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The impact of monetary policy on the exchange rate: puzzling evidence from three emerging economies*

Emanuel Kohlscheen**

Abstract

This study investigates the impact effect of monetary policy shocks on the exchange rates of Brazil, Mexico and Chile. We find that even a focus on 1 day exchange rate changes following policy events - which reduces the potential for reverse causality considerably - fails to lend support for the conventional view that associates interest rate hikes with appreciations. This lack of empirical backing for the predictions of standard open economy models that, for instance, combine the UIP condition with rational expectations (along the lines of Dornbusch (1976)) persists irrespective of whether we use the US Dollar or effective exchange rates, whether interest rate changes are anticipated or not, whether changes in the policy rate that were followed by exchange rate intervention are excluded or whether "contaminated" events are dropped from the analysis. We argue that it is difficult to attribute this stronger version of the exchange rate puzzle to fiscal dominance, as similar results are obtained in the case of Chile - a country that has had the highest possible short-term credit rating since 1997 and a debt/GDP ratio below 10%. Indeed, in Chile a 100 b.p. hike leads to a 2.2 to 2.6% devaluation of the Peso on impact.

Keywords: exchange rate; monetary policy; event study;
JEL Classification: E40, E50, F31, F41

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** Research Department, Central Bank of Brazil. *E-mail*: emanuel.kohlscheen@bcb.gov.br

"If the relationship between interest rates and exchange rate movements were predictable, the effectiveness of the exchange rate transmission channel would be helpful to monetary policy. But in practice this relationship remains rather inscrutable."

Ian Plenderleith, Deputy Governor, *South African Reserve Bank*

1. Introduction

The extent to which monetary factors determine the value of a currency has been one of the key questions of macroeconomics for a long time. While an extensive list of studies has addressed this question and the associated puzzles in the case of developed countries, the literature that looks at this issue in the context of emerging markets is much more scant, in part because most emerging markets do not have a sufficiently long track record with a floating exchange rate regime. As the number of emerging economies that let the value of its currency be driven by market forces has increased, and the value of the currencies of these increasingly important players in the global economy has come to the forefront of the international policy debate, the need of a clearer understanding of the determinants of the value of their currencies has raised the necessity of such analysis.[1] At the very least, some knowledge about the actual relationship between interest rate and exchange rate movements in emerging economies is required to guide model selection in the context of emerging markets and provide a clearer understanding of the transmission mechanisms that are at work.

Conventional open economy models that combine an uncovered interest parity condition with rational expectations, along the lines of the seminal paper by Dornbusch (1976), would suggest that an unexpected monetary contraction leads to an immediate appreciation of the currency, so as to create the conditions for a subsequent depreciation at

[1] The recent strength of the Brazilian Real (at the time of this writing the BRL was trading at a 12 year high against the USD even in *nominal* terms), for instance, has often been attributed to the fact that the domestic interest rate in Brazil has been high by international standards.

a rate that equals the interest rate differential. Identifying the effects of monetary policy shocks on exchange rates in the data however is not a trivial task if one takes proper account of the issue of endogeneity, i.e. the possibility that monetary policy actions constitute a reaction to concomitant changes in the exchange rate or foreign monetary policy policy conditions. In fact, a study by Zettelmeyer (2004) argues that the frequent association of positive interest rate shocks with currency depreciations - which is a well known feature of the VAR literature (see Grili and Roubini (1995)) - can be attributed to this problem of reverse causality. In order to control for this possibility, this paper follows the approach taken by that author, to study the impact effect of a total of 238 monetary policy committee decisions on the exchange rates of the Brazilian Real, the Mexican and the Chilean Peso using daily variations. In contrast to Zettelmeyer, however, we do not restrict our study to monetary policy decisions that led to changes in the policy rate (as decisions to hold may also have a surprise component) and do not include periods in which the central banks responded to exchange rates in an explicit way.

