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FELIPE TUMENAS MARQUES

THREE ESSAYS ON CONFLICTS OF INTEREST IN FINANCIAL MARKETS

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Tese apresentada à Escola de Administração de Empresas de São Paulo da Fundação Getúlio Vargas como requisito para obtenção do título de Doutor em Administração de Empresas.

Campo de Conhecimento: Finanças

Orientador: Prof. Dr. Antônio Gledson de Carvalho

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ABSTRACT

This thesis aims to explore possible conflicts of interest between the activities of agents in the Brazilian financial market, especially banks, investment funds and analysts.

In the first chapter, the focus is the possible lack of a Chinese Wall between the investment banking activities and the asset management unit of the same bank during the bond underwriting process. The conflict of interest analyzed is the possible use of funds under management of the same bank to allocate bond issuances that would not have sufficient demand in the market. The paper proposes an empirical study of bonds issued in Brazil between 2005 and 2015. The results show that bond 'excess return' at the time of issuance is negative when there is allocation of funds associated with the underwriter, supporting the thesis of conflict of interest. However, when the associated funds are for Institutional Investors, the 'excess return' is positive indicating that the better monitoring of the fund's activities could serve as mitigation for the conflict of interest.

In the second chapter the assessed conflict of interest is the funding activities of banks and the rates obtained by investment funds from fixed income assets issued by banks. The hypothesis tested is that affiliated funds obtain a lower yield than non-affiliated funds on the same assets. To test this hypothesis, an empirical study was conducted in Brazil with the rates of Letra Financeira, from the beginning of its emergence in 2010 until the end of 2015. The results point that funds, when investing in Letras Financeiras of the controlling bank, obtain a lower yield than that obtained by funds not affiliated to the same bank. However, like the results obtained in the previous chapter, this effect is not observed in funds for Institutional Investors. Corroborating the idea that better monitoring can mitigate the conflict of interest involved.

Finally, the third chapter analyzes two possible conflicts of interest derived from the relationship between the opinions of stock analysts and the investments of the funds affiliated to the same bank. The first hypothesis is about optimism of the analysts as the affiliated funds have a large volume of investment in the stock. The second hypothesis is about Front Running, where funds anticipate changes in analysts' opinions of the same bank.

The database used in this study was the opinion of all analysts covering Brazilian stocks for 10 years, from 2005 to 2015. The results suggest that: (i) there is an optimism of analysts associated with Brazilian banks related to the volume invested by affiliated funds, and (ii) the evidence does not support the hypothesis of front running by the funds.

Keywords: Financial markets, conflicts of interest, finance, financial institutions.

RESUMO

Esta tese examina possíveis conflitos de interesse entre as atividades dos agentes atuantes no mercado financeiro brasileiro, especialmente bancos, fundos de investimentos e analistas.

No primeiro capítulo, analisa-se o conflito de interesse da possível falta de um *Chinese Wall* entre as operações de banco de investimento e a área de fundos de investimento de um mesmo banco durante o processo de emissão de debêntures. O conflito de interesse analisado é a possível utilização dos fundos de investimentos sob a gestão do banco coordenador para alocar emissões que não teriam demanda suficiente no mercado. Foi realizado um estudo empírico das emissões de debêntures realizadas no Brasil entre 2005 e 2015. Os resultados mostram que o ‘retorno em excesso’ das debêntures no momento de emissão é negativo quando há alocação dos fundos de investimento associados ao banco coordenador da emissão, indicando a possibilidade do conflito de interesse. Porém, quando os fundos associados são destinados a Investidores Qualificados, o ‘retorno em excesso’ é positivo indicando que o possível melhor monitoramento das atividades do fundo serve de mitigador para o conflito de interesse..

No segundo capítulo o conflito de interesse avaliado são as atividades de captação dos bancos e as taxas obtidas pelos fundos de investimento nos ativos de renda fixa emitidos pelos bancos. A hipótese testada é que fundos associados aos bancos obtém uma taxa menor que os fundos não associados nos mesmos ativos. Para avaliar esta hipótese foi realizado um estudo empírico no Brasil com as taxas das Letras Financeiras, desde o início de seu surgimento em 2010 até o final de 2015. Os resultados apontam que os fundos, ao investirem em Letras Financeiras do banco controlador, obtém uma taxa menor que a obtida por outros fundos em Letras Financeiras deste mesmo banco. Porém, assim como os resultados obtidos no capítulo anterior, este efeito não é observado em fundos destinados a Investidores Qualificados, o que corrobora a ideia de que um melhor monitoramento pode mitigar o conflito de interesses envolvido.

Por fim, no terceiro capítulo, são analisados dois possíveis conflitos de interesse derivados da relação entre as opiniões dos analistas de ações e os investimentos dos fundos do mesmo banco. O primeiro conflito é o otimismo dos analistas conforme os fundos associados ao mesmo banco possuem um grande volume de investimento nas ações avaliadas. O segundo conflito é o *Front Running*, onde os fundos obtém retornos antecipando as mudanças de opiniões dos analistas relacionados ao mesmo banco. Foram avaliadas as opiniões de todos os analistas que cobrem as ações brasileiras por 10 anos. Os resultados sugerem que: (i) existe um indicativo de otimismo dos analistas associados aos bancos brasileiros quanto maior o volume de recursos aplicado pelos fundos associados e que (ii) as evidências não dão suporte à hipótese de *front running* por parte dos fundos.

Palavras-chave: Mercado financeiro, conflito de interesses, finanças instituições financeiras.

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1 - CONFLICT OF INTEREST IN BOND UNDERWRITING

1.1 - Introduction

Conflict of interest has been an important issue in universal banks. Most of the literature focuses on banks that supply capital and underwrite issues for a same corporate client (Calomiris and Pornrojngkool, 2009, provide a comprehensive review of this literature).

In this study we focus on a potential conflict of interest that may result from banks underwriting securities and managing investment funds and, consequently, deciding whether to subscribe to those issues with its own funds, the affiliated funds.

This problem has been little studied. The exceptions are focused on Initial Public Offerings (IPO): Ber, Yafeh and Yosha (2001) studied Israeli IPOs during the 1990s and found that stock performance during the first year after the IPO is lower than average when an affiliated investment fund is heavily involved in the IPO. The conflict of interest analyzed is that universal banks float the 'cherries' but not the 'lemons' in expense of investors of its affiliated funds. The investment bank could use its affiliated funds to buy shares that otherwise would have found buyers only at a lower price. On the other side, Ritter and Zang (2007) found that during the internet bubble in the period of 1999–2000 lead underwriter allocates hot IPOs to its affiliated funds to boost their performance and thus attract more money, as occurred.

Besides the use of funds under management there is also the use of inside information between bank divisions, when there should exist a *Chinese Wall* preventing the information flow, Herzel and Colling (1978).

Massa and Rehman (2008) showed that affiliated mutual funds increase their stock holdings in firms borrowing from the affiliated bank around the initiation of the deal by greater amount than other unaffiliated funds. The performance of these positions is superior to the performance in other stocks located in the same industry, as well as to that of similar stocks matched on size and book-to-market ratio. The evidence found indicated that asset management units could benefit from the information available in other units, with lending

divisions of banks passing the information about borrowing firms to their affiliated asset divisions.

Ivashina and Sun (2011) studied loan syndication and the performance of stock trading by institutional investors of the same company. They also found that these trades outperformed trades by other managers and trades in other stocks.

Focusing on the sharing of material inside information to clients, Griffin, Shu and Topagluthe (2012) examined whether clients of investment banks who were underwriters of IPOs and seasoned equity offerings (SEO) engage in profitable trades before earnings and takeover announcements and found some evidence of buying ahead. However, the trades are not in the right direction or earn abnormal returns on average.

In fact, the literature has showed evidence of this conflict in equity underwriting. Despite the bond market be bigger than equities markets, SIFMA (2015), the possible conflict of interest in bond underwriting process has not been analyzed yet by the best of our knowledge.

This study analyzes the potential conflict between the investment bank and asset management areas during the bond underwriting process and the focus will be the Brazilian market.

Brazil offers a good setting for this issue for several reasons.

First, it is a large market. According to the Investment Company Institute, by the end of 2014 Brazil had the 7th largest asset management industry in the world by net assets and the 3rd largest number of funds (only behind Luxembourg and Korea), ICI (2015).

Second, there was a change in regulation in January of 2009 that led to a boosting in bond issuances in Brazil. Brazilian Securities Exchange Commission (CVM) issued the instruction 476 (ICVM 476) that allowed credit-based securities to be offered to a small number of qualified investors without registration in CVM. This instruction led an increase in bond issuances in Brazil, where the average annual number of issuances went from 38 in the 2003-2008 period to 177 in the 2009-2015, with 90% of issuances under this instruction. This softening of the rules on underwriting could lead to a bigger use of affiliated asset management units to unload the bond issuances. Table 1 shows the

number of bond issuances during the period, excluding issuances of companies affiliated to financial institutions (leasing companies).

Year	Non ICVM 476		ICVM 476	
	Issuances	Total Amount (BRL MM)	Issuances	Total Amount (BRL MM)
2005	46	14,248.0		
2006	42	22,155.0		
2007	49	13,430.8		
2008	37	9,050.4		
2009	40	13,260.8	73	15,991.1
2010	33	15,086.4	163	39,445.8
2011	15	2,980.0	195	49,335.2
2012	35	15,047.5	286	76,730.5
2013	35	10,944.8	311	60,109.1
2014	14	3,923.6	339	112,530.3
2015	17	10,639.7	252	55,510.3

Source: www.debentures.com.br

Table 1 - Bond Issuances

This table shows the number of issuances and the total amount issued for both ICVM 476 and non ICVM 476 for each year

An important fact of this instruction is that private companies are allowed to issue bonds under this normative. However, despite simplifying some regulatory burden for the underwriting process, this instruction restricts the advertising and selling to a limited number (up to 50 for advertising and up to 20 for selling) of qualified investors, which are institutional investors and individuals that have more than BRL 300,000 in investments. Investors who buy bonds issued under this instruction on the primary market have to hold the bonds for 90 days before selling in the secondary market. These two characteristics could lead to difficulties to correctly price the bonds.

The third reason is that one characteristic of the Brazilian bond market is the lack of liquidity and consequently the pricing of these bonds (Sheng and Saito 2008; Sheng and Saito 2005). The volume of negotiations in the secondary market is small and in the primary market 70% of the volume of the issuances is held by banks (Almeida and Bazilio, 2015).

