pesticides	0,006	0,005	0,006	0,006	0,006
I7	Tobacco products	0,005	0,005	0,004	0,004	0,004
I5	Other mining and quarrying	0,005	0,005	0,005	0,005	0,006
I21	Paints, varnishes, enamels and lacquers	0,005	0,005	0,004	0,004	0,006
I24	Cement	0,004	0,004	0,003	0,004	0,006
I4	Iron ore	0,003	0,003	0,003	0,002	0,001
I55	Public health	0,001	0,001	0,001	0,001	0,001
I54	Public education	0,0004	0,0003	0,0003	0,0004	0,0004
	Total	3,2067	3,1702	3,1239	3,1670	3,3604

Source: Elaborated by authors, from Multiplier Matrices.

As the multiplier reveals the impact of the financial sector in the product of economic sectors, this trend shows that Financial Intermediation were less effective between 2006 and 2007 and more relevant from 2008 in its function to facilitate transactions and the financing of economic output. MFS reveals that an unity increase in the demand of the Financial Intermediation sector will have greater effect on its own output, and on Trade sectors, Information services, Food and drinks industry, Business services, Real estate and rental services, Transport, storage and mailling, Construction, Electricity and gas, water, sewage and urban cleaning, and Refining of oil and coke.

Larger MFS from FSAM indicates the productive sectors that will have greater impact on the product output due to an exogenous shock in financial intermediation, considering all transactions of goods and services, income transfers, investment flows and financial flows (changes in financial assets and liabilities) that occur the Brazilian economy.

We can note that, most of these sectors are the largest sectors in terms of production gross value, and they are the sectors that grew most in the period; So, high MFS would be reflecting the productive structure of these sectors, which are larger, demand more services, including financial. Since these are sectors with great movement of funds, financial intermediation could be only exercising its role in supporting the functioning of other economic activities, facilitating transactions, but not necessarily acting as a provider of financing sources (funding).

Comparing the MFS from the FSAM with the MFS from the SAM, we can show the incremental role of financial intermediation, since the difference between these two multipliers will show the part of the effect that is unique to endogenous financial flows in FSAM. Table 4 shows the major differences between the MFS FSAM and MFS SAM. Annex 2 gives full table for the 56 Brazilian sectors.

Table 4: Difference between SAM and FSAM, MFS.

Absolute Difference	unit.	Percentage Difference	%
Building	0,2345	Trucks and Buses	59,91
Trade	0,0389	Building	55,13
Transportation, storage and mailing	0,023	Machinery and equip., including maint. and repairs	49,11
Machinery and equip., including maint. and repairs	0,0107	Cement	45,74
Financial intermediation and insurance	0,0098	Office machines and computer equip.	42,94
Food and Drinks	0,0085	Other non-metallic mineral products	40,33
Real estate and rental	0,008	Metal products - except machinery and equip.	33,69
Electric. and gas, water, sewage and cleaning urb.	0,0065	Steel manufacturing and derivatives	32,45

Source: Elaborated by authors.

Concerning to the difference between the SAM and FSAM multipliers, we highlight the sectors with the greatest absolute and percentage difference. We have two sets of distinct sectors. The absolute difference, concentrates tertiary sectors such as Trade and Services, with the exception of Construction, Machinery and equipment, and Food and drinks, which are industrial sectors. In the percentage difference, we observe sectors of mineral heavy industry and production of capital goods such as Trucks and buses, Machinery and equipment, in addition to the Construction and its supply chain, like Cement. The incremental effect of financial intermediation can be evidenced in these sectors.

We highlight Construction (Building), and Machinery and equipment, whose percentage and absolute differences are relevant. We emphasize the Construction sector as one that suffered the greatest effect of financial intermediation in the period, with the largest absolute difference and second highest percentage difference. As seen, the Construction is one of the top 10 sectors of the Brazilian economy (6th place in terms of gross value of production and generation of added value), with significant percentages of growth as well as being the sector that most contributes to the gross fixed capital formation in the Brazilian economy. Thus, we can see the great influence of financial intermediation, not only as a service sector, but also, increasing the Construction industry growth. The big difference between MFS from SAM and from FSAM for this sector points to the great importance of financial intermediation as a provider of funding, that is, allocating resources to the construction sector. This information meets the information contained in the Banking and Credit Economics Reports (BCB, 2005-2010), indicating growth of housing loans higher than the average growth of other lines of credit in the period observed.

