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A Note On Interest Rate Pass-Through Under Different Monetary Regimes In Argentina

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A note on interest rate pass-through under different monetary regimes in Argentina *

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Abstract

We examine whether changes of monetary regime in Argentina (before and after inflation targeting) entailed changes in the response of market interest rates to the policy rate. We look at the interbank rate, the wholesale deposit rate, the rate on current account over drafts and on discounted documents. Using a VAR model, we find a more important role for the central bank interest rate in 2015-2019 than in 2004-2014. The policy rates Granger-causes interbank, wholesale deposit and lending rates more directly in 2015-2019. Pass-through from policy to market rates is faster. And the policy rate accounts for over 80% of observed variability in market rates in 2015-19, while it did so for around 30% in 2004-14.

JEL classification codes: E43, E52, G21, C23
Keywords: Interest rate pass through, monetary transmission mechanism

*This note is part of an ongoing project on the monetary policy transmission mechanism, to which it serves as an introduction. All views expressed are the authors' own and do not necessarily represent those of the Central Bank of Argentina (BCRA).

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1 Introduction

The transmission mechanism of monetary policy is comprised of several channels, of which the interest rate is a very relevant one (Gigineishvili, 2011). Argentina moved to inflation targeting (IT) in 2016 and then to a money-growth targeting regime, setting a policy rate in the former and a reference rate in the latter. It is worth examining what changes can be found in the pass-through from the policy/reference rate to money market, credit and deposit rates. In this paper, we aim to study the transmission mechanism from the policy or reference rate to market rates, before and after the adoption of inflation targeting and monetary targeting in Argentina. Our hypothesis is that the systematic use of a reference interest rate should increase the response of market rates to policy changes.

In order to analyze interest rate pass-through, we plan to work at two levels. The first one is aggregate: in this note, we study the relationship between the policy/reference rate and average money market rates, deposit and lending rates, for the whole financial system. We estimate VAR models and perform Granger-causality tests, in order to determine which rate "moves first" with respect to the others; and impulse-response and variance decomposition exercises to understand, at a descriptive and aggregate level, the relationship between different rates.

At a more granular level, and in the following part of this project (not included in this note) we will employ bank-level data in order to determine how the policy rate is transmitted to lending and deposit rates. In this sense, we plan to follow studies like Gambacorta et al. (2015) and Horvath et al (2018) that look at interest rate pass-through in the euro area before and after the global financial crisis. We will employ panel data models relating individual bank rates and policy rates, including bank-specific and macroeconomic, financial and foreign exchange markets controls.

We consider the project to be a contribution to the monetary policy transmission mechanism literature for emerging market and developing economies (EMDEs). It is especially relevant as it tackles a situation of regime change, including the impact of the "sudden stop" of capital flows underwent by EMDEs in 2018. The rest of this note is organized as follows. Section II describes the changes in the Argentine monetary regime since the early 2000s and how they relate to the behaviour of different interest rates. Section III presents the basic aggregate-level analysis using VAR models. Section IV concludes.

2 Monetary regimes and interest rates in Argentina, 2004-2019

2.1 Monetary policy frameworks

Most disinflation strategies put in place in Argentina in recent decades used the exchange rate as a nominal anchor. For example, the currency board (foreign exchange peg to the US dollar) was instrumental in drastically reducing inflation following hyperinflation bouts in 1989-1990. But it left the country without a tool to cope with external shocks, such as the succession of crises that hit EMEs, notably Mexico in 1995 and Brazil in 1999. Both contagion and domestic developments ultimately resulted in the demise of the currency board in the midst of a macroeconomic and financial crisis in 2001-2002. Table 1 details the main features of monetary policy frameworks in Argentina in the last two decades.

After the currency board, monetary policy was implemented as money growth targeting with a managed floating exchange rate regimes from 2002 until 2012. Following the government debt default, the Central Bank of Argentina (BCRA) was left without elligible paper to carry out open market operations, and thus started issuing its own Central Bank Bills and Notes (known

as LEBACs and NOBACs). Those were its main operational instrument until 2016. In keeping with an annual monetary program that set money growth targets, the Central Bank regulated liquidity in the financial market mainly through LEBACs and NOBACs.