The opportunity to disguise mispricing in the issuance of equity by the underwriting bank is thoroughly discussed in Ritter and Welch (2002), and the underwriting bank would normally not have discretionary power to disguise

prices by the characteristics of bonds, as predetermined cash flow and rating supplied by an independent agent.

However, this discretionary power of the underwriting bank of bonds is possible by the lack of liquidity of the Brazilian bond market. One possible factor explaining the lack of liquidity is tax arbitrage. Banks can use bonds under ICVM 476, which do not require registration in the CVM, to replace regular credit operations to companies and avoid Financial Operations Tax (IOF) and avoid capital requirements for credit risk (Almeida and Bazilio, 2015).

The fourth reason is that it is possible to differentiate funds for different types of investors. This is important because some investors, like institutional investors, are more informed than the regular investors (Ke and Petroni, 2004), and these investors control more the investments of its funds, thus preventing possible conflicts of interest in bond underwriting and investments. In Brazil funds could have three possible flags (CVM, 2014):

- **Closed Fund:** funds that do not allow investors to enter and exit. After a specified period, new quota holders and new investments are no longer admitted by the former investors in the fund. In addition, it is also not allowed to redeem investments. The deadline for closing the fund is also previously set;

- **Institutional Investor:** funds targeted to legal persons or persons with financial assets greater than BRL 1 million;

- **Exclusive Fund:** fund designed to a single investor, who should be classified as Professional Investor (Legal persons, persons with financial assets greater than BRL 10 million or persons with special authorization from CVM, like professional analysts and portfolio managers).

The fifth reason is that Brazil has a concentrated banking system (Chang, Guerra, Lima and Tabak, 2008), and this fact could increase the chances of conflict of interest, as clients would not have many options to switch bank in case they are harmed by conflictuous investments made by their funds.

The sixth reason is an important aspect discussed in the Brazilian press, that banks could keep issuances with good quality only to participants involved

in the underwriting process Veja (2011). This possible conflict of interest can be analyzed by the allocations of funds affiliated to other agents in the underwriting process, like the fiduciary agent, which is not necessarily the same bank who is the underwriter. Table 2 shows the banks that were fiduciary agents for both non ICVM 476 and ICVM 476. The two biggest private banks in Brazil concentrate the issuances for both categories.

Fiduciary Agent	non ICVM 476	% ICVM 476
ITAU UNIBANCO S/A	183	784
BANCO BRADESCO S/A	157	773
BANCO CITIBANK S/A	11	54
BANCO DO BRASIL S/A	8	9
BANCO PINE S/A		12
BANCO PAULISTA S/A		2
NO BANK		6

Source: www.debentures.com.br

Table 2 - Fiduciary Agents

This table shows the number of issuances each bank was the fiduciary agent.

This study focus on bond issuances in Brazil from 2005 to 2015, a period of special importance due the introduction in 2009 of instruction 476 which permitted the bond issuances with restricted efforts. This new instruction allowed bond issuances without registration in Brazilian Securities and Exchange Commission (CVM) by narrowing the public to be marketed to a limited number of institutional investors. Therefore, the number of issuances in bond market had a sharp increase with this instruction.

This study builds on the literature by expanding the analysis to the bond underwriting process, which has not been studied so far, and, also, studying the impact of introduction of private placements regulation in Brazil on bond allocation in affiliated mutual funds. We show that the conflict of interest found in Ber, Yafeh and Yosha (2001) is also present in bond underwriting and, more interesting, also show that funds for more informed investors does not suffer from this conflict of interest. Our results also point that nepotism found in Ritter and Zang(200) could be present in bond underwriting, however the number of occurrences does not allow to have a statistical significant result.

The rest of this paper is structured as follows. Section 2 presents the hypotheses tested, Section 3 characterized the sample and methods used, in Section 4 we analyze the results and in the last section, Section 5, we make the conclusion.

1.2 - Hypotheses

The hypotheses of this paper are as follows:

Hypothesis 1 - Dumping ground hypothesis: Investment banks allocate the bonds with lower returns in affiliated mutual funds. The less attractive a bond is to the market the more allocation it has in affiliated mutual funds.

This hypothesis follows the studies of Ber, Yafeh and Yosha (2001), with a different financial instrument, bonds instead of stocks. The bond issuances in Brazil has faced a large increase with the instruction ICVM 476, and the characteristics of Brazilian bond market, like lack of liquidity, bank concentration and funds for different types of investors provide a fertile ground for the existence of this conflict of interest.

Hypothesis 2 - Nepotism hypothesis: The more attractive a bond is to the market greater is the allocation in affiliated mutual funds and funds related in the underwriting process. This hypothesis is the opposite of the previous one and is related to anecdotal evidence in the Brazilian press, IstoÉ (2016) and also related to studies of Ritter and Zang (2007), where the underwriting bank privileges its affiliated funds.

1.3 - Data and Methods

The data used in this paper consists of the end of month holdings for all Brazilian mutual funds from March 2005 to December 2015 obtained from CVM website.

One characteristic of Brazilian bond market is the lack liquidity; with this in mind, we assume that if a fund has the bond in its holdings at the end of the month the bond was issued the fund has bought it during the underwriting process. This assumption is not necessary for bonds under the ICVM 476, since these bonds cannot be traded for 90 days after its issuance.

The credit risk information is the rating of the issuance of the issuer at the time collected in a Bloomberg Terminal. The ratings were converted to a numeric scale with the conversion criteria presented in the table 3, using the methodology based in Sheng and Saito (2008), and issuances not rated were attributed a number lower than the last number in the scale.

Rating	Moody's	SP	Fitch
1	Aaa	BrAAA	AAA(bra)
2	Aa1	BrAA+	AA+(bra)
3	Aa2	BrAA	AA(bra)
4	Aa3	BrAA-	AA-(bra)
5	A1	BrA+	A+(bra)
6	A2	BrA	A(bra)
7	A3	BrA-	A-(bra)
8	Baa1	BrBBB+	BBB+(bra)
9	Baa2	BrBBB	BBB(bra)
10	Baa3	BrBBB-	BBB-(bra)
11	Ba1	BrBB+	BB+(bra)
12	Ba2	BrBB	BB(bra)
13	Ba3	BrBB-	BB-(bra)
14	B1	BrB+	B+(bra)
15	B2	BrB	B(bra)
16	B3	BrB-	B-(bra)
17	Caa1	BrCCC	CCC(bra)

Source: Analysis and Sheng and Saito (2008)

Table 3 - Ratings Conversion

This table shows the conversion scale used to transform each rating to a number.

The distribution of issuances and volume issued by rating is presented in table 4.

Non ICVM 476			ICVM 476		
	Issuances	Total Amount (BRL MM)		Issuances	Total Amount (BRL MM)
1	50	34,211.1	72		42,928.6
2	43	17,897.5	77		28,063.0
3	47	15,842.5	98		28,999.0
4	52	13,312.0	135		37,912.3
5	53	20,240.5	53		16,500.0
6	47	10,589.2	81		12,103.9
7	25	5,604.0	39		6,380.7
8	18	5,415.7	40		7,225.8
9	5	2,000.0	17		4,959.0
10	4	950.0	17		5,882.3
11	1	64.0	2		284.0
12	1	250.0	4		900.0
13	5	679.0	4		654.0
14			18		923.0
15	1	370.0			
17			1		179.5
NR	11	3,341.4	1048		228,486.6

Source: www.debentures.com.br and analysis

KS Volume (p-value) : 0.94118

KS Quantity (p-value) : 0.41536

Table 4 - Rating Distribution

This table shows the distribution of ratings between ICVM and non ICVM issuances both for quantity and for financial volume. The p-value of Kolmogorov-Smirnov tests shows no statistical difference of ratings distribution between the two groups for quantity and financial volume.

Comparing the distribution by rating of the number of issuances and the volume of issuances with the Kolmogorov-Smirnov test (KS), the data showed no evidence of difference in the distribution of the two groups.

One important aspect of bonds in Brazil is the lack of liquidity that does not allow participants to mark to market bonds properly. This characteristic is worsened by the fact that not all issuances have credit rating. With market risk for bonds relying on internal models of each investor, credit events are the main risks, alongside liquidity risk, faced by investors when investing in corporate bonds. In this paper two types of credit events are considered, default and renegotiation.

The credit problems are categorized as ex-post, whether the event occurred after the issuance, and as ex-ante, whether the issuer had already an issuance with credit event by the time of each issuance.

For the ex-post categories, tables 5 and 6 the credit events are concentrated in ICVM 476 emissions and in not rated (NR) issuances.

	Non ICVM 476		ICVM 476	
	Issuances	Default Ex-Post	Issuances	Default Ex-Post
1	50	0	72	0
2	43	0	77	0
3	47	0	98	0
4	52	0	135	0
5	53	0	53	0
6	47	0	81	1
7	25	0	39	3
8	18	0	40	9
9	5	0	17	0
10	4	0	17	2
11	1	0	2	1
12	1	0	4	0
13	5	0	4	0
14	0	0	18	2
15	1	1	0	0
17	0	0	1	0
NR	11	1	1048	90

Source: www.debentures.com.br and analysis

Table 5 - Default *Ex-Post*

This table shows the distribution by rating of issuances and *ex-post* defaults for ICVM and non ICVM categories.

	Non ICVM 476		ICVM 476	
	Issuances	Ren. Ex-Post	Issuances	Ren. Ex-Post
1	50	2	72	3
2	43	0	77	0
3	47	0	98	0
4	52	1	135	0
5	53	0	53	0
6	47	1	81	4
7	25	0	39	1
8	18	0	40	0
9	5	0	17	1
10	4	0	17	0
11	1	0	2	0
12	1	0	4	0
13	5	0	4	0
14	0	0	18	0
15	1	0	0	0
17	0	0	1	0
NR	11	0	1048	8

Source: www.debentures.com.br and analysis

Table 6 - Renegotiation *Ex-Post*

This table shows the distribution by rating of issuances and *ex-post* renegotiations for ICVM and non ICVM categories.

The same is true for ex-ante categories. Tables 7 and 8 show that, with the advent of ICVM 476, all issuances of companies who had had bonds with previous credit events.