The main advantage of the event based methodology is that our results are not model dependent and, in particular, do not rely on VAR based identification of monetary policy shocks and the strong information assumptions that underlie it. Note that VAR based procedures require the strong assumption that the information set of the central bank is fully described by the variables contained in the system. The caveat of our approach is that we are unable to draw any conclusion about the dynamic response of the exchange rate to monetary policy shocks. The focus on the cases of Brazil, Mexico and Chile allows us to compare the effects of monetary policy in emerging economies that have had a floating exchange rate regime in place for more than a decade but have had markedly different levels of gross indebtness.

Contrary to the results that were obtained for a number of developed economies,[2] the analysis of the events that surrounded the (pre-scheduled) monetary policy committee meetings that took place in Brazil, Mexico and Chile between January 2003 and May 2011 fails to provide evidence that interest rate increases are associated with exchange rate

[2] Kearns and Manners (2006) and Faust, Rogers, Wang and Wright (2007) also find the textbook association of monetary contractions with currency appreciations for a selection of advanced economies.

appreciations on impact in any of these three countries. This observation holds irrespective of whether interest rate changes are anticipated or not or of whether changes in the policy rate that were followed by exchange rate intervention are excluded from the sample. If anything, we find that the exchange rate depreciates following monetary policy contractions, irrespective of whether we use changes in the US Dollar rate or the variation against a basket of currencies. This apparently puzzling finding is not easily attributed to fiscal dominance, as such results hold not only in the case of Brazil or Mexico, but also in the case of Chile - a country that has the highest possible short-term sovereign credit rating since 1997 and a debt/GDP ratio below 10%. Indeed, in the case of Chile we find that a 100 b.p. hike leads to a 2.2 to 2.6% depreciation of the Peso on impact, a result that is statistically significant at the 1% confidence level. The empirical failure of the impact UIP in these emerging markets represents a higher frequency version of the exchange rate puzzle that is typical of the VAR literature.

Relation to the literature. One paper that finds results that are similar to the ones reported here is that of Kraay (2003), who fails to find any indication that higher interest rates defend exchange rates that come under attack. However, their sample is restricted to periods of crises. In terms of theory, a number of models have weakened or even reversed the link between interest rate hikes and currency appreciations. In Aghion, Bacchetta and Banerjee's (2000, 2001) model with credit constraints, for instance, there is the possibility that an increase in interest rates could lead to exchange rate depreciation for a certain range of parameters. This possibility arises because higher domestic interest rates diminish investment and future output, reducing future demand for money -- which implies a currency depreciation. On the other hand, Blanchard (2005) and Gonçalves and Guimarães (2011) develop fiscal dominance models in which high indebtness levels can lead to an inverted relationship between interest and exchange rates. More recently, disaster risk models, along the lines of Guo (2007), Farhi and Gabaix (2008) and Gourio, Siemer and Verdelhan (2010), have delivered a negative association between interest rates and currency values, replicating the failure of UIP. However, in these models, this is the result of a shock to disaster probability or to the resilience of a country, rather than to monetary policy itself.

To the extent that the exchange rate does not react to domestic monetary policy in the way that conventional theory and standard open economy DSGE models would suggest, the results of this paper are also related to the exchange rate disconnect puzzle. Moore and Roche (2010) provide an explanation to the exchange rate disconnect puzzle and the failure of UIP based on habit persistence, in a paper that is closely related to Verdelhan (2010). Finally, Brunnermeier, Nagel and Pedersen (2008) point out that carry trade would push the reaction of the exchange rate after an interest rate shock toward the one that is predicted by UIP. Slow adjustment could be due to liquidity constraints. However, their rationale suggests an initial under-reaction to a shock, rather than the reverse reaction that we find. The same holds for the infrequent portfolio adjustment theory of Bacchetta and van Wincoop (2010).

The paper proceeds as follows. Section II explains the country selection and provides some background information on the policy framework. In Section III, a preliminary scatter plot analysis is presented. Section IV explains the estimates for the baseline models. A comprehensive classification of the policy events according to their inputted degree of exogeneity and re-estimation of the specifications of the previous section is performed in Section V, where we analyze subsamples according to the degrees of exogeneity of the observations. As a robustness check, the estimations are repeated based on the variations against a weighted basket of global currencies. The paper closes with some concluding remarks, indicating possible directions for further research.