Table 1

Monetary Policy frameworks in Argentina, 1991-2018

Monetary Policy Framework	Date of Implementation
Fixed Exchange Rate (Convertibility regime)	April 1991
Monetary aggregates targeting with managed floating exchange rate	January 2002
Managed floating exchange rate with capital controls	April 2012 (new Central Bank charter; capital controls were tightened in November 2011)
Inflation targeting	September 2016 (after a transition period starting in December 2015)
Base money growth target with FX intervention/non-intervention zones	October 2018

A new central bank charter was passed by the National Congress in 2012, which entailed no commitment of BCRA to announce specific targets, but to set annual objectives for monetary, credit and financial variables. In practice, it translated into a heavily managed floating exchange rate, together with the substantial tigthening of capital controls. In the same breath, from mid-2014, interest rates became regulated, with ceilings for deposit rates and caps for lending rates.

Since December 2015, BCRA lifted capital controls and migrated to an IT regime, fully adopted by late 2016. This went together with the use of a short-term interest rate as the main monetary policy tool and a floating exchange rate. Initially, the policy rate was that of 35-day LEBACs in pesos, then it changed to 7-day repo rate in pesos (actually, the mid-point between the repo and reverse-repo rates; see BCRA, 2016). This was a very important change in monetary policy implementation: in over two decades, there had been no experience of the combination of a policy interest rate as the main central bank tool and a floating exchange rate. This naturally leads to analyzing whether the actual monetary transmission mechanism changed as a result.

Argentina was among the countries that suffered the most from the tightening of financial conditions for emerging market economies since late April 2018. Foreign exchange depreciation and a recession ensued, with the country entering a program with the IMF. It also led to changes in monetary policy implementation in the direction of a new regime, implemented in October 2018; the IT scheme was suspended. A base money growth target has been adopted, together with a foreign exchange reference zone; within it, the central bank may intervene (it was initially

defined as an intervention/non intervention zone). In this case, the interest rate adjusts endogenously to equate supply and demand of central bank paper. The central bank issues or withdraws liquidity bills (LELICs) so that it complies with its base money growth target. The target has been at zero percent growth until December 2019, from the average level in September 2018. Still, the central bank may provide some "forward guidance" on the level and evolution of the reference interest rate. See BCRA (2019) for details on this regime and its recent performance.

Recent changes just described also merit looking at possible changes in the monetary transmission mechanism. Interest rate volatility is expected to increase with a money growth target in place; but retail rates may be less volatile, depending on supply and demand of deposits and loans. This is another reason why interestrate pass-through estimation becomes relevant.

2.2 Interest rates

We look at the following interest rates and how they evolved under succeeding regimes: the policy or reference rate, the interbank rate, the wholesale deposit rate, the rates on current account over drafts and on discounted documents. All of them are published by BCRA on its website and refer to operations in local currency (Argentine pesos).

Policy rate: this is the rate most closely associated to monetary policy implementation in each period. Across the different regimes just outlined, different instruments have been employed: we choose the rate that is, under each regime, most directly linked to open market operations. Thus, we use: the LEBAC auction rate for up to 90 days in 2004-2015; the monetary policy rate in 2015-2018 (LEBAC auction rate for 35 days in 2016, 7-day repo rate in 2017-2018); the LELIQ auction rate for 7 days (reference rate). Between 2004 and 2015, the LEBAC rate was the most important rate for monetary policy operations, but in a regime which did not openly or directly identified the interest rate as its main instrument. Strictly speaking, the LEBAC rate became *the* monetary policy rate since late 2015: it was explicitly recognized as such by the central bank as part of the transition and subsequent implementation of inflation targeting. Since September 2018, the LELIQ rate is the main monetary policy operation rate; note that BCRA publishes an uninterrupted daily series for the policy rate since December 2015 (first the LEBAC and then the LELIQ rate).

Call or interbank rate: the interest rate on interbanking loans in pesos, for up to 15-day maturities.

BADLAR: interest rate on time deposits in pesos, for 30-35 days on amounts exceeding AR$ 1 million. This is generally considered a representative interest rate for "wholesale" deposits (i.e. for large investors; notice, however, that due to inflation during the sample period, the rate definition tends to capture relatively smaller inverstors over time).

Current account overdrafts; discounted documents: interest rate on both type of loans to the private sector in pesos; we use the average rate, weighted by loan amount. Both interest rates corresponde to the most active segments in the credit market when it comes to loans to the private sector (especially companies).