	Non ICVM 476			ICVM 476		
	Issuances	Default	Ex-Ante	Issuances	Default	Ex-Ante
1	50		0	72		0
2	43		0	77		0
3	47		0	98		0
4	52		1	135		0
5	53		0	53		0
6	47		0	81		2
7	25		0	39		0
8	18		1	40		0
9	5		0	17		0
10	4		0	17		0
11	1		0	2		0
12	1		0	4		0
13	5		0	4		0
14	0		0	18		0
15	1		0	0		0
17	0		0	1		0
NR	11		0	1048		5

Source: www.debentures.com.br and analysis

Table 7 - Default *Ex-Ante*

This table shows the distribution by rating of issuances and *ex-ante* defaults for ICVM and non ICVM categories.

	Non ICVM 476			ICVM 476		
	Issuances	Ren.	Ex-Ante	Issuances	Ren.	Ex-Ante
1	50		0	72		2
2	43		0	77		2
3	47		0	98		0
4	52		4	135		3
5	53		1	53		3
6	47		1	81		0
7	25		0	39		0
8	18		0	40		0
9	5		0	17		0
10	4		0	17		0
11	1		0	2		0
12	1		0	4		0
13	5		0	4		0
14	0		0	18		0
15	1		1	0		0
17	0		0	1		0
NR	11		0	1048		21

Source: www.debentures.com.br and analysis

Table 8 - Renegotiation *Ex-Ante*

This table shows the distribution by rating of issuances and *ex-ante* renegotiations for ICVM and non ICVM categories.

We can see that problematic issuances, both default and renegotiation, are basically under ICVM 476. Cases where problematic issuances were not under ICVM 476 occurred before the instruction, this is true for both ex-post and ex-ante conditions.

1.4 - Results

As the bond market in Brazil lacks liquidity to assess how attractive an issuance could be for an investor it was calculated a regression, for each issuance, with the issuances of the prior month. The yield offered of these issuances was the dependent variable and the characteristics of the issuances the independent variables. To measure the “attractiveness” we plug the characteristics of the issuance in the regression and calculate an “expected yield”, and the difference between the “expected yield” and the actual offered yield will be the “spread”. The regression for Expected Yield will be as follows.

$$\text{Expected Yield}_i = \alpha + \beta_1 * \text{Rating}_i + \beta_2 * \text{Volume}_i + \beta_3 * \text{Days to Maturity}_i + \beta_4 * \text{ICVM}_i + \beta_5 * \text{Public Company}_i \quad (1)$$

Where Rating is the numeric rating from table 3, Volume is the total amount of the issuance, Days to Maturity controls the maturity of the issuance and ICVM and Public Company are dummies whether the issuance and the company are from these categories respectively.

The mean spread for the different categories of issuances and companies is presented in the following table.

	ICVM	Non ICVM	Private ICVM	Public ICVM	Public non ICVM
Mean Spread	-1.022	2.206	-0.541	0.554	2.600
p-value (t-test)		0.007		0.030	0.039

Source: Analysis

Table 9 - Mean Spread

This table shows mean spread between ICVM and non ICVM groups and also for public and private companies. The table also shows the p-value for the t-test between the groups and shows that the difference is statistically significant among them.

Table 9 shows the difference between the mean spread of bond issuances of ICVM and Non ICVM issuances, and also for private and public companies, with the public companies divided in ICVM and non ICVM issuances. We performed a t-test to test the difference of the mean spread of each category. The tests show statistically significant difference in mean mean between bonds of private companies and bonds from public companies under both ICVM and non ICVM. There was a statistically significant difference between ICVM and non ICVM bonds, and also between public and private companies.

As private companies have less disclosure, and possibly less governance, their bond issuances should be more attractive than the bond of public companies so they have a higher average spread than public companies. This could be an indicative that the type of company issuing the bond could as important as the underwriting process which the bond is subject to.

The next step in the analysis is to see the allocations in the mutual funds, and to test the Nepotism hypothesis we considered the fund affiliated to the fiduciary agent of the bond, which is not necessarily the underwriter, as involved in the underwriting process, and therefore the allocation in its funds as evidence of possible privileged information.

Tables 10 and 11 summarize the allocations of funds divided by ICVM 476 and non ICVM 476 issuances.

	Total	Not Affiliated	Underwriter	Fiduciary
Total	1,619	165	50	38
Volume (BRL MM)	409,652.193	55,384.601	20,896.405	15,981.440
Rating	1.922	2.709	2.760	2.289
NR	963	29	8	8
Spread	-1.022	-0.252	-0.006	-1.999
Default Ex-Post	108	3	0	0
Default Ex-Ante	7	0	0	0
Renegotiation Ex-Post	17	1	0	1
Renegotiation Ex-Ante	30	5	4	4

Source: Analysis

Table 10 - Allocation ICVM

This table shows the descriptive statistics for ICVM issuances

	Total	Not Affiliated	Underwriter	Fiduciary
Total	363	68	26	21
Volume (BRL MM)	130,766.928	27,464.399	9,784.372	8,911.401
Rating	4.240	3.368	3.269	3.810
NR	11	0	0	0
Spread	2.206	2.088	1.951	4.140
Default Ex-Post	2	0	0	0
Default Ex-Ante	2	0	0	0
Renegotiation Ex-Post	4	0	0	0
Renegotiation Ex-Ante	7	0	0	0

Source: Analysis

Table 11 - Allocation Non ICVM

This table shows descriptive statistics for non ICVM issuances

Regarding the risk related to credit events we can see that there are few allocations in bonds without rating at the moment of issuance, concentrated mainly in the Non-Affiliated funds, which weakens the Dumping Ground Hypothesis. For non ICVM there were no allocation in funds for emissions with credit events, both ex-ante and ex-post. For bonds under ICVM the allocation of problematic bonds all categories of funds invested in few cases of problematic issuances. The average rating oscillates at the same level for all categories of funds. The mean Spread does not have a clear pattern across the groups in ICVM and non ICVM issuances, for instance the Fiduciary related funds have the lowest mean spread in the ICVM issuances but have the highest spread in non ICVM issuances.

The same information, now divided by public and private companies is shown in tables 12 and 13. The results are in line with the ones for ICVM and non ICVM.

	Total	Not Affiliated	Underwriter	Fiduciary
Total	144	25	8	5
Volume (BRL MM)	34,843.373	11,375.466	2,550.000	1,769.036
Rating	5.542	4.680	3.875	5.200
NR	21	2	0	1
Spread	0.966	0.920	1.586	2.867
Default Ex-Post	5	1	0	0
Default Ex-Ante	0	0	0	0
Renegotiation Ex-Post	1	1	0	0
Renegotiation Ex-Ante	1	0	1	0

Source: Analysis

Table 12 - Private Companies

This table shows descriptive statistics for issuances of private companies.

	Total	Not Affiliated	Underwriter	Fiduciary
Total	1,838	208	68	54
Volume (BRL MM)	505,575.748	71,473.534	28,130.777	23,123.805
Rating	2.096	2.688	2.824	2.611
NR	953	27	8	7
Spread	-0.541	0.373	0.555	-0.062
Default Ex-Post	105	2	0	0
Default Ex-Ante	9	0	0	0
Renegotiation Ex-Post	20	0	0	1
Renegotiation Ex-Ante	36	5	3	4

Source: Analysis

Table 13 - Public Companies

This table shows descriptive statistics for issuances of public companies

As the information separated by ICVM and non ICVM issuances the allocations divided by public and private companies also does not show any noticeable pattern.

One factor that might caught the attention is that the allocation of issuances with Renegotiation Ex-Ante problems is roughly the same among the groups, despite the fact that the number of allocations in total is not the same, which could lead to a higher proportion in some groups. To test this difference, we used the Fisher's exact test with the Bonferroni correction and the results are presented in table 14.

	Not Related	Underwriter	Fiduciary
Not Related	1.000	-	-
Underwriter	0.191	1.000	-
Fiduciary	0.078	0.391	1.000

Source: Analysis

Table 14 - Fisher Test for Proportions

This table shows the Fisher test comparing the proportion of investments in issuances with *ex-ante* renegotiation problem between groups. The results show that the difference is not statistically significant.

We can see that the differences were not statistically significant, not letting us affirm that the proportion of allocation in issuances with Renegotiation Ex-Ante problems were different among groups.

The next step in the analysis is to consider the allocation of each fund in the bonds in a Pooled Regression to analyze the factors that could explain the spread obtained by funds. The equation used was the following.

$$\begin{aligned}
 Spread_i = & \alpha + \beta_1 * Rating_i + \beta_2 * Volume_i + \beta_3 * Days\ to\ Maturity_i \\
 & + \beta_4 * ICVM_i + \beta_5 * Public\ Company_i + \beta_6 * Index + \beta_7 \\
 & * Default\ Ex\ Ante + \beta_8 * Renegotiation\ Ex\ Ante + \beta_9 \\
 & * Underwriter + \beta_{10} * Fiduciary + \beta_{11} * Underwriter * Fiduciary \\
 & + \beta_{12} * Institutional\ Investor + \beta_{13} * Closed\ Fund + \beta_{14} \\
 & * Exclusive\ Fund + \beta_{15} * Institutional\ Investor * Underwriter + \beta_{16} \\
 & * Closed\ Fund * Underwriter + \beta_{17} * Closed\ Fund * Underwriter + \varepsilon_i
 \end{aligned}
 \tag{2}$$

Where Rating, Volume, Days to Maturity, ICVM and Public Company are the same variables used in regression 1. Index is a variable controlling which financial index the issuance is linked, Default *Ex Ante* and Renegotiation *Ex Ante* are dummies whether the bond has these credit problems. Underwriter, Fiduciary are dummies whether the issuance have funds from these groups investing. Closed Fund, Institutional Investor and Exclusive Fund are dummies controlling if the fund investing is from any of these categories.

The results of the regression are presented in table 15.

	Spread			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t-value</i>	<i>Pr(> t)</i>
(Intercept)	3.1207	0.346	9.009	0.0000
closed_fund	-0.0658	0.201	-0.327	0.744
institutional_investor	-0.5031	0.319	-1.577	0.115
exclusive_fund	-0.5805	0.193	-3.014	0.003
underwriter	-1.6030	0.452	-3.550	0.000
underwriter:closed_fund	0.5682	0.277	2.050	0.040
underwriter:institutional_investor	0.1342	0.516	0.260	0.795
underwriter:exclusive_fund	-0.8176	0.268	-3.046	0.002
fiduciary	-0.4655	0.498	-0.934	0.350
fiduciary:closed_fund	-0.3895	0.276	-1.409	0.159
fiduciary:institutional_investor	0.1342	0.516	0.260	0.795
fiduciary:exclusive_fund	-0.0041	0.265	-0.016	0.988
fiduciary:underwriter	0.6036	0.240	2.510	0.012
volume	-1.233e-09	8.61e-11	-14.321	0.000
rating	-0.1081	0.035	-3.047	0.002
default_ex_ante	-0.0348	0.078	-0.062	0.671
renegotiation_ex_ante	0.8323	0.399	2.085	0.037
index_dolar	11.0435	3.705	2.980	0.003
index_igpm	1.731e-14	5.99e-15	2.892	0.004
index_ipca	3.7741	0.159	23.688	0.000
index_fixed	0.6472	0.534	-1.212	0.226
icvm476	-2.8073	0.127	-22.171	0.000
public_company	1.2209	0.245	4.984	0.000
Observations	4668			
R ² / adj. R ²	0.286 / 0.283			
F value / p-value	87.30 / 0.0000			

Table 15 - Regression Results

This table shows the results of the regression 2.