2. Methodology

The paper analyzes the impact of monetary policy by focusing on three emerging economies that have an established floating exchange rate regime: Brazil, Mexico and Chile. We consider the exchange rate regimes of these countries as established because they have been in place in an uninterrupted fashion for longer than 10 years according to the *de facto* classification of Reinhart and Rogoff (2004) and later updates of it by the IMF. Emerging economies that fall into this category typically have a higher nominal exchange

rate volatility than that of the United States and the Eurozone, even though they practice a managed float.[3] All three countries have also been operating within an inflation targeting framework for more than a decade (see Gonçalves and Salles (2008)) and use a short-term interest rate as their main policy instrument. Besides the fact that they are important Latin American economies for which we could obtain daily foreign exchange intervention data, the selection also rested on the observation that the decision of the monetary policy committee meetings in these countries is announced after markets have already closed: in the case of the *Banco Central do Brasil* and *Banco Central de Chile*, in the evening of the last day of the meeting and, in the case of *Banco de Mexico*, on the following morning, at 9:30 a.m., before the opening of markets.[4] We considered the pre-scheduled monetary policy committee meetings in these countries that took place between January 2003 and May 2011. This gave us a total of 238 policy events for which we could analyze the market developments on the day that followed the policy decision (79 in Brazil, 101 in Mexico and 58 in Chile). To consider the surprise component of the decisions we examined how immediate changes in market interest rates relate to changes in the nominal exchange rates.

3. Scatter Plots

Figure 1 shows the scatter plots of exchange rate and market interest rate variations for each of the countries. The plots on the left represent changes in the US Dollar exchange rate against changes in the 90 day interest rate swaps on the days that followed the monetary policy committee meetings. In the case of Mexico we used the 28 day interbank rate as a continuous daily series for the equivalent 90 day rate was not available.[5] The plots on the right are based on the actual changes in the targeted policy rate.[6] The visual analysis

[3] See Kohlscheen (2010).
[4] In the case of the *Reserve Bank of South Africa*, in contrast, the announcement is made at 3:00 p.m. on the last day of the meetings, while markets are still open.
[5] We do not use government bills as the issuance of these has not been continuous. DI x pré swap contracts are guaranteed by the futures exchange (*BM&FBovespa*) and effectively replicate a zero-coupon bond.
[6] Note that in Mexico the 1 day interbank rate only became the main policy instrument in January 2008, which explains the smaller sample size in this case. Prior to that, the monetary policy committee used to announce a quantitative target (the *corto*).

suggests no clear relation between the variables in the case of Brazil and Mexico and a positive relation in Chile - i.e. an association of interest rate increases with currency devaluations.

Figure 2 repeats the scatter plots separating the observations according to whether the observations occurred on a day in which the central bank intervened in the foreign exchange market or not. It is interesting to note that, if anything, the relationship becomes even more positive in the sample without intervention. On the other hand, the intervention subsamples suggest a slightly negative relationship (as would be predicted by theory).

4. Regression Analysis

To assess the impact effect of monetary policy on the exchange rates we estimated

$$\Delta e_t = \alpha + \beta \Delta i_{n,t} + \gamma \Delta Z_t + \varepsilon_t$$

for each country, where Δe_t is the daily variation in the exchange rate, $\Delta i_{n,t}$ represents the change in the n-month interest rate and ΔZ_t stands for the change in eventual additional control variables on the day of the policy announcement - or the day after, if the policy announcement was made after market closure. α captures the eventual trend depreciation over the sample period. The parameter of interest in this paper is β: if the usual Dornbusch type combination of uncovered interest parity and rational expectations were a good approximation of reality, β would be negative and statistically significant, meaning that a surprise monetary tightening would lead to an appreciation of the exchange rate.