Figure 1 shows the distinct dynamics of interest rates during the periods outlined in section 2.1. After a sharp drop in the aftermath of the 2001-2002 crisis, interest rates stabilize. They go on to show distinct peaks, associated to the international financial crisis (2007-2008), the eurozone crisis (Greek default, 2011), the local currency depreciation of early 2014 and the lifing of capital controls since late 2015, together with a new and aggressive disinflation policy. The

spike in the second half of 2018 is linked to the sudden stop in capital flows. For the whole sample period, and as expected, lending rates are higher than deposit rates, the call rate and the LEBAC/policy rate (table 1). The call rate is the most volatile in relative terms (as measured by the coefficient of variation), followed by the LEBAC/policy rate. From 2004-2014 to 2015-2019, there is an increase in mean and median rates for all credit types, as well as in volatility. While call and policy rates remain the most volatile (in relative terms) in 2015-2019, the difference in volatility across interest rates is reduced when compared to the previous period.

Figure 1. Selected interest rates.
Argentina, 2003-2019

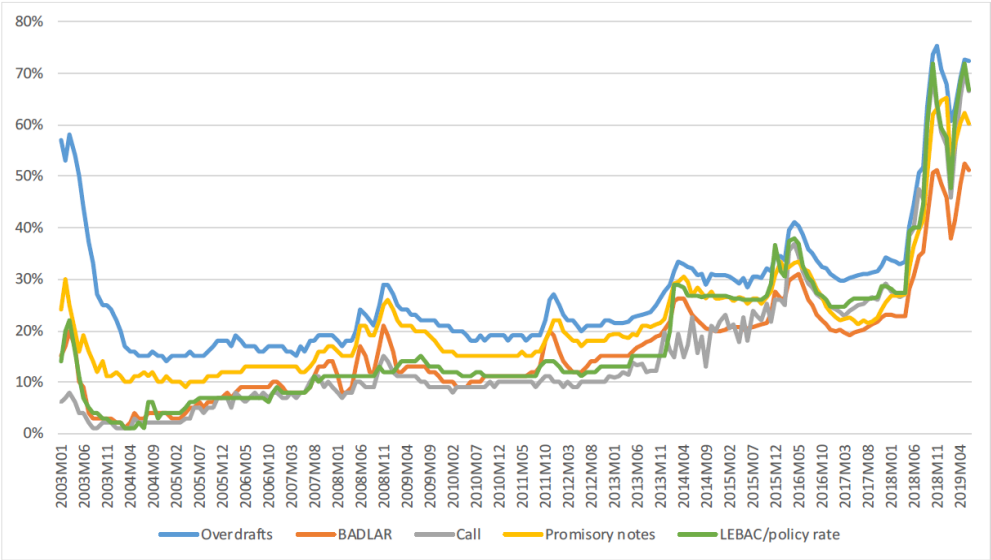


Table 2
Selected interest rates, descriptive statistics
(a)

	January 2004-June 2019				
	Overdrafts	BADLAR	Call	Promisory notes	LEBAC/Policy rate
Mean	27,25%	16,00%	15,55%	21,41%	17,91%
Median	22,90%	14,00%	10,00%	19,00%	13,00%
Maximum	75,20%	52,44%	70,31%	65,15%	71,92%
Minimum	14,00%	1,00%	1,00%	9,00%	1,00%
Std. Dev.	13,02%	10,21%	13,96%	11,08%	14,10%
Coefficient of variation	0,478	0,638	0,898	0,518	0,787

Table 2 (continued)

Selected interest rates, descriptive statistics

(b)

	January 2004- April 2014				
	Overdrafts	BADLAR	Call	Promisory notes	LEBAC/Policy rate
Mean	20,02%	11,19%	8,67%	16,18%	10,51%
Median	19,00%	11,00%	9,00%	15,00%	11,00%
Maximum	33,27%	26,28%	19,67%	30,52%	29,00%
Minimum	14,00%	1,00%	1,00%	9,00%	1,00%
Std. Dev.	3,97%	5,16%	3,67%	4,52%	4,69%
Coefficient of variation	0,198	0,461	0,423	0,279	0,447

(c)

	December 2015- June 2019				
	Overdrafts	BADLAR	Call	Promisory notes	LEBAC/Policy rate
Mean	42,89%	29,61%	36,53%	35,20%	37,82%
Median	34,51%	26,02%	27,97%	30,63%	30,33%
Maximum	75,20%	52,44%	70,31%	65,15%	71,92%
Minimum	29,70%	19,20%	22,84%	21,26%	24,75%
Std. Dev.	15,46%	10,68%	15,13%	14,63%	15,19%
Coefficient of variation	0,360	0,361	0,414	0,416	0,402

3 Interest rates dynamics: stylized facts

We estimated a VAR model with monthly data for the period 2004-2019, including as endogenous variables the five interest rates described in the previous section. In order to contrast the period when the central bank adopted a monetary policy rate with the previous one, we estimated different models for January 2004- April 2014 and December 2015- June2019. The period between May 2014 and November 2015 was deliberately omitted as floors on deposit rates and ceilings on lending rates were in place; this distorted the transmission from policy to market interest rates. Different statistical criteria indicated the use of two lags in the models.