The Trade and Transport, storage and mailing sectrors are important economic sectors in the Brazilian economy (in terms of production gross value and generation of added value). Thus, it is understood that the importance of financial intermediation for these sectors is related to support services, since the large size of these sectors demand more services from financial operations (deposits, payments, receipts, exchange). However, since the difference between SAM and FSAM MFS is great, we observed that financial intermediation not only meets the needs related to transactions from Trade and Transport, but also takes significant role in funding the growth of these sectors.

The same can be said about the relationship between financial intermediation and the Food and drinks industry, which is also one of the most important sectors in gross

value of production (3rd largest). Besides, it is the only industrial activity which grew throughout the period, it is the sector with the greatest Input-Outpu Multiplier (MP), so it is the sector with the greatest ability to stimulate the output gap. Since the Food and drink´s MP and the MFS are high, we understand that financial intermediation tend to be effective in transmition resource to this sector with has the highest potential to positively influence the output gap.

Overall, the sectors with higher MFS in absolute terms, are also the most important sectors in terms of gross value of production in the Brazilian economy. Thus, financial intermediation was being effective in directing resources to these sectors, providing financial services and additionally funding investment, imports and exports, contributing to economic growth.

In relative terms, in addition to Construction, we highlight the Trucks and buses and Machines and equipment sectors. They have medium and low participation in the gross value of production, with growth of total production by 2008 and reduction in 2009. Machinery and Equipment grew up in the middle of the sectors in the period, but Trucks and buses grew below average. As can be seen in Annex 1, both are sectors with a significant share in imports, exports and gross fixed capital formation. Additionally, the MP of these sectors are one of the largest. According to Banking and Credit Economics Reports (BCB, 2010), these sectors received specifically credit lines between 2008 and 2009. The release of funds for the equipment sector for office and computer equipment, machinery and equipment, including maintenance and repair, had a positive effect on MFS, which had been reduced and proved effective increase in 2009. In this sense, the big (percentage) difference of the SAM and FSAM multipliers (MFS) for these two sectors highlights the role of financial intermediation as a financier of the economic growth.

Steel and derivatives manufacturing, Metal products and Other non-metallic mineral, participate with 1.73%, 1.53% Steel and derivatives manufacturing and 0.72% of economic output, respectively, and grew until 2008. In 2009 there was a fall in output, the largest fall in the first, Steel and derivatives manufacturing, probably due to its higher share of exports (around 6% of Brazilian exports output comes from this sector, and the reduction in its exports between 2008 and 2009 were about 40%). Both are sectors with the potential to increase economic growth, as its MP are above the mean. The Financial Intermediation was effective in directing resources to these sectors, but the dependence on the external sector and the low level of global economic growth observed in 2008 and

2009, seems to limit the role of financial intermediation, making it inefficient in the objective of promoting economic growth.

Additional considerations can be made about the Real estate and rental services, which is presented with important influence of financial intermediation. Real estate and rental contributes a little to economic growth compared to other sectors because its Input-Output multiplier (MP) effect is the lowest among the sectors.

Final Remarks

This study aimed to point how the Financial Intermediation affects the Brazilian productive sectors. We show the effect of an exogenous shock in the demand of financial intermediation sector in the others economic activity, by the Sectoral Financial Multipliers (MFS), calculated from the Brazilian Financial and Social Accounting Matrix (MCSF), built for the period 2005 to 2009. The incremental effect of financial intermediation derived from the allocation of resources and provision of funding was evidenced by comparing the MFS from the FSAM (where financial flows are endogenous) with the MFS from the SAM (where financial flows are exogenous).

We observe that the exogenous shock of a currency in the financial intermediation sector generated an average increase of 2.2 units in total output of the economy over the years 2005 and 2009, being lower in the early years and increasing in the last two years. In other words, despite the high volatility of financial liabilities flows to Brazilian non-financial firms, financial intermediation was more efficient in allocating resources in the most turbulent period of crisis. At the time of crisis and the "post-crisis" (2008 and 2009), the Financial Intermediation increased its ability to foster economic output. The sectors that are most and least affected by the financial sector were highlighted. Looking at the average over the years, Trade sectors, Information services, Business services, Food and drinks industry and Real estate and rental services are the sectors with the highest Sectoral Financial Multipliers (MFS); and the sectors of Public education and health, Iron ore, Tobacco products, Cement, Paints, varnishes, enamels and lacquers, those with smaller MFS.

Comparing the SAM and FSAM multipliers we could identify the incremental effect of financial intermediation, we highlights the Construction (Building) sectors, Machines and equipment manufacturing, Tucks and buses, as those that the financial

intermediation contributed most incrementally as the supplier of funding to output growth and investment.