We can see that for funds related to the Underwriter the coefficient is negative and statistically significant, in line with the dumping ground hypothesis. The interesting fact is that the interaction between the dummies for underwriter

and funds for institutional investor is positive and statistically significant, what raises the option that the more informed investor, the institutional investor, the more vigilance exists in fund allocation. This is also true for the interaction between underwriter and closed fund dummies, but the opposite happens in the interaction between underwriter and exclusive fund.

However, the opposite effect is found in exclusive funds, a category for tailor made funds for institutional. This could be due to high switching costs, where the investor would not have the same option to withdraw his money and go to another bank as it would have if he had invested in regular Institutional Investor fund.

The nepotism hypothesis has some base with the interaction between the underwriter and fiduciary dummies being positive and statistically significant, which brings the situation where when other actors involved in the issuance process have allocation alongside the underwriter they divided 'good' issuances.

1.5 - Conclusion

Conflict of interest that may result from banks underwriting securities and managing investment funds has been an important issue in the literature. This study focus on the conflict of interest that could be caused by the Investment Banking division, responsible for the bond issuances, using it's affiliated mutual funds to place the issuances. This conflict has already been registered in the literature in IPO of stocks (Ber, Yafeh and Yosha, (2001) and Ritter and Zang (2007)) and we expanded the literature by analyzing the bond issuances in Brazil considering two hypotheses, a dumping ground hypothesis, where investment banks allocate the bonds with lower returns in it's affiliated mutual funds and a nepotism hypothesis, where the banks associated in the issuance keep the better issuance to themselves.

The bond issuances in Brazil experienced an increase with the ICVM 476 instruction. The market regulator allowed, with this instruction, issuances with less strict requirements, what could provide room for conflicted investments from funds affiliated to the same underwriting bank.

We analyzed the issuances in Brazil in the 2005 to 2015 period and found that ICVM 476 had not much impact on the characteristics nor the allocation of funds, however the bond being from a private company or not, which was allowed by the ICVM 476 instruction, had an impact. Bonds from private companies had a more attractive relation of risk return, calculated by the relative spread of issuances of one month period, than the bonds issued by public companies. Another important characteristic was that all bonds with credit events, both ex-ante and ex-post, were issued under the ICVM 476 when it became effective.

Regarding the dumping ground hypothesis, we found some evidence supporting this hypothesis. The allocation in bonds of private companies, measured by the proportion of the total monetary value of the issuance, was also higher in funds not related to the underwriting bank. To assess the attractiveness of the bonds we calculated which expected yield each bond would be in comparison to bond issuances of the previous 30 days and calculated the spread as the difference between the actual yield and the expected yield. The mean spread of bonds with allocation only of funds affiliated to the underwriting is lower than the other cases.

The nepotism hypothesis, that is present in the Brazilian financial press, could have evidence supporting it in cases where only the funds related to the underwriter and other agents in the process, like the fiduciary agent, have allocation and the return to risk characteristics are better. There was only one bond in this situation and, despite the mean spread be higher than all the other possible cases, we could not say that are enough evidence to claim in favor of this hypothesis.

This paper found that the same conflict of interest documented in the literature for stock underwriting is also present in bond underwriting, however this conflict of interest is not present in funds of more informed investors and this fact is new. This relation between the level of investor information and the conflicts of interest is extremely important and open for further research.

2 - TIME DEPOSITS IN MUTUAL FUNDS

2.1 - Introduction

Financial intermediaries are the root institutions in the savings-investment process, serving as monitoring agents, information producers, liquidity providers and other important roles in an economy (Gorton and Winston 2003). Among financial intermediaries, universal banks are of special importance due their size and impact in an economy. These banks have multiple areas whose activities, despite the economies of scale and scope, could be a potential source of conflicts of interests due their diverging objectives. Conflicts of interest can be defined as

"a situation where a party to a transaction could potentially make a direct gain by taking actions that affect the other party adversely" (Mehran and Stulz, 2007).

Conflicts of interest within financial institutions have attracted a lot of attention in the academic literature, despite the assertion that these conflicts of may be overrated because of the heavy regulation on these institutions (Mehran and Stulz 2007).

Agency problems have been focus of research among diverse financial areas, and literature of conflicts of interest between banks and its affiliated mutual fund has showed diverse evidence of possible problems and the reasons for its existence (Mehran and Stulz, 2007). Funds could be used by the investment bank division for underwriting activities, as showed by Ber, Yafeh and Yosha (2001) and Ritter and Zang (2007), also to stabilize the price of the stock of the related bank during the release of bad news, as related by Golez and Marin (2015).

Most individuals invest in security markets through funds (Mahoney, 2004), and these funds are managed by asset management companies. Fund managers are thus serving two principals, the investors and the owners of its company, creating a situation of potential conflict of interest between these two principals.

Fiduciary duty requires that fund managers follow the interests of investors (CFA, 2016), but in practice fund managers may have incentives to act on behalf of its asset management company, Mahoney (2004)

Funds have a diverse array of asset classes to invest depending of its objectives. However, all funds have liquidity requirements, to face possible withdraws and to benefit from investment opportunities that may appear, which force all of them to hold cash and cash related instruments. Simutin (2013) found evidence of relation between high cash position and fund performance, arguing that the flexibility of holding cash is a factor for good performance.

Among cash related instruments time deposits are an important option for mutual funds, allowing them to have liquidity, and also earning a yield on these investments. However, time deposits are issued by banks and some funds are affiliated to banks, which could open for space for conflicts of interest between the fund holders and the bank.

This study analyzes the conflict of interest in investments in time deposits by funds in Brazil. Brazil provides a perfect set to analyze possible conflicts of interest for four reasons.

The first reason is that Brazil has one of the highest interest rate in the world (World Bank, 2016), which make investments in time deposits attractive beyond the liquidity and operational necessities of the funds. Nevertheless, the investments from affiliated funds could be a cheaper option of funding for the banks if they could pay lower yields to time deposits for its affiliated mutual funds.

The second reason is that at the end of 2009 the Brazilian Central Bank established a new type of time deposit called Letra Financeira (LF). This product was designed to provide a stable source of funding to banks, as the LF have at least 2 years of maturity with no possibility of redeeming before the maturity and would not be subject to reserve requirement at the central bank. Another important fact is that the amount invested in a LF is not covered by the deposit guarantee from Fundo Garantidor de Creditos (FGC).

This new type of time deposit has grown in importance in funds allocation during the years. The average percent of financial institutions related instruments to total assets and the evolution of importance of LF is shown in table 16.

Year	Bank assets	Letra Financeira
2005	22.598	
2006	22.958	
2007	19.856	
2008	21.054	
2009	21.617	
2010	18.992	1.823
2011	21.670	17.359
2012	20.508	17.431
2013	14.437	15.613
2014	15.022	16.648
2015	15.703	18.136

Source: www.cvm.gov.br

Table 16 - Evolution of Bank Related Assets

This table shows the evolution of the percentage of total Assets Under Management(AUM) invested in bank related assets and, specifically, in Letra Financeira

The standardization of the product, allowing the comparison between investments of different funds and its relevance in the market, provides a good scenario to evaluate possible conflicts of interest in time deposits investments made by affiliated mutual funds.

The third reason is the combination in Brazil of a large number of funds (ICI, 2015) and a concentrated bank market (Chang, Guerra, Lima and Tabak, 2008), where banks could use funds as a source of cheaper capital and the clients would not have options to switch to another bank.

The fourth reason is that institutional investors are more informed than regular investors (Ke and Petroni, 2004), and in Brazil funds we could separate the funds of these informed investor from fund to regular investors. This separation allows to test whether informed investor could avoid this conflict of interest.

This paper expands the literature shedding some light on the relationship between banks and its affiliated mutual funds concerning the bank funding activities. By the best of our knowledge this subject has not been studied so far and the only literature of investments in time deposits, from Schiozer and Tejerina (2013), analyzed whether investor monitor the allocation of fixed income mutual funds analyzing the investment of Certificado de Depósito Bancário (CDB) of medium sized banks during the 2008 crisis, but focusing on

the previous literature of bank runs using mutual funds as proxies Schmidt *et al.* (2016) e Ben-David *et al.* (2012).

We show that funds get lower yields on LF from banks that they are affiliated, and this conflicted type of investment did not occurred in funds for more informed investors.

The rest of this paper is divided in the following sections: Section 2 presents the hypotheses tested, Section 3 characterized the sample and methods used, in Section 4 we analyze the results and in the last section, Section 5, we make the conclusion.

2.2 - Hypotheses

The hypotheses of this paper are the following:

- **Hypothesis 1 - Conflict of interest:** Banks offer a lower yield to its affiliated funds than the yield it offers to non-affiliated funds. This hypothesis is related to other studies that found evidence of investments of funds privileging the activities of controlling bank at expense of fund holders, as existence showed by Ber, Yafeh and Yosha (2001), Ritter and Zang (2007) and Golez and Marin (2015).

- **Hypothesis 2 - Monitoring:** Funds aimed to more informed investors, like institutional investors, will not face lower yields offered from the controlling bank, as these investors monitor the allocation of funds. As these investors have more skills and resources, (Ke and Petroni, 2004), than regular investors to oversee the investments made by the funds, the conflict of interest could be mitigated and the yields offered to these funds would not be lower than the yields offered to other affiliated funds.

2.3 - Data and Methods

The data used in this paper is based on the monthly mutual fund holding from 2010 to 2015 of all Brazilian mutual funds obtained in the Brazilian Securities and Exchange Commission (CVM) website.

The evolution of the representativeness of new investments made by funds is shown in table 17.