As already noted, the focus on the variation within a single day diminishes the potential that a problem of reverse causality may drive the estimation results. As we are focusing on the day following the policy announcement, the variation in the market interest rate should normally be dominated by the news regarding the monetary policy decision. Note that e_t and $i_{n,t}$ are asset prices that should react to news instantaneously as long as markets are liquid. We use either a 1-month or a 3-month interest rate as the market for

these instruments is sufficiently liquid and changes in short-term rates will reflect the surprise element in the new policy rate. Obviously, the market interest rate will also reflect other developments that affected the money market within the same day, so that we cannot rule out the possibility of endogeneity completely. This led us to re-estimate the above equation using the actual change in the policy target as an instrument. While the change in the targeted policy rate is unlikely to be correlated with non-policy factors that could have affected the 1 or the 3 month rate on the first opening day of markets, it is clearly correlated with the change in these rates.[7] The Durbin and the Wu-Hausman test statistics clearly did not reject the null of exogeneity of the regressors in the cases of Brazil and Mexico for all specifications, backing the use of standard L.S. over I.V. This was not the case in Chile, where we report the results of the I.V. estimations instead.[8]

The first column in Table 1 shows the estimation output when no controls are included (as in the baseline case of Zettelmeyer), whereas the second column repeats the exercise including controls. The controls in Z_t intend to capture the changes in three factors: foreign monetary conditions, risk premia and international commodity prices. The change in the foreign monetary conditions is measured by the daily variation of the 3 month T-Bill rate - which is comparable to the 90 day swap rates in the cases of Brazil and Chile,[9] whereas in the case of Mexico we use the change in the 1 month US Dollar LIBOR rate to compare with the change in the 28 day interbank rate. The change in the country specific risk premium is proxied by the daily change in the VIX rate, as the strong correlation of the VIX with changes in sovereign credit default spreads has been documented earlier (see Pan and Singleton (2008)).[10] Indeed, the change in the VIX rate turns out to be highly correlated with the daily change in the 5 year CDS spreads also within our sample period. (The correlation over the sample period was 0.584 for Brazil, 0.702 for Mexico and 0.708 for Chile.) Using the CDS spread directly to capture the risk premium would have the potential of compounding the problem of reverse causality - which previous authors have pointed out

[7] For our sample of policy events, the correlation is 0.395 for Brazil, 0.621 for Mexico and 0.761 for Chile.
[8] Note that, since the models are not overidentified, the Sargan-Hansen test does not apply.
[9] In the Chilean case the daily series starts in May 2006, which is why we focus on the policy events that took place after this date.
[10] The VIX index is a measure of equity market volatility that is computed by the *Chicago Board Options Exchange*.

as being the culprit for the association of interest rate hikes with depreciations. While in principle the exchange rate variation could have a direct effect on the CDS spread within the same day, it is highly unlikely that the exchange rates of any of these countries drive the VIX spread. In any case, as a robustness check, we re-ran the regressions using the CDS instead and report them in Table A1 in the Appendix. The pattern of the results that we report for the β estimates is not greatly affected by this change in proxy. Note however that the substitution of the VIX rate by the CDS causes the control for the foreign monetary conditions to attain the wrong sign in the case of Chile, with high statistical significance. Finally, the change in international commodity prices, is measured by the daily variation in the CRB index, a commodity price index that is calculated on a daily basis by the *Commodity Research Bureau*.

The third and the fourth columns in Table 1 repeat the estimations restricting the subsample to the days in which the respective Central Banks did not intervene in the foreign exchange market. Throughout, our control variables do attain the expected sign wherever they turn out to be statistically significant. Increases in international interest rates, in the VIX rate and decreases in international commodity prices lead to depreciations of the currencies. The effect of the foreign interest rate however is only statistically significant at 5% in the case of Mexico. The reduction in risk appetite, proxied by the increase in the VIX rate, leads to significant depreciations in the Brazilian and the Chilean currencies. Finally, increases in commodity prices lead to very significant appreciations of the Chilean Peso, as one would expect. The fit of the regressions led us to adopt the version with the control variables as the baseline specification in the remainder of this paper.