In 2004-2014, Granger causality tests (table 2) indicate that the LEBAC rate causes the interbank rate (which is caused by no other rate), which in turn causes the BADLAR (wholesale deposit rate) and the discounted documents rate. The latter is also caused by the BADLAR. The rate on overdrafts, in turn, is Granger-caused by BADLAR and the LEBAC rate (at barely over 5% significance). The LEBAC rate is only anticipated by the call rate; this is consistent with both rates reflecting liquidity management by banks (banks buy or sell LEBACs, and borrow or lend in the call market). Thus, policy and interbank rates tend to influence deposit rates and lending rates, as expected.

Table 2

Grange causality tests, VAR 2004-2014

Dependent variable: **LEBAC rate**

Excluded	*Chi-sq*	*df*	*Prob.*
Overdrafts	0.090625	2	0.9557
Documents	0.995406	2	0.6079
Call	24.32255	2	0
BADLAR	3.027813	2	0.22
All	32.86987	8	0.0001

Dependent variable: **Call**

Excluded	*Chi-sq*	*df*	*Prob.*
LEBAC	13.23546	2	0.0013
Overdrafts	0.679037	2	0.7121
Documents	0.18401	2	0.9121
BADLAR	1.427408	2	0.4898
All	21.12059	8	0.0068

Dependent variable: **BADLAR**

Excluded	*Chi-sq*	*df*	*Prob.*
LEBAC	7.427535	2	0.0244
Overdrafts	1.775561	2	0.4116
Documents	0.334033	2	0.8462
Call	10.43289	2	0.0054
All	27.05982	8	0.0007

Dependent variable: **Overdrafts**

Excluded	*Chi-sq*	*df*	*Prob.*
LEBAC	5.827229	2	0.0543
Documents	1.420136	2	0.4916
Call	0.981992	2	0.612
BADLAR	13.77585	2	0.001
All	54.39904	8	0

Dependent variable: **Documents**

Excluded	*Chi-sq*	*df*	*Prob.*
LEBAC	5.161012	2	0.0757
Overdrafts	3.846891	2	0.1461
Call	10.12196	2	0.0063
BADLAR	15.38438	2	0.0005
All	62.27505	8	0

Impulse-response functions show positive and significant reactions of all rates to the LEBAC rate in 2004-2014 (figure 2). Cholesky ordering of interest rates is as follows: LEBAC, call, BADLAR, overdrafts, documents.The highest responses are estimated after three months, and are more prominent for the wholesale deposit rate and the overdraft rate; these virtually double the reaction of the call and the discounted documents' rates. The pass-through from the policy rate is also somewhat faster for the BADLAR rate: a 1,1 p.p. increase in the policy rate (1

standard deviation) is fully reflected in the wholesale deposit rate after one to two months, while it takes two to three months in the case of both lending rates, and three to four months for the call rate (the latter is surprising, given the faster expected reaction of the interbank market).

Variance decomposition (figure 3) suggests that the interbank rate represents most of the variability behind wholesale deposits and most lending rates after a year (with variance in the order of 45-55%). The "policy" rate typically amounts to under a third of total variability of all rates considered.