Year	Bank assets - All	Letra Financeira
2005	11.808	
2006	10.510	
2007	9.407	
2008	10.603	
2009	8.416	
2010	6.545	1.823
2011	7.579	12.001
2012	7.636	9.942
2013	6.770	4.593
2014	5.175	4.210
2015	4.901	4.113

Source: www.cvm.gov.br

Table 17 - Evolution of New Investments

This table shows the evolution of the new investments in percentage of total Assets Under Management(AUM) invested in bank related assets and in Letra Financeira

For LF there are various types of index that could be used, however more than 90% of the volume is indexed by the CDI. The distribution of all indexes used in LF is shown in table 18. The focus of this paper will be LFs indexed to the CDI.

Year	DI1	IAP	IGM	IPC	OUT	PRE	SEL	Total
2010	100.000	0.000	0.000	0.000	0.000	0.000	0.000	100.000
2011	99.594	0.000	0.000	0.000	0.000	0.406	0.000	100.000
2012	87.922	5.931	5.762	0.300	0.085	0.000	0.000	100.000
2013	93.726	5.100	0.029	0.313	0.641	0.188	0.002	100.000
2014	95.057	3.600	1.051	0.003	0.114	0.169	0.006	100.000
2015	94.385	2.000	0.060	0.103	2.150	0.340	0.962	100.000

Source: www.cvm.gov.br

Table 18 - Percentage per Index

This table shows the evolution of the proportion by index of the Letra Financeira invested by funds.

To analyze the variables that could influence the yield of the LF we run a regression controlling the following variables:

- bank issuing the LF: as the riskiness of banks are different, and there is no deposit guarantee, the yield offered in LF is related to this risk;
- period (measured in month and year): to control for periods where the yields in general are higher or lower;
- days to maturity: despite the LF considered in this paper are from 2 years to 5 years could exist an effect of maturity influencing yields;
- fund classification: the same groups used in chapter 1. Whether the fund is exclusive for some client, whether the fund is closed or open and whether the fund is only for institutional investors.

The regression that will be used is the following:

$$\begin{aligned}
 Yield_i = & \alpha + \beta_1 * Bank_i + \beta_2 * Date_i + \beta_3 * Volume_i + \beta_4 * Days\ to\ Maturity_i \\
 & + \beta_4 * Affiliated\ Fund_i + \beta_5 * Public\ Company_i + \beta_6 \\
 & * Institutional\ Investor + \beta_7 * Closed\ Fund + \beta_8 * Exclusive\ Fund \\
 & + \beta_9 * Institutional\ Investor * Affiliated + \beta_{10} * Closed\ Fund \\
 & * Affiliated + \beta_{11} * Closed\ Fund * Affiliated + \varepsilon_i
 \end{aligned}
 \tag{3}$$

In addition to the listed variables, the regression also considers the interaction between the dummy variable indicating whether the fund is affiliated and the possible characteristics of the funds.

2.4 - Results

Comparing the average yield provided by the LF through the years we have that LF of banks which funds are affiliated to have lower yields, as it is shown in table 19.

Year	Non Affiliated	Affiliated	t-test
2010	106.000		
2011	107.414	108.115	0.137
2012	107.471	106.724	0.000
2013	106.813	106.316	0.074
2014	108.383	107.360	0.003
2015	107.284	106.711	0.083

Source: www.cvm.gov.br and analysis

Table 19 - Yield Difference

This table shows the average yield of the Letra Financeira invested by the funds divided by the two groups considered. It also show the p-value of the t-test of the difference between the yields.

We can see that, on average, affiliated mutual funds have lower yields in LFs than non-affiliated funds and the difference is statistically significant for almost all years.

The next step is to run the regression established in the previous section. The results are presented in table 20, as there are many covariates the complete results are in the appendix, and show that the coefficient related to affiliated funds is negative and statistically significant, showing evidence that affiliated mutual funds have, on average, lower yields on LF than yields offered to non-affiliated mutual funds. Providing support for the first hypothesis of a conflict of interest between the bank funding activities and the investments of its affiliated funds.

	Yield			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t-value</i>	<i>Pr(> t)</i>
(Intercept)	1.08E+02	1.80E+00	59.912	0.000
maturity	1.60E-03	7.31E-05	21.92	0.000
volume	3.61E-09	2.66E-09	1.358	0.174443
affiliated_fund	-2.08E+00	4.48E-01	-4.632	0.000
exclusive_fund	-2.42E-01	9.21E-02	-2.626	0.009
closed_fund	-1.19E+00	2.57E+00	-0.463	0.643641
institutional_investor	-3.03E-01	1.53E-01	-1.978	0.047959
affiliated_fund:institutional_investor	1.93E+00	4.79E-01	4.028	5.66e-05
affiliated_fund:exclusive_fund	1.75E-01	2.59E-01	0.676	0.499
affiliated_fund:closed_fund	-4.15E-01	2.43E-01	-1.705	0.088301
exclusive_fund:closed_fund	3.32E-01	1.54E-01	2.154	0.031244
exclusive_fund:institutional_investor	4.90E-01	3.57E+00	0.137	0.890796
closed_fund:institutional_investor	1.19E+00	2.57E+00	0.461	0.645121
Observations	13850			
R ² / adj. R ²	0.436 / 0.4294			
F value / p-value	66.09 / 0.0000			

Table 20 - Regression Results

This table shows the results of the regression 3.

The effect of days to maturity is statistically significant but not economically relevant. Regarding the interaction terms, we found that affiliated funds target to institutional investors have a positive and statistically significant coefficient, and the magnitude of the coefficient is equivalent to the affiliated funds, which is a sign that the possible conflict of interest between banks and affiliated mutual funds is not present in funds target to institutional investors, providing evidence for the second hypothesis, where more informed investors could better monitor the fund's investments and avoid possible conflicts of interest.

Differently than the results in the previous chapter, the interaction effect between the dummies for affiliated funds and exclusive funds was not statistically significant.

2.5 - Conclusion

Conflicts of interest are an important topic in finance, however to the best of our knowledge cash investments of funds have not been considered as a possible area of conflict of interest.

Cash related instruments are an important asset class in Brazilian fund industry, not only for its operational needs but also as investment strategy. Many funds are affiliated to banks, what could bring conflicts of interest between the funding activities of the banks and the funds investments. At the end of 2009 the Brazilian Central Bank created the Letra Financeira (LF) as an option to provide a stable source of funding for banks, exempting it from reserve requirements but also prohibiting the redeeming before maturity. This instrument grew in importance as asset class in funds and, combined with the characteristics of the instrument (which has not flexibility and therefore is comparable across banks and funds) provided an excellent opportunity to test the possible conflict of interest between banks and affiliated funds focusing in bank funding activities.

We analyzed the yields of LF invested by Brazilian funds from 2010 to 2015 to test two hypotheses, the conflict of interest hypothesis, where the fund would get a lower yield on the LF of the bank it is related to than other funds that are not related, and the monitoring hypothesis, that funds from more informed investors would not be subject to this lower yields from LF of the controlling bank.

For the conflict of interest hypothesis we found a significant negative difference in LF of affiliated funds, with banks offering a lower yield to its own funds, transferring resources from fund investors to the bank.

The monitoring hypothesis also had evidence supporting it, with the negative difference in yields found in affiliated funds did not occurring in funds targeted to more informed investors. Monitoring could prevent this type of conflict of interest.

There results point to a new conflict of interest in the relation between banks and its affiliated mutual funds that distorts fund investment decisions and impact negatively the results for fund investors.

3 - ANALYSTS OPINION AND ASSET MANAGEMENT INVESTMENTS

3.1 - Introduction

Analysts have an important role in markets analyzing large amounts of data and producing information about companies and economy. The information produced, the analyst opinion, can influence expectations and, therefore, prices of securities and financial decisions. Dunbar, Hwang and Shastri (1997).

However, analysts are employees of investment banks or broker houses, and these organizations have activities that are directly influenced by the analyst opinion. This structure could put the independence of analysts' opinion in jeopardy, Michaely & Womack (1999).

The independence of analysts' opinion has been subject of research in financial economics by different perspectives.

One branch of this research has been analysts' earnings forecasts and how the analysts influence each other, causing a herd effect in opinions. Trueman (1994) developed a model that shows that analysts tend to release earnings forecasts closer to prior forecasts than is appropriate given their information, causing a herd behavior. Clement and Tse (2005) divided forecasts as "bolds" and "herding" by consensus forecasts and found evidence that bold forecasts incorporate private information providing more relevant information to investors than herding forecasts. On the other hand, there are evidences that analysts "anti-herd" issuing biased forecasts away from consensus. Campello, Benhardt and Kutsoati (2006) developed a test for herding in earnings forecasts and found that analysts issue contrarian forecasts that overemphasize their private information. Other branch is analysts' recommendations, which, differently than forecasts, does not have specific announcement dates. Jegadeesh and Kim (2010) analyzed recommendations and found evidence that market reaction is stronger when the recommendations move away from the consensus and stronger herding effects for downgrades than for upgrades.

Other line of research focus on the optimism of analysts towards companies their organizations have interests. Michael and Womack (1999) found evidence that there is a bias in recommendations from analysts affiliated to the underwriting bank of a stock. Chan, Karceski & Lakonishok (2003) studied the equity bull market of the 1990's and found evidence that analysts have incentive to be more optimistic toward growth firms than value firms, as these firms are more likely to raise capital and be involved in mergers and, therefore, be target of their investment bank division. Mola and Guidolin (2009) analyzed quarterly reports of mutual funds holdings found evidence that the greater the weight a stock has in portfolios of the affiliated asset management unit, the more optimistic the stock recommendations of affiliated analysts become. However, Agrawal and Chen (2008) showed evidence that the market recognizes the conflicts of interest in analysts' opinion and discounts optimistic recommendations from conflicted analysts. The results are in line with the findings of Ljungqvist *et al.* (2007), that analyzed the recommendations from 1994-2000 period and found that the presence of institutional investor inhibits the optimistic opinions from conflicted analysts.