As for our main variable of interest, β, we never manage to attain anything close to the negative sign predicted by theory in a way that is significant. On the contrary, the point estimates indicate that an unexpected monetary tightening that leads to a 100 b.p. increase in the 90 day DI swap rate would lead to a modest 0.5-1.2% depreciation of the Brazilian Real on impact. In the case of Mexico, a hike that causes a 100 b.p. increase in the 28 day TIIE rate, would lead only to marginal variations in the value of the Peso. Based on the robust standard errors, neither effect differs significantly from zero. The estimates for Chile are the most surprising ones: our point estimates suggest that a tightening of 100 b.p. in the

tasa de politica monetaria would lead to a 2.2 to 2.5% depreciation of the Chilean Peso. This effect is always significant at the 1% confidence level.[11] Indeed, this suggests that the positive slope that was apparent in the scatter plots is not accidental. The Chilean case is very telling because it would seem to invalidate attributing the failure to find an association of interest rate hikes with currency appreciations in emerging markets to a problem of fiscal dominance in a generalized way. Chile has had the highest possible short-term sovereign credit rating at Standard & Poor's since 1997 and its debt/GDP ratio of 8% is one of the lowest in the world.

Summing up, we fail to find the link of interest rate hikes with currency appreciations or any evidence that would square with the prediction of standard rational expectations models that are based on the UIP when looking at impact effects. In particular, note that, if anything, dropping all events in which the monetary authorities intervened in the foreign exchange market on the day that followed the policy meeting moves us even further away from the negative coefficient that one would have expected.

5. Robustness

To assess the robustness of the findings of the previous Section, we proceed to analyze first whether the results persist once we drop "contaminated events" - following the narrative approach of Zettelmeyer (2004) - and, second, whether results change if effective exchange rate variations are used instead of bilateral variations.

5.1. Exogeneity Classes

Zettelmeyer observed that a researcher may fail to find evidence in favor of the UIP condition because of data contamination. In our setting, this could occur because market

[11] βs are also positive and significant under OLS, when the variation in the 90 day swap rate is used. The Durbin and the Wu-Hausman tests however reject the null hypothesis that regressors are exogenous in this specification.

interest rates may react to other changes, besides the changes in the policy rate, within the day that follows the policy announcement. For this reason, we scrutinized the news that surrounded all pre-scheduled monetary policy committee meetings of this study. We did this by analyzing all country news that were made public by *Bloomberg* between the time of the policy announcement and the following market closure. The cover pages of major newspapers on the days that followed the monetary policy committee meetings were also analyzed. In the case of Brazil we used the archives of *Folha de São Paulo*, while in the case of Mexico the archives of *El Universal* were used. Both newspapers typically give ample coverage to monetary policy decisions. For the case of Chile, we used *Bloomberg* additionally to search for major global events that may have affected the local money market on the days that followed the monetary policy decisions.

The overall strategy was to highlight any data release that was related either to GDP, inflation or unemployment, as well as reports concerning the state of the global economy and other measures that clearly could have had an economic impact that appeared in the media outlets mentioned above. We identified that 21.8% of the policy events could suffer from potential contamination in the case of Brazil, 22.7% in the case of Mexico and 20.7% in the case of Chile. Each of the policy events was then classified according to whether there were other news that may have affected the money market on that particular date. We considered that the release of GDP and CPI data represented the highest degree of contamination, because of their importance within an inflation targeting framework, and classified the events that coincided with such releases as being of the exogeneity class C. Changes to the minimum wage - which clearly have strong fiscal implications in the case of Brazil - as well as events in the international economy that made it to the front page of the major national newspapers, as for instance the *Lehman Brothers* incident or the slashing of the Fed Funds rate in October 2008 where also put into this class. We considered that the publication of unemployment statistics represented a lower degree of contamination, assigning it an exogeneity classification B, due to the lower weight that this variable has in economies where only a part of the labor market is formal.[12] The remaining policy events, which had no overlap with other significant economic news, were assigned to exogeneity

[12] In Brazil, for instance, only 51% of current employment relations are formal.

class A. The complete list of the meetings and their classification can be seen in Tables 2 to 4.