Figure 2. Impulse-response functions
2004-2014

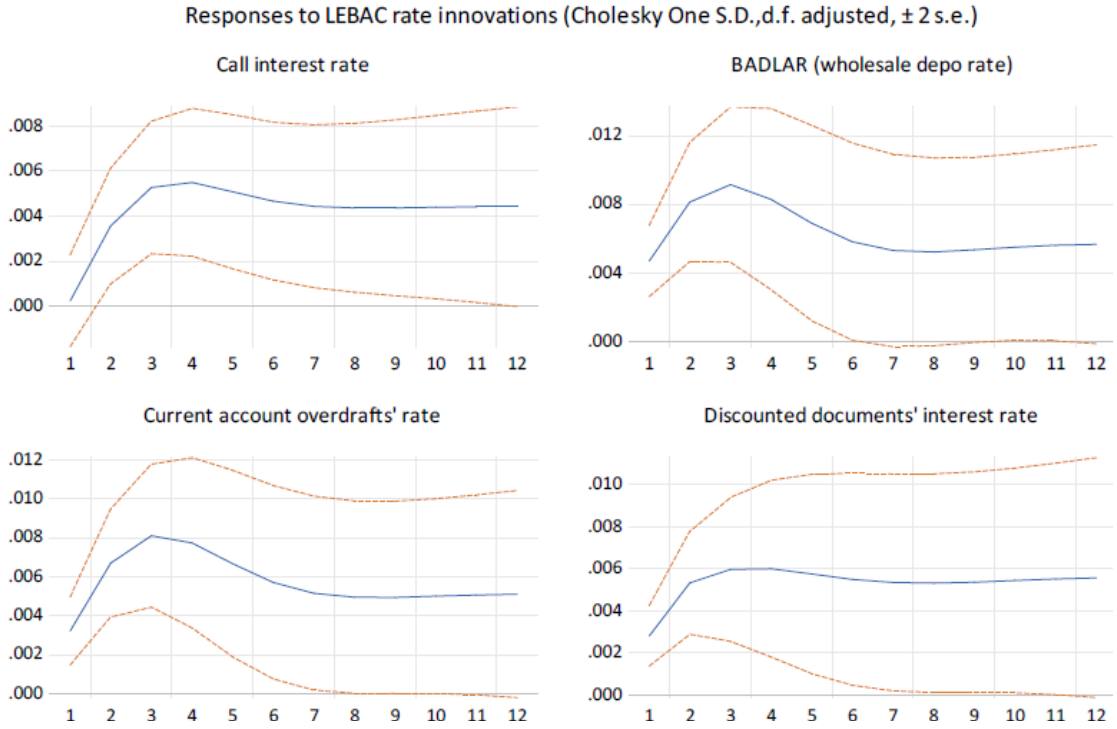
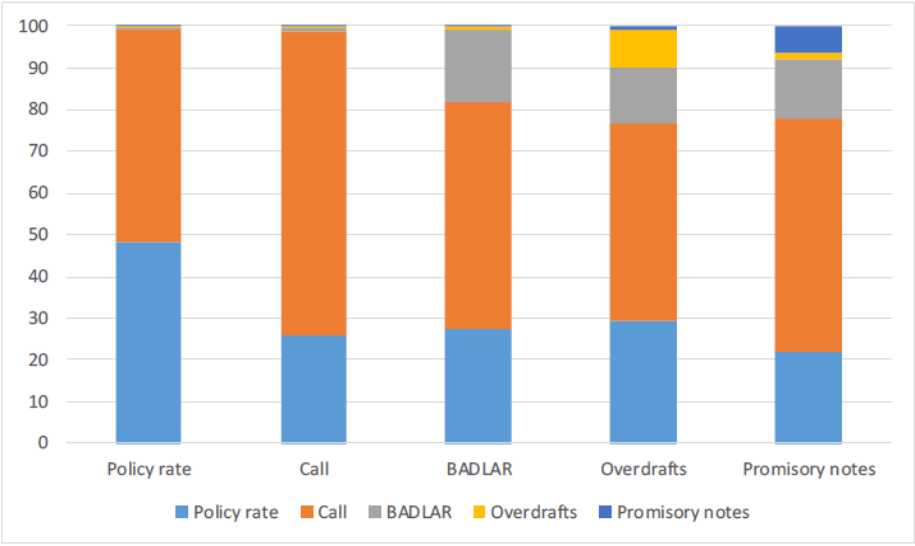


Figure 3. Variance decomposition
2004:1-2014:4 - after 10 months



These results contrast sharply with those obtained for 2015-2019. There is a more important role for the policy rate, which Granger-causes the other four interest rates (table 3). The call rate anticipates the overdraft rate (at 6% significance), which in turn causes the rate on discounted documents. Curiously, the latter anticipates the policy rate at a 5% significance level.