Another branch of research is whether exists front-running in the analysts' opinion and the possible use of non-public information by fund managers could have implications for investors of these funds. Jurgens and Lindsey (2009) found evidence of a disproportionate increase in volume with the firm's recommendation changes and an elevated sell volume from the affiliated institution in the two days period preceding a downgrade. Christophe, Ferri and Hsieh (2010) studied the short sellers and downgrades of Nasdaq stocks between 2000 and 2001 and found evidence that three days before the announcement the volume of short-selling is significantly related to price declines due downgrades. On the other hand Blau and Wade (2012) revisited the issue and found that short selling is symmetric for downgrades and upgrades, which indicate that short selling prior to analyst recommendations, tend to be more likely speculation than privileged information. Jiang, Yao and Yu (2007) developed a measure to test whether mutual funds have timing skills and found evidence that market timing funds use non-public information to predict market returns, alongside having industry concentration and large fund size. Danthine and Moresi (1998) developed a model of front running by mutual

fund managers and reached to a conclusion that front-running decreases liquidity cost of trading in a market of asymmetric information, but also reduces the hedging benefits. The general conclusion is that front-running has, in aggregate, either negative or positive consequences.

This study analyzes the conflicts of interest in analysts' opinion in the Brazilian market. The first reason to focus on Brazil is that the country has one of the markets with the largest number of funds in the world (ICI, 2015), providing plenty of options and sources of conflicts of interest in analysts' opinion.

The second reason is that stock market development is related to long-run economic growth, Levine & Zervos (1996), and conflicts of interest in stock markets of developing countries could be a cause hindering the economic development of a country.

To the best of our knowledge, this study is pioneer in analyzing conflicts of interest in analysts' opinion in a developing country.

We show that the analysts' optimism is present in analysts associated to national banks. This effect, indicating a possible difference in information between analysts in national and international banks, is new and opens new question for research.

The rest of this paper is divided as follows. Section 2 presents the hypotheses tested, Section 3 characterized the sample and methods used, in Section 4 we analyze the results and in the last section, Section 5, we make the conclusion.

3.2 - Hypotheses

The hypotheses are based on the previous studies in the literature and are as follows:

Hypothesis 1 - Optimism: The analyst opinion about a stock is influenced by whether the affiliated asset management has positions in this stock. This hypothesis focuses on the same research problem that Mola and Guidolin

(2009) and, as Brazil has a large number of funds, this conflict of interest can be present.

Hypothesis 2 - Front-running: The affiliated mutual funds take positions before the analyst opinion goes public. This hypothesis target a still open research question with opposites evidences from Christophe, Ferri and Hsieh (2010) and Blau and Wade (2012). The high number of funds in Brazil can put a pressure for results in funds, and maybe provide an incentive for this type of conflict of interest.

3.3 - Data and Methods

The data used are the analysts' opinion on Brazilian stocks over the 2005 to 2014 period and the monthly mutual fund holdings from Brazil in the same period.

The distribution of the number of stocks, grouped by the number of analysts covering it, for the end of each year is presented in table 21.

Analysts	1	2	3	4	5+
2005	39	15	20	18	85
2006	27	22	17	21	79
2007	48	19	23	20	83
2008	56	27	24	22	105
2009	42	23	19	30	116
2010	43	17	23	16	156
2011	47	30	16	20	162
2012	38	27	20	23	153
2013	39	24	24	22	134
2014	48	26	25	22	125

Source: Bloomberg and analysis

Table 21 - Quantity of Analysts x Stocks

This table shows the evolution of stocks cover by a specific number of analysts, ranging from one analyst to more or equal than five analysts.

There exist stocks with different number of analysts covering, and this number can change over time, so we considered at each period only the stocks

with 3 or more analysts. This filter ensures that the comparison to the market for each analyst have more than one data point.

The recommendations of the analysts are coded as the following rating table, where the higher the number, the bullisher the analyst is:

1	2	3	4	5
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Source: Bloomberg

Table 22 - Analysts' Ratings

This table shows the range of possible ratings. The range goes from 1 (Strong sell) to 5 (Strong Buy), where the higher the rating, higher the bullish the analyst is about the stock.

To compute the return that a bank i had, for each stock s , at each period t the following formula will be used:

$$Stock\ Return_{ist} = \frac{\sum_i (End\ Position_{st}) + \sum_i (Sellings_{st})}{\sum_i (End\ Position_{s(t-1)}) + \sum_i (Buyings_{st})} \quad (4)$$

Where End Position is how much of the stock each fund of the bank had invested at the end of the period, Sellings and Buyings are how much of a stock a fund sold and bought during the period. This formula could capture all the possible scenarios, e.g. funds related to a particular agent/bank could buy and sell the stocks during the month; they could buy the stock and keep it until the next month, among others.

To test the hypothesis three regression equations will be used, with the first being

$$\begin{aligned} Variation_{ist} = & \alpha + \beta_1 * dissensus_{s(t-1)} + \beta_2 * rating_{is(t-1)} + \beta_3 * dissensus_{st-1} \\ & * rating_{is(t-1)} + \beta_4 * dissensus_{st-1} * internationali \\ & + \beta_5 * stock\ return_{st-1} + \beta_6 * stock\ beta_{st-1} + \varepsilon_i \end{aligned} \quad (5)$$

where Variation measures the change of rating of the i -th analyst about the s -th stock at the period t . This variation is related to the dissensus, measured by the opinion minus the mean opinion of the other analysts, of the

previous period, the rating this analyst gave to the stock in previous period and the interaction effect between the dissensus and rating from the previous period and the interaction effect between the dissensus of the previous period and a dummy variable indicating whether the analyst is from an international bank. The results will have as controlling variables the stock return on the previous period and the stock beta from the previous period.

The stock beta is calculated using a rolling window of twelve months of daily data.

The next regression to be used focus on explaining the dissensus, measured as the difference between the rating of the analyst and the mean rating of the others analysts, using different variables.

$$\begin{aligned}
 Dissensus_{ist} = & \alpha + \beta_1 * dissensus_{is(t-1)} + \beta_2 * change\ allocation_{ist} \\
 & + \beta_3 * diff\ allocation_{ist} + \beta_4 * nationali + \beta_5 \\
 & * change\ allocation_{ist} * nationali + \beta_6 * diff\ allocation_{ist} \\
 & * nationali + \beta_7 * change\ allocation_{ist} * diff\ allocation_{ist} \\
 & + \beta_8 * change\ allocation_{ist} * diff\ allocation_{ist} * nationali \\
 & + \beta_9 * stock\ return_{st-1} + \beta_{10} * stock\ beta_{st-1} + \varepsilon_i
 \end{aligned}
 \tag{6}$$

where the dissensus of the i-th analyst in the stock s at the period t have as explaining factors how much the allocation, in percentage of total assets, changed during the period (change allocation), the difference in allocation (diff allocation) between the percentage of total assets of the bank and percentage of total assets the market had invested in a stock during the period, a dummy for the national banks and the stock return and stock beta from the previous period as controlling variables.

The final regression, to test the Front Running hypothesis, is the following

$$\begin{aligned}
Return_{ist} = & \alpha + \beta_1 * dissensus_{ist} + \beta_2 * change \ rating_{ist} + \beta_3 \\
& * national_i + \beta_5 * change \ rating_{ist} * national_i + \beta_6 \\
& * change \ rating_{ist} * dissensus_i + \beta_7 * stock \ return_{ist} \\
& * national_i + \beta_8 * stock \ return_{st-1} + \beta_9 * stock \ beta_{st-1} + \varepsilon_i
\end{aligned}
\tag{7}$$

where the return of the i-th bank, in the s-th stock at period t is explained by the dissensus, an indicative variable (change rating) whether the analyst from the i-th bank changed its rating at the period t, the dummy variable for the national bank and the stock return, at period t and t-1 and beta stock from the previous period.

To test which error model could be used in each regression, fixed effects or random effects models, the Hausman test will be used.

3.4 - Results

Using the standard deviation as Divergence we first test whether there is a greater difference in analysts' opinion with more analysts covering the stock. The results are presented in table 23, and the divergence does not change in a clear pattern, with the Divergence in stocks with 3, 4 and 5 and more analyst not different among them.

Divergence	3	4	5+
2005	1.024	1.048	1.057
2006	1.135	0.828	0.932
2007	0.730	0.918	0.930
2008	0.987	1.009	1.049
2009	0.919	1.074	1.067
2010	0.991	0.950	0.996
2011	0.896	0.976	0.967
2012	0.790	0.741	1.036
2013	0.799	1.080	1.005
2014	0.887	1.220	1.065

Source: Bloomberg and analysis

Table 23 - Mean Divergence per Number of Analysts

This table shows the evolution of the mean divergence, measured as standard deviation, of the stocks covered by three, four and five ou more analyst. It shows that theres is no relation between the divergence and the number of analysts covering the stocks

Using the first regression we test whether there is a mean reversion in analysts' opinions. First it is necessary which model, random effects or fixed effects, is more appropriate. The result of the Hausman test is presented in table 24, and it points to a random effects model.

	Hausman Test		
	<i>Value</i>	<i>df</i>	<i>p value</i>
chisq	2.0206	7	0.9587
alternative hypothesis :	one model is inconsistent		

Table 24 - Hausman Test

This table shows the result of the Hausman test for the regression 5. The p-value shows that the random effects model is better than the fixed effects model for this regression

Running the random effects model on the first regression the results are presented in table 25

	rating_change			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t - value</i>	<i>Pr(> t)</i>
(Intercept)	1.74E-01	6.57E-03	26.5107	0.0000
dissensus_before	-2.48E-02	3.20E-03	-7.735	0.0000
rating_before	-4.53E-02	1.40E-03	-32.2822	0.0000
international	-2.18E-02	2.53E-03	-8.6109	0.0000
stock_return_before	2.89E-07	2.52E-07	1.1459	0.25183
stock_beta	1.51E-07	8.62E-08	1.7541	0.07942
dissensus_before:rating_before	5.18E-04	7.23E-04	0.7164	0.47372
dissensus_before:international	-3.73E-03	2.00E-03	-1.8633	0.06243
Observations	133578			
R ² / adj. R ²	.033 / .033			
F value / p-value	651.558 / .0000			

Table 25 - Regression Results

This table shows the results for the regression 5

We can see that the coefficient of “dissensus_before” is negative and statistically significant, giving evidence that there is a mean reversion effect in analysts’ opinion, and the interaction with international bank dummy are also negative and statistically significant, analysts in international banks ‘mean revert’ more than analysis in national banks. This could be that national banks could have more information of Brazilian companies and therefore analysts in international banks ‘mean reverse’ more analysts in national banks.

For the second regression, the results of the Hausman test indicate a Fixed Effects model and are presented in table 26.