In addition we highlight the importance of financial intermediation in promoting exports and gross fixed capital formation, already revealing the efficiency of financial intermediation to direct resources to tertiary sectors of the economy such as Trade, and Services, and to industrial sectors such as Food and drinks. This sector that have high potential for increasing economic growth. On the other hand, we can highlight the importance of financial intermediation in providing funding for Heavy industries such as Steel manufacturing, Non metallic metals and minerals; however, the reduction in world economic growth mitigated the ability of financial intermediation in increasing investments and production in these sectors.

Importantly, however, the small capacity of financial intermediation in promoting activities related to the production chains of Mining and metallurgy, Manufacture of coke, Products derived from biofuel oil, Manufacturing of chemicals, among other industrial sectors, which are important sectors for the output and the dynamics in the Brazilian economy, but essentially depending on the demand from abroad.

Thus, we suggest that further studies aims to understand the needs of these sectors and supply constraints in relation to them, so could be developed policies that reduce the existing frictions in the financial intermediation relationship with these sectors. In addition, measures should be taken to strengthen financial intermediation, to keeps the ability to influence permanently the output, not only in times of crisis. Another issue that deserves further investigation, but that was not the initial goals of this work refers to the large share of public administration in production, income transfers in Brazilian economy. Finally, it is noteworthy that the analyzes in this paper are limited to the assumptions of the input-output methodology with fixed production coefficients, emphasizing that are suitable for short-term analysis, like it is done in this work.

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Annex 1: Overview of the Productive Sector Activity Brazilian
Shows the percentage participation of each of the 56 sectors of economic activity in relation to the total economy, average for the years 2005-2009 on the following economic aggregates: Gross Value of Production, Total Value Added, Compensation, gross operating surplus , Tax Payments, Import, Export and Investment, in addition to Product Multiplier each sector (average of 5 years).
Source: Authors.

Annex 2: Financial Multipliers comparison Sector (MFS) of the Social Accounting Matrix (SAM) with MFS Social Accounting Matrix and financial (MCSF)
The difference is calculated from the average of the MFS of MCS and MCSF for each of the 56 sectors over the years 2005 and 2009.
Source: Authors.