Table 3

Grange causality tests, VAR 2015-2019

Dependent variable: **policy rate**

Excluded	*Chi-sq*	*df*	*P-value*
Overdrafts	4.588835	2	0.1008
BADLAR	0.150873	2	0.9273
Call	1.107398	2	0.5748
Documents	6.097073	2	0.0474
All	15.95015	8	0.0431

Dependent variable: **Call rate**

Excluded	*Chi-sq*	*df*	*P-value*
Policy rate	8.692939	2	0.013
Overdrafts	3.220295	2	0.1999
BADLAR	0.080976	2	0.9603
Documents	5.060877	2	0.0796
All	15.16821	8	0.056

Dependent variable: **BADLAR**

Excluded	*Chi-sq*	*df*	*P-value*
Policy rate	7.286992	2	0.0262
Overdrafts	4.676363	2	0.0965
Call	2.096974	2	0.3505
Documents	3.085789	2	0.2138
All	17.7225	8	0.0234

Dependent variable: **current account overdrafts' rate**

Excluded	*Chi-sq*	*df*	*P-value*
Policy rate	12.81537	2	0.0016
BADLAR	0.10755	2	0.9476
Call	5.389346	2	0.0676
Documents	3.606738	2	0.1647
All	17.01938	8	0.0299

Dependent variable: **documents**

Excluded	*Chi-sq*	*df*	*P-value*
Policy rate	5.826803	2	0.0543
Overdrafts	10.80968	2	0.0045
BADLAR	2.043237	2	0.36
Call	3.21704	2	0.2002
All	26.80037	8	0.0008

Impulse-response functions continue to show positive and significant reaction of market rates to the policy rate (figure 4). But dynamics are different: the interbank rate reacts more strongly at first (after two months), followed by the overdraft and discounted documents rates. All these

response tend to be higher than that of the wholesale deposit rate. The reaction of all rates is faster now: a 4,7 p.p. (1 standard deviation) increase in the policy rate is fully reflected in the interbank rate contemporaneously; while it is only in the second month that it is fully passed on to the other interest rates.

Variance decomposition (figure 5) also reveals a much more fundamental role for the policy rate: it accounts for 80% to 90% of observed variability of the other interest rates (call, wholesale deposit and lending rates).

Overall, the results for 2015-2019 suggest a more central role for the policy rate in the determination of interbank, deposit and lending rates. This is in keeping with the change in the monetary policy instrument. A caveat is here in order: in the second period, there was a change in regime from IT to money growth targeting. At the aggregate level we are working, there are still not enough data to ascertain whether this has involved a significant change in the monetary transmission mechanism.

Figure 4. Impulse-response functions
2005-2019
Response to policy rate innovations (Cholesky One S.D.,d.f. adjusted,± 2 s.e.)