	Hausman Test		
	<i>Value</i>	<i>df</i>	<i>p value</i>
chisq	704.87	10	0.0000
alternative hypothesis :	one model is inconsistent		

Table 26 - Hausman Test

This table shows the result of the Hausman test for the regression 6. The p-value shows that the fixed effects model is better than the random effects model for this regression

The results for the second regression are presented in the table 27.

	dissensus			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t-value</i>	<i>Pr(> t)</i>
(Intercept)	8.75E-01	2.42E-03	360.9409	0.0000
change_allocation	1.57E-01	6.61E-01	0.2374	8.12E-01
diff_perc	-4.52E-01	1.98E-01	-2.2906	0.021994
national	4.12E-03	5.88E-03	0.7001	0.483845
stock_return_before	-3.28E-07	4.75E-07	-0.6913	0.489396
stock_beta	-4.14E-07	1.57E-07	-2.6401	-0.008291
change_allocation:national	1.24E-01	8.25E-01	.01505	.880386
diff_perc:national	4.43E-01	2.58E-01	1.7156	0.086238
change_allocation:diff_perc	9.77E-01	6.14E+00	0.1591	0.873607
change_allocation:diff_perc:national	5.27E-01	7.01E+00	0.0752	0.940059
Observations	40362			
R ² / adj. R ²	.765 / .763			
F value / p-value	13102.2 / 0.0000			

Table 27 - Regression Results

This table shows the results of the regression 6

We can see that the interaction between diff perc and national bank dummy is positive and somewhat statistically significant, contrarian to the counterintuitive coefficient for diff perc alone that is negative and statistically significant, which provide support for the Optimism hypothesis for analysts from national banks.

Finally, to test the Front-running hypothesis the Hausman test indicates a Random Effects model and is presented in the following table:

	Hausman Test		
	<i>Value</i>	<i>df</i>	<i>p value</i>
chisq	3.3708	7	0.8487
alternative hypothesis :	one model is inconsistent		

Table 28 - Hausman Test

This table shows the result of the Hausman test for the regression 7. The p-value shows that the random effects model is better than the fixed effects model for this regression

The results for the third regression are presented in table 29

	Consolidated Stock Return			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t value</i>	<i>Pr(> t)</i>
(Intercept)	2.17E+00	5.98E-01	3.6332	0.0002803
rating_change	-2.76E-02	1.39E+00	-.00198	0.9841821
dissensus	-5.28E-02	3.46E-01	-0.1529	0.8784517
stock_return	-9.70E-07	8.14E-05	-0.0119	0.9904982
national	-2.19E-01	8.08E-01	-0.2704	0.786832
stock_beta	2.84E-06	2.04E-05	0.1392	0.8893076
rating_change:dissensus	-1.60E-01	6.00E-01	-0.266	0.7902129
stock_return:national	6.60E-07	1.16E-04	0.0057	0.995473
rating_change:national	-7.95E-02	1.80E+00	-0.0442	0.9647479
Observations	42257			
R ² / adj. R ²	.000 / .000			
F Value / p-value	0.03016 / .9999			

Table 29 - Regression Results

This table shows the results of regression 7. The p-value of the F-Test shows that the model considering the consolidated return per bank does not fit well to the data

We can see that the F test show that the model is not relevant. There are others factors that influence the consolidated results of stock investments of funds and the results could be better described separated by funds. However, other conflicts, as transfer of results among funds of the same bank may occur Gaspar *et al.* (2006), and they are outside of the scope of this paper

3.5 - Conclusion

Analysts' opinion is an important source of information in capital markets. They provide analysis and help the flow of information in the financial markets. However, as they are inside an organization, the analysts' objectives could be others than only to provide information to investors. The literature showed diverse conflicts of interest in analysts' opinion, like optimism that analysts have

towards stocks that its bank has interest and companies that profit from opinions before it goes public, among others.

We tested two hypotheses of conflicts of interest in Brazilian stock analysts' opinion with data from 2005 to 2015. The first hypothesis is the optimism of analysts, whether they tend to favor stocks that its parent organization has interests in, and the second hypothesis is the whether funds have an advantage on the analysts opinion and front-runs the rest of the market to make profits.

For the optimism hypothesis we found that analysts in international banks tend to mean revert more than analysts in national banks, which could be an indicative that national banks could have more information than international banks regarding Brazilian companies. In addition to this fact we tested relation between the dissensus and the difference in allocation between funds and found that this relation is positive for analysts in national banks. In other words, analysts affiliated to national banks mean revert less and are more optimistic to stocks that funds from their affiliated bank have investments.

The second hypothesis, of Front-running, has not found support in the data, where the relation between the funds returns on the stocks should be influenced by other structure than the one considered in this paper, for instance cross subsidization among funds.

This paper found conflict of interest in analysts' opinions affiliate to national banks, but this conflict was not present in analysts' affiliate to international banks and this effect is new in the literature. For future studies from the results of this paper we recommend the analysis of possible cross subsidization among Brazilian funds and the possible information difference between analysts affiliated national and international banks.

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APPENDIX

Regression Results

	Yield			
	<i>Estimate</i>	<i>Std Deviation</i>	<i>t-value</i>	<i>Pr(> t)</i>
(Intercept)	1.08E+02	1.80E+00	59.912	0.000
maturity	1.60E-03	7.31E-05	21.92	0.000
volume	3.61E-09	2.66E-09	1.358	0.174443
affiliated_fund	-2.08E+00	4.48E-01	-4.632	0.000
exclusive_fundr	-2.42E-01	9.21E-02	-2.626	0.009
closed_fund	-1.19E+00	2.57E+00	-0.463	0.643641
institutional_investor	-3.03E-01	1.53E-01	-1.978	0.047959
affiliated_fund:institutional_investor	1.93E+00	4.79E-01	4.028	5.66e-05
affiliated_fund:exclusive_fund	1.75E-01	2.59E-01	0.676	0.499
affiliated_fund:closed_fund	-4.15E-01	2.43E-01	-1.705	0.088301
exclusive_fund:closed_fund	3.32E-01	1.54E-01	2.154	0.031244
exclusive_fund:institutional_investor	4.90E-01	3.57E+00	0.137	0.890796
closed_fund:institutional_investor	1.19E+00	2.57E+00	0.461	0.645121
factor(cnpj_emissor)475203	-1.27E+00	3.57E+00	-0.355	0.722447
factor(cnpj_emissor)360305000104	-2.29E+00	2.20E-01	-10.431	0.000
factor(cnpj_emissor)556603000174	1.14E+01	1.49E+00	7.647	0.000
factor(cnpj_emissor)1386256000141	7.65E-01	3.57E+00	0.214	0.830386
factor(cnpj_emissor)1522368000182	-2.60E+00	5.89E-01	-4.41	1.04e-05
factor(cnpj_emissor)1638542000157	9.72E-01	2.07E+00	0.47	0.638514
factor(cnpj_emissor)1701201000189	-1.59E+00	2.09E-01	-7.646	0.000
factor(cnpj_emissor)1701201034326	-9.44E-01	1.80E+00	-0.526	0.599122
factor(cnpj_emissor)1858774000110	-3.79E+00	2.08E+00	-1.824	0.068247
factor(cnpj_emissor)2977348000169	-1.46E+00	5.11E-01	-2.853	0.004341

factor(cnpj_emissor)2992446000175	8.35E+00	4.68E-01	17.843	0.000
factor(cnpj_emissor)3017677000120	-7.19E-01	9.10E-01	-0.79	0.429284
factor(cnpj_emissor)3323840000183	-2.83E-01	4.80E-01	-0.59	0.555177
factor(cnpj_emissor)3502961000192	-8.47E+00	8.60E-01	-9.852	0.000
factor(cnpj_emissor)4379829000106	1.05E+01	1.37E+00	7.691	1.55e-14
factor(cnpj_emissor)4862600000110	5.01E-01	2.07E+00	0.242	0.808858
factor(cnpj_emissor)4866275000163	2.49E+00	3.58E+00	0.697	0.486058
factor(cnpj_emissor)5503849000100	1.15E+01	1.06E+00	10.841	0.000
factor(cnpj_emissor)7450604000189	7.41E-02	2.08E+00	0.036	0.971563
factor(cnpj_emissor)7652226000116	1.15E+01	1.28E+00	9.006	0.000
factor(cnpj_emissor)9313766000109	2.16E+01	1.63E+00	13.26	0.000
factor(cnpj_emissor)11124448885577	2.41E+00	2.07E+00	1.164	0.244314
factor(cnpj_emissor)11471754000146	-1.25E+00	8.19E-01	-1.523	0.127853
factor(cnpj_emissor)11938926000149	3.09E-01	3.57E+00	0.087	0.930969
factor(cnpj_emissor)12865507000197	6.65E+00	9.88E-01	6.731	0.000
factor(cnpj_emissor)14388334000199	7.81E+00	3.81E-01	20.507	0.000
factor(cnpj_emissor)15114366000169	7.19E+00	3.76E-01	19.111	0.000
factor(cnpj_emissor)15114366000240	7.72E+00	2.53E+00	3.054	0.002264
factor(cnpj_emissor)15436515000106	-1.45E+00	1.38E+00	-1.056	0.290944
factor(cnpj_emissor)17184037000110	8.56E+00	1.36E+00	6.281	0.000
factor(cnpj_emissor)17298092000130	-5.53E+00	7.07E-01	-7.831	0.000
factor(cnpj_emissor)17351180000159	4.49E+00	5.65E-01	7.933	0.000
factor(cnpj_emissor)28195667000106	-8.45E-02	4.01E-01	-0.21	0.833365
factor(cnpj_emissor)30306294000145	-8.37E-01	2.92E-01	-2.863	0.004197
factor(cnpj_emissor)30723886000162	-1.67E+00	3.57E+00	-0.467	0.640682
factor(cnpj_emissor)32062580000138	-7.65E-01	4.17E-01	-1.837	0.066257
factor(cnpj_emissor)32254138000103	1.86E+01	1.11E+00	16.672	0.000