Table 5 lists the regression outputs for the cases were contaminated observations are dropped from the sample. We report the results for the cases in which only observations of the exogeneity class C were dropped as well as results for when we dropped both, classes B and C. By and large, it is apparent that the results repeat those reported in Table 1 quite closely. In particular, in the case of Chile, the association of interest rate hikes with depreciations of the Peso remains significant at the 1% confidence level throughout and the point estimates remain largely unaffected.[13] On the whole, we do not find an association between interest rate hikes and appreciations even if we restrict our sample to contain only the observations of exogeneity class A. Indeed, we did not find such association even when we additionally dropped the observations that were associated with market volatility, i.e. the observations in which either the VIX rate, the CDS spread or the CRB index varied by more than a percentage point in absolute terms.

5.2 Effective Exchange Rates

Another possibility is that the above failure to find evidence in favor of the conventional view is that so far we have looked exclusively at the bilateral exchange rates against the US Dollar. To investigate whether this is the case, we checked whether results change when effective exchange rates are used as dependent variables instead. For this purpose, the daily variation of the national currencies against baskets of currencies was considered. Table 6 reports the test results when the basket included the US Dollar, the Euro, the Japanese Yen and the British Pound (which are the four currencies with highest turnover according to the Triennal Bank Survey of the *Bank of International Settlements*). The weight of each currency was calculated based on the share of total trade flows of each

[13] Note that the two events with the highest variations in the CLP/USD rate were classified as C, as they were associated with the announcements of intervention programs.

country with the respective currency areas during the 3 year period that ended in 2002.[14] The estimates of β change surprisingly little when compared to the estimates that are based on the US Dollar exchange rates. In Chile, a 100 b.p. increase in the base rate now leads to a 2.3 to 2.6% depreciation of the Peso in effective terms - a result that continues to be significant at the 1% confidence level and is practically identical to that obtained based on bilateral rates. The overall fit however is worse when effective rates are used, as the RMSE statistic increases relative to the US Dollar based results in all 18 specifications of the table.

6. Concluding Remarks

The failure to find the association that Zettelmeyer (2004) and others have found for developed countries leads us to conclude that in the context of these emerging economies there is no indication that the exchange rate puzzle that is characteristic of the VAR literature is due to reverse causality or even fiscal dominance. When analyzing the time variation of β by using rolling window estimations we also did not find any evidence that the point estimates or significance of the coefficient changed in a noticeable way after the global financial crisis. In face of this, what we have in these countries may be a stronger version of the exchange rate puzzle. It is clear that the link between interest and exchange rate variations seems to be much more elusive than what conventional theory and standard open economy models would suggest. Addressing this apparent failure of the exchange rate predictions of the usual UIP cum rational expectations paradigm would certainly enhance the understanding of international capital flows. One conjecture that could be explored further is that the level of activity in the more immediate future and changes in global risk aversion are the dominant factors when it comes to currency valuations in emerging economies.

[14] In the case of the 4 currency basket, for instance, the weights in the basket are 0.4366 for the US Dollar, 0.4336 for the Euro, 0.0817 for the Yen and 0.0481 for the Pound in the case of Brazil, 0.3436, 0.3280, 0.2236 and 0.1049, respectively, for Chile and 0.8950, 0.0674, 0.0307 and 0.0069, respectively, for Mexico.

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Data Sources

The 3 month T-Bill and the 1 month US Dollar LIBOR rates were obtained from the *Federal Reserve Bank of St. Louis*, whereas the VIX, CDS spreads and the CRB index were obtained through *Bloomberg*. Bilateral trade flows were taken from the *IMF*'s Direction of Trade Statistics. Exchange rates, interest rates, monetary policy committee meeting and exchange market intervention dates were obtained from the respective central banks.

Figure 1 - Exchange Rate and Market Interest Rate Variations