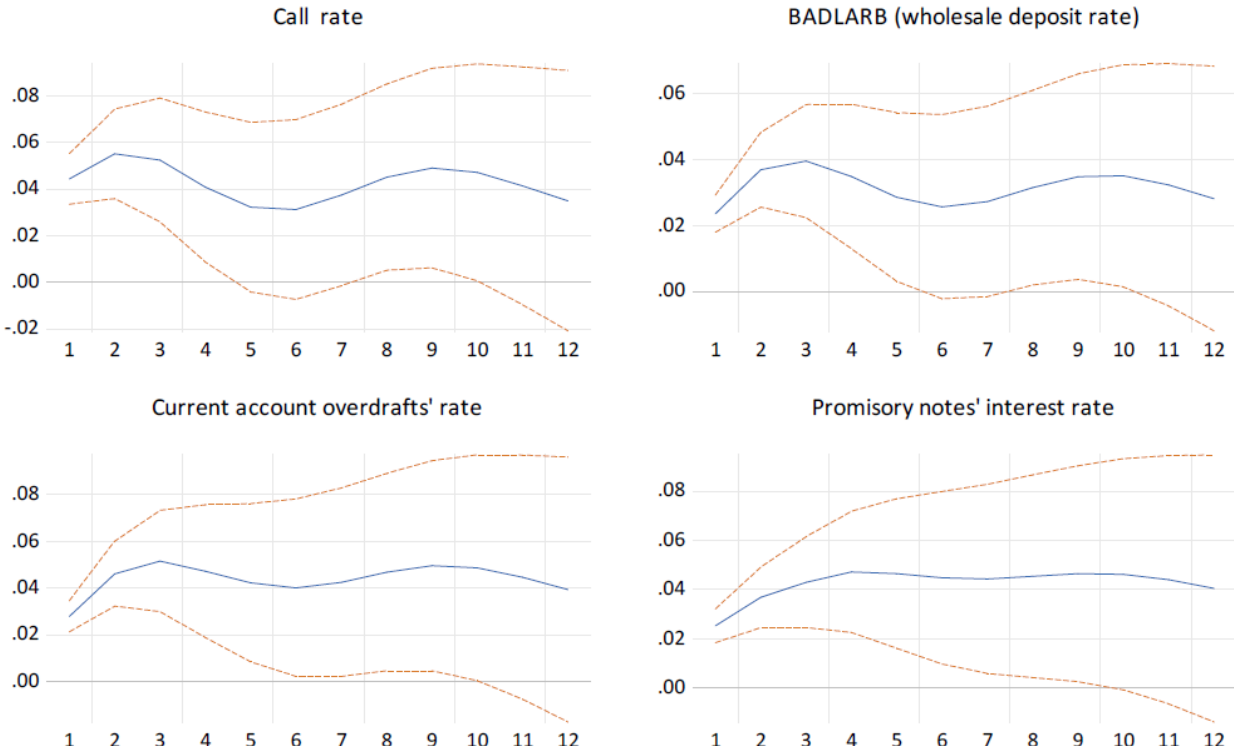
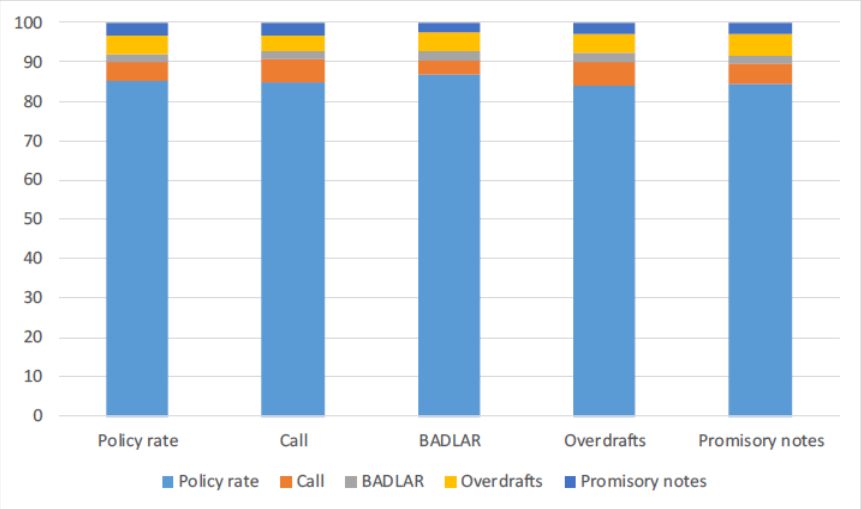


Figure 5. Variance decomposition
2015:12-2019:6 - after 10 months



4 Concluding remarks and further work

As the Central Bank of Argentina adopted a policy rate as its main instrument since late 2015, we examine whether this entailed changes in the monetary policy transmission mechanism. In particular, in the response of market interest rates to the policy rate: we look at the interbank rate, the wholesale deposit rate, the rate on current account over drafts and on discounted documents . Using a VAR model, we find a more important role for the central bank interest in 2015-2019 than in 2004-2014. The policy rates Granger-causes interbank, wholesale deposit and lending rates more directly in 2015-2019. Pass-through from policy to market rates is faster. And the policy rate accounts for over 80% of observed variability in market rates in 2015-19, while it did so for around 30% in 2004-14.

Our results are only a first approximation. We need to refine the analysis at the aggregate level: exploring the possibility of implementing a VECM (as in Gambacorta and Iannotti, 2007); improving shock identification and/or control for the "sudden stop" episode that took place in the second sample period. We leave for further work to l introduce bank-level data in order to portray interest rate pass-through dynamics with more granularity.We will employ bank-level data in order to determine how the policy rate is transmitted to lending and deposit rates. In this sense, we plan to follow studies like Gambacorta et al. (2015) and Horvath et al (2018) that look at interest rate pass-through in the euro area before and after the global financial crisis. We will employ panel data models relating individual bank rates and policy rates, including bank-specific and macroeconomic, financial and foreign exchange markets controls. Depending on the final size and structure of the panel (individuals with respect to time dimension) we may employ methods that specifically account for "long" panels, such as pooled mean group estimation. We will be interested in obtaining interest rate pass-through estimates as well as in detecting possible breaks in the relationships as monetary regimes change.

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