factor(cnpj_emissor)33040601000187	1.60E+00	2.10E+00	0.761	0.446739
factor(cnpj_emissor)33254319000100	-1.44E+00	2.07E+00	-0.696	0.486148
factor(cnpj_emissor)33466988000138	4.84E+00	2.53E+00	1.917	0.055308
factor(cnpj_emissor)33479023000180	-2.85E+00	2.53E+00	-1.127	0.259939
factor(cnpj_emissor)33517640000122	-4.24E-01	1.48E+00	-0.286	0.775115
factor(cnpj_emissor)33775974000104	-3.35E+00	2.53E+00	-1.323	0.186005
factor(cnpj_emissor)33894445000111	6.26E+00	3.57E+00	1.755	0.079304
factor(cnpj_emissor)33987793000133	-4.68E-01	1.48E+00	-0.316	0.751706
factor(cnpj_emissor)34111187000112	9.52E+00	4.19E-01	22.718	0.000
factor(cnpj_emissor)38486817000194	3.24E+00	5.40E-01	6.005	0.000
factor(cnpj_emissor)42584318000107	-2.46E-01	3.57E+00	-0.069	0.945087
factor(cnpj_emissor)44211936000137	1.86E+00	2.53E+00	0.735	0.462333
factor(cnpj_emissor)44577887412181	-3.27E+00	1.61E+00	-2.029	0.042498
factor(cnpj_emissor)46570800000149	-4.60E+00	3.57E+00	-1.288	0.197698
factor(cnpj_emissor)47184510000120	8.63E+00	8.27E-01	10.443	0.000
factor(cnpj_emissor)56897440417723	-1.17E+00	2.06E+00	-0.567	0.57074
factor(cnpj_emissor)58160789000128	-9.69E-01	2.28E-01	-4.25	0.000
factor(cnpj_emissor)58160789004468	-1.37E+00	7.25E-01	-1.889	0.058941
factor(cnpj_emissor)58160789010867	2.73E+00	1.05E+00	2.604	0.009214
factor(cnpj_emissor)58229246000110	-1.11E-01	2.53E+00	-0.044	0.965124
factor(cnpj_emissor)58616418000108	5.01E+00	1.79E+00	2.794	0.005217
factor(cnpj_emissor)59109165000149	-1.50E+00	3.37E-01	-4.445	8.87e-06
factor(cnpj_emissor)59274605000113	6.58E+00	6.82E-01	9.655	0.000
factor(cnpj_emissor)59275792000150	6.01E+00	2.53E+00	2.377	0.017465
factor(cnpj_emissor)59281253000123	-9.89E-01	7.65E-01	-1.292	0.196425
factor(cnpj_emissor)59285411000113	1.91E+00	6.98E-01	2.728	0.006376
factor(cnpj_emissor)59588111000103	-4.68E-02	2.15E-01	-0.218	0.827821

factor(cnpj_emissor)60394079000104	-7.16E+00	2.07E+00	-3.459	0.000544
factor(cnpj_emissor)60701190000104	-1.54E+00	2.01E-01	-7.678	0.000
factor(cnpj_emissor)60701190481609	-4.56E+00	2.54E+00	-1.797	0.072306
factor(cnpj_emissor)60746948000112	-1.95E+00	1.94E-01	-10.054	0.000
factor(cnpj_emissor)60746948000201	2.69E-02	1.27E+00	0.021	0.983125
factor(cnpj_emissor)60770336000165	-6.66E-01	2.77E-01	-2.409	0.016023
factor(cnpj_emissor)60814191000157	-1.87E+00	4.37E-01	-4.274	0.000
factor(cnpj_emissor)60872504000123	-8.87E-01	9.19E-01	-0.965	0.334493
factor(cnpj_emissor)60889128000180	3.08E+00	1.61E+00	1.914	0.055699
factor(cnpj_emissor)61024352000171	6.18E+00	1.27E+00	4.856	0.000
factor(cnpj_emissor)61186680000174	9.52E+00	4.47E-01	21.307	0.000
factor(cnpj_emissor)61472676000172	2.23E-01	2.08E+00	0.108	0.914327
factor(cnpj_emissor)61784278000191	-4.83E+00	2.57E-01	-18.762	0.000
factor(cnpj_emissor)62144175000120	7.31E+00	4.82E-01	15.192	0.000
factor(cnpj_emissor)62178421000164	8.56E-01	3.57E+00	0.24	0.810249
factor(cnpj_emissor)62232889000190	4.61E+00	3.00E-01	15.361	0.000
factor(cnpj_emissor)62237425000176	7.38E+00	5.46E-01	13.518	0.000
factor(cnpj_emissor)62285390000140	1.00E+01	2.53E+00	3.955	0.000
factor(cnpj_emissor)62307848000115	3.98E+00	7.16E-01	5.567	0.000
factor(cnpj_emissor)65913436000117	-7.27E+00	3.57E+00	-2.034	0.041976
factor(cnpj_emissor)71027866000134	1.61E-01	9.88E-01	0.163	0.870589
factor(cnpj_emissor)71371686000175	1.62E-01	2.07E+00	0.078	0.937628
factor(cnpj_emissor)75647891000171	-5.13E-01	9.49E-01	-0.541	0.588735
factor(cnpj_emissor)90400888000142	-1.34E+00	2.07E-01	-6.483	0.000
factor(cnpj_emissor)90731688000172	2.86E+00	5.00E-01	5.72	0.000
factor(cnpj_emissor)92228410000102	6.38E+00	1.80E+00	3.551	0.000384

factor(cnpj_emissor)92702067000196	-6.18E-01	7.39E-01	-0.836	0.402968
factor(cnpj_emissor)92702067014227	-5.36E+01	1.28E+00	-41.741	0.000
factor(cnpj_emissor)92894922000108	5.16E+00	1.79E+00	2.881	0.003969
factor(data_carteira)01/2013	1.19E-01	1.81E+00	0.066	0.947553
factor(data_carteira)01/2014	9.44E-01	1.80E+00	0.524	0.600429
factor(data_carteira)01/2015	-3.30E-01	1.80E+00	-0.183	0.854729
factor(data_carteira)01/2016	8.23E-01	1.80E+00	0.458	0.647032
factor(data_carteira)02/2012	-6.44E-01	2.18E+00	-0.296	0.767509
factor(data_carteira)02/2013	6.80E-02	1.81E+00	0.038	0.969989
factor(data_carteira)02/2014	1.81E-01	1.80E+00	0.1	0.920219
factor(data_carteira)02/2015	-4.47E-01	1.80E+00	-0.249	0.803224
factor(data_carteira)02/2016	1.14E+00	1.81E+00	0.628	0.530228
factor(data_carteira)03/2012	1.17E+00	2.72E+00	0.429	0.667711
factor(data_carteira)03/2013	-1.03E+00	1.80E+00	-0.57	0.56882
factor(data_carteira)03/2014	-1.05E-01	1.79E+00	-0.058	0.953456
factor(data_carteira)03/2015	-1.53E-01	1.79E+00	-0.085	0.932094
factor(data_carteira)03/2016	3.63E-01	1.81E+00	0.201	0.841069
factor(data_carteira)04/2012	1.07E+00	2.00E+00	0.534	0.593603
factor(data_carteira)04/2013	-1.33E+00	1.80E+00	-0.736	0.461674
factor(data_carteira)04/2014	1.06E+00	1.79E+00	0.592	0.553614
factor(data_carteira)04/2015	1.77E-01	1.80E+00	0.098	0.921576
factor(data_carteira)04/2016	-1.45E+00	1.82E+00	-0.795	0.426345
factor(data_carteira)05/2012	2.77E+00	2.08E+00	1.333	0.182496
factor(data_carteira)05/2013	-7.09E-01	1.82E+00	-0.39	0.696644
factor(data_carteira)05/2014	5.56E-01	1.79E+00	0.311	0.756055
factor(data_carteira)05/2015	-9.44E-01	1.79E+00	-0.526	0.598827
factor(data_carteira)06/2011	-1.65E+00	4.13E+00	-0.399	0.689941

factor(data_carteira)06/2012	-1.07E+00	1.79E+00	-0.597	0.550348
factor(data_carteira)06/2013	-7.70E-01	1.80E+00	-0.428	0.66879
factor(data_carteira)06/2014	2.50E-01	1.79E+00	0.14	0.888931
factor(data_carteira)06/2015	-3.01E-01	1.79E+00	-0.168	0.866657
factor(data_carteira)07/2011	8.66E+00	4.13E+00	2.098	0.035897
factor(data_carteira)07/2012	1.20E-01	1.81E+00	0.066	0.947018
factor(data_carteira)07/2013	7.29E-01	1.82E+00	0.401	0.688268
factor(data_carteira)07/2014	9.33E-01	1.79E+00	0.521	0.602397
factor(data_carteira)07/2015	-1.66E+00	1.80E+00	-0.921	0.357179
factor(data_carteira)08/2012	5.16E-02	1.86E+00	0.028	0.977841
factor(data_carteira)08/2013	6.78E-01	1.80E+00	0.377	0.70607
factor(data_carteira)08/2014	-6.10E-01	1.79E+00	-0.341	0.733453
factor(data_carteira)08/2015	-3.80E-01	1.80E+00	-0.211	0.832685
factor(data_carteira)09/2012	4.34E-01	1.84E+00	0.236	0.813595
factor(data_carteira)09/2013	-7.71E-01	1.81E+00	-0.426	0.670301
factor(data_carteira)09/2014	-7.37E-01	1.79E+00	-0.411	0.681136
factor(data_carteira)09/2015	-5.81E-01	1.79E+00	-0.324	0.745662
factor(data_carteira)10/2010	-9.57E-01	3.98E+00	-0.241	0.809825
factor(data_carteira)10/2011	1.13E-01	1.81E+00	0.063	0.950137
factor(data_carteira)10/2012	3.13E-01	1.78E+00	0.175	0.860701
factor(data_carteira)10/2013	-6.89E-01	1.79E+00	-0.384	0.700778
factor(data_carteira)10/2014	1.77E-01	1.80E+00	0.099	0.921531
factor(data_carteira)10/2015	-1.33E+00	1.79E+00	-0.742	0.457936
factor(data_carteira)11/2011	-3.96E-01	2.72E+00	-0.146	0.884078
factor(data_carteira)11/2012	1.42E-01	1.79E+00	0.08	0.936524
factor(data_carteira)11/2013	-7.78E-01	1.79E+00	-0.435	0.663909
factor(data_carteira)11/2014	-5.43E-01	1.80E+00	-0.302	0.76294

factor(data_carteira)11/2015	-3.30E-01	1.79E+00	-0.184	0.853764
factor(data_carteira)12/2011	7.99E-01	2.52E+00	0.318	0.750809
factor(data_carteira)12/2012	-9.42E-02	1.79E+00	-0.053	0.958109
factor(data_carteira)12/2013	8.15E-01	1.79E+00	0.454	0.649705
factor(data_carteira)12/2014	-6.41E-01	1.79E+00	-0.359	0.719867
factor(data_carteira)12/2015	1.15E+00	1.80E+00	0.64	0.522295
Observations	13850			
R ² / adj. R ²	0.436 / 0.4294			
F value / p-value	66.09 / 0.0000			