	Setores	VBP	VA	Wage	EOB	Tax.	Imp.	Exp.	Inv.	MP
I6	Food and Drinks	6,53	2,86	2,87	2,01	7,43	3,97	9,59	-0,01	3,93
I35	Cars, Trucks and Utilities	1,57	0,47	0,67	0,07	2,42	3,18	2,49	5,90	3,79
I36	Trucks and buses	0,48	0,16	0,20	0,06	0,67	1,17	1,43	3,52	3,77
I10	Leather goods and footwear	0,53	0,35	0,52	0,11	0,71	0,67	1,53	0,10	3,75
I7	Tobacco products	0,22	0,12	0,09	0,11	0,32	0,14	0,66	-0,02	3,70
I37	Parts and accessories for motor vehicles	1,35	0,82	1,04	0,47	1,58	2,69	2,69	0,63	3,62
I19	Pesticides	0,31	0,13	0,13	0,09	0,42	0,71	0,21	0,13	3,61
I11	Wood products - furniture exclusive	0,44	0,37	0,34	0,36	0,47	0,36	1,33	-0,05	3,55
I12	Pulp and paper products	0,91	0,61	0,57	0,52	1,24	1,49	1,85	0,20	3,54
I2	Livestock and fisheries	1,82	1,81	1,78	1,82	1,73	0,96	0,89	2,16	3,54
I30	Appliances	0,25	0,15	0,15	0,12	0,38	0,45	0,12	0,15	3,54
I15	Alcohol	0,40	0,33	0,21	0,46	0,28	0,08	0,60	-0,14	3,54
I29	Machinery and equip., including maint. and repairs	1,70	1,11	1,42	0,71	2,15	2,78	3,38	11,37	3,53
I48	Accommodation and food services	2,03	1,95	1,53	2,21	3,61	0,68	2,51	0,02	3,51
I20	Perfumery, hygiene and cleaning	0,47	0,31	0,25	0,33	0,62	0,83	0,19	-0,01	3,50
I9	Articles of apparel and accessories	0,74	0,64	0,67	0,60	0,82	0,68	0,10	0,14	3,48
I21	Paints, varnishes, enamels and lacquers	0,22	0,14	0,15	0,12	0,24	0,51	0,09	0,03	3,48
I24	Cement	0,19	0,13	0,08	0,16	0,27	0,23	0,02	0,03	3,47
I8	Textiles	0,81	0,64	0,56	0,66	0,75	1,03	0,82	0,05	3,46
I14	Petroleum refining and coke	3,00	0,85	0,32	0,87	4,06	12,10	2,71	0,12	3,45
I22	Products and prepared several chemical	0,29	0,17	0,18	0,12	0,37	0,84	0,36	0,02	3,45
I25	Other non-metallic mineral products	0,72	0,57	0,65	0,44	1,02	0,92	0,87	0,23	3,45
I38	Other transport equipment	0,66	0,34	0,44	0,18	0,79	2,03	3,09	1,44	3,44
I32	Machinery, appliances and electric equipment	0,84	0,57	0,63	0,42	1,13	1,59	1,12	1,76	3,44
I39	Furniture and products of various industries	0,84	0,73	0,57	0,84	0,89	0,95	0,52	1,75	3,44
I26	Steel manufacturing and derivatives	1,73	1,07	0,65	1,29	1,92	4,26	5,30	0,52	3,44
I16	Chemicals	1,42	0,61	0,46	0,52	1,86	5,01	1,56	0,07	3,44
I28	Metal products - except machinery and equip.	1,31	1,10	1,02	1,10	1,22	1,77	0,80	3,17	3,43
I23	Rubber and plastic	1,17	0,73	0,86	0,50	1,34	3,28	0,96	-0,11	3,43
I55	Public health	1,65	1,90	3,81	0,26	1,38	1,51	0,00	0,00	3,42
I56	Public administration and social security	7,79	9,74	17,69	2,84	5,28	2,97	0,24	0,08	3,41
I27	Non-ferrous metallurgy	0,72	0,43	0,35	0,41	0,92	1,56	3,27	0,40	3,41
I50	Commercial education	0,93	1,14	2,13	0,21	0,93	0,56	0,03	0,04	3,40
I33	Electronic materials and equip. communications	0,72	0,31	0,30	0,14	1,28	3,47	1,40	2,58	3,38
I52	Services rendered to families and associations	2,22	2,37	2,84	1,80	2,87	1,30	0,58	0,45	3,38
I54	Public education	2,39	3,47	7,26	0,43	1,12	0,48	0,00	0,00	3,37
I13	Newspapers, magazines, records	0,73	0,73	0,63	0,81	0,74	0,76	0,03	-0,15	3,37
I17	Resin manufacturing and elastomers	0,55	0,24	0,17	0,18	0,67	2,21	1,11	0,18	3,37
I5	Other mining and quarrying	0,35	0,28	0,23	0,31	0,48	0,48	0,75	0,05	3,37
I4	Iron ore	0,61	0,56	0,17	0,94	0,61	0,55	5,67	0,03	3,35
I43	Transportation, storage and mailing	4,84	4,93	4,62	5,11	5,48	3,83	3,32	1,46	3,35
I51	Commercial health	1,77	1,91	2,29	1,60	1,87	1,55	0,06	0,10	3,34
I41	Building	4,64	4,87	3,65	6,24	3,99	2,96	0,33	44,16	3,34
I3	Oil and natural gas	1,85	1,73	0,86	2,55	1,63	1,98	3,46	0,22	3,32
I18	Pharmaceutical products	0,70	0,69	0,56	0,80	0,75	0,89	0,31	-0,04	3,32
I49	Business services	3,95	4,75	5,75	4,02	4,10	1,55	5,01	0,44	3,29
I44	Information services	3,69	3,85	2,72	4,60	5,40	2,53	0,22	-0,02	3,25
I53	Domestic services	0,62	1,16	2,57	0,00	0,02	0,00	0,00	0,00	3,24
I1	Agriculture, forestry, logging	3,22	3,71	2,35	5,25	2,07	3,14	5,76	1,17	3,23
I45	Financial intermediation and insurance	5,48	6,96	5,61	8,65	4,57	1,57	0,56	0,01	3,21
I40	Electric. and gas, water, sewage and cleaning ur	3,26	3,59	1,55	5,17	4,55	2,27	0,10	0,01	3,18
I42	Trade	8,44	11,42	11,26	12,74	6,57	3,61	6,35	9,93	3,16
I31	Office machines and computer equip.de	0,39	0,17	0,16	0,09	0,79	1,50	0,16	3,30	3,16
I34	Appliances/ hospital medical/ optical instrum.	0,28	0,31	0,23	0,39	0,28	0,53	0,28	1,42	3,14
I47	Maintenance and repair services	0,70	0,98	0,62	1,43	0,44	0,63	0,01	0,02	3,03
I46	Real estate and rental	4,52	7,95	0,61	15,79	0,48	0,27	0,55	0,99	2,74
Média		1,79	1,79	1,79	1,79	1,79	1,79	1,56	1,79	3,42

	Sectoral Financial Multipliers (MFS)	Mean 2005-2009		Difference	
		SAM	FSAM	Abs.	%
I36	Trucks and buses	0,0052	0,0084	0,0031	59,91
I41	Building	0,0706	0,1095	0,0389	55,13
I29	Machinery and equip., including maint. and repairs	0,0218	0,0325	0,0107	49,11
I24	Cement	0,0030	0,0043	0,0014	45,74
I31	Office machines and computer equip.	0,0067	0,0096	0,0029	42,94
I25	Other non-metallic mineral products	0,0105	0,0147	0,0042	40,33
I28	Metal products - except machinery and equip.	0,0192	0,0257	0,0065	33,69
I26	Steel manufacturing and derivatives	0,0191	0,0253	0,0062	32,45
I33	Electronic materials and equip. communications	0,0116	0,0154	0,0038	32,37
I4	Iron ore	0,0019	0,0025	0,0006	31,50
I34	Appliances/ hospital medical/ optical instrum.	0,0048	0,0062	0,0015	31,22
I27	Non-ferrous metallurgy	0,0073	0,0096	0,0022	30,09
I21	Paints, varnishes, enamels and lacquers	0,0036	0,0047	0,0011	29,08
I5	Other mining and quarrying	0,0041	0,0052	0,0011	27,71
I38	Other transport equipment	0,0068	0,0086	0,0019	27,24
I32	Machinery, appliances and electric equipment	0,0139	0,0176	0,0037	26,60
I11	Wood products - furniture exclusive	0,0061	0,0077	0,0016	25,51
I35	Cars, Trucks and Utilities	0,0277	0,0339	0,0062	22,54
I37	Parts and accessories for motor vehicles	0,0205	0,0249	0,0044	21,70
I23	Rubber and plastic	0,0224	0,0259	0,0035	15,59
I17	Resin manufacturing and elastomers	0,0092	0,0107	0,0014	15,57
I42	Trade	0,1677	0,1906	0,0230	13,70
I16	Chemicals	0,0221	0,0251	0,0030	13,44
I2	Livestock and fisheries	0,0340	0,0380	0,0040	11,88
I22	Products and prepared several chemical	0,0053	0,0059	0,0006	11,82
I39	Furniture and products of various industries	0,0226	0,0252	0,0026	11,36
I3	Oil and natural gas	0,0286	0,0318	0,0032	11,28
I14	Petroleum refining and coke	0,0570	0,0634	0,0063	11,09
I19	Pesticides	0,0053	0,0059	0,0006	10,65
I43	Transportation, storage and mailing	0,1040	0,1149	0,0108	10,43
I40	Electric. and gas, water, sewage and urban cleaning	0,0730	0,0795	0,0065	8,91
I1	Agriculture, forestry, logging	0,0546	0,0595	0,0048	8,80
I30	Appliances	0,0057	0,0062	0,0005	8,71
I8	Textiles	0,0172	0,0186	0,0014	7,92
I15	Alcohol	0,0072	0,0077	0,0005	7,68
I10	Leather goods and footwear	0,0092	0,0099	0,0007	7,56
I46	Real estate and rental	0,1074	0,1153	0,0080	7,44
I20	Perfumery, hygiene and cleaning	0,0107	0,0115	0,0008	7,38
I52	Services rendered to families and associations	0,0546	0,0585	0,0040	7,31
I6	Food and Drinks	0,1231	0,1316	0,0085	6,93
I12	Pulp and paper products	0,0221	0,0236	0,0015	6,89
I18	Pharmaceutical products	0,0130	0,0139	0,0009	6,88
I51	Commercial health	0,0363	0,0388	0,0025	6,86
I55	Public health	0,0009	0,0010	0,0001	6,79
I56	Public administration and social security	0,0109	0,0116	0,0007	6,77
I53	Domestic services	0,0148	0,0158	0,0010	6,66
I9	Articles of apparel and accessories	0,0184	0,0197	0,0012	6,66
I48	Accommodation and food services	0,0442	0,0470	0,0029	6,50
I7	Tobacco products	0,0041	0,0043	0,0003	6,28
I50	Commercial education	0,0242	0,0257	0,0015	6,12
I54	Public education	0,0003	0,0004	0,0000	5,90
I47	Maintenance and repair services	0,0211	0,0223	0,0012	5,67
I49	Business services	0,1325	0,1395	0,0071	5,34
I44	Information services	0,1425	0,1486	0,0060	4,23
I13	Newspapers, magazines, records	0,0341	0,0352	0,0011	3,34
I45	Financial intermediation and insurance	1,2464	1,2562	0,0098	0,79
	Total	2,9711	3,2056	0,2345	7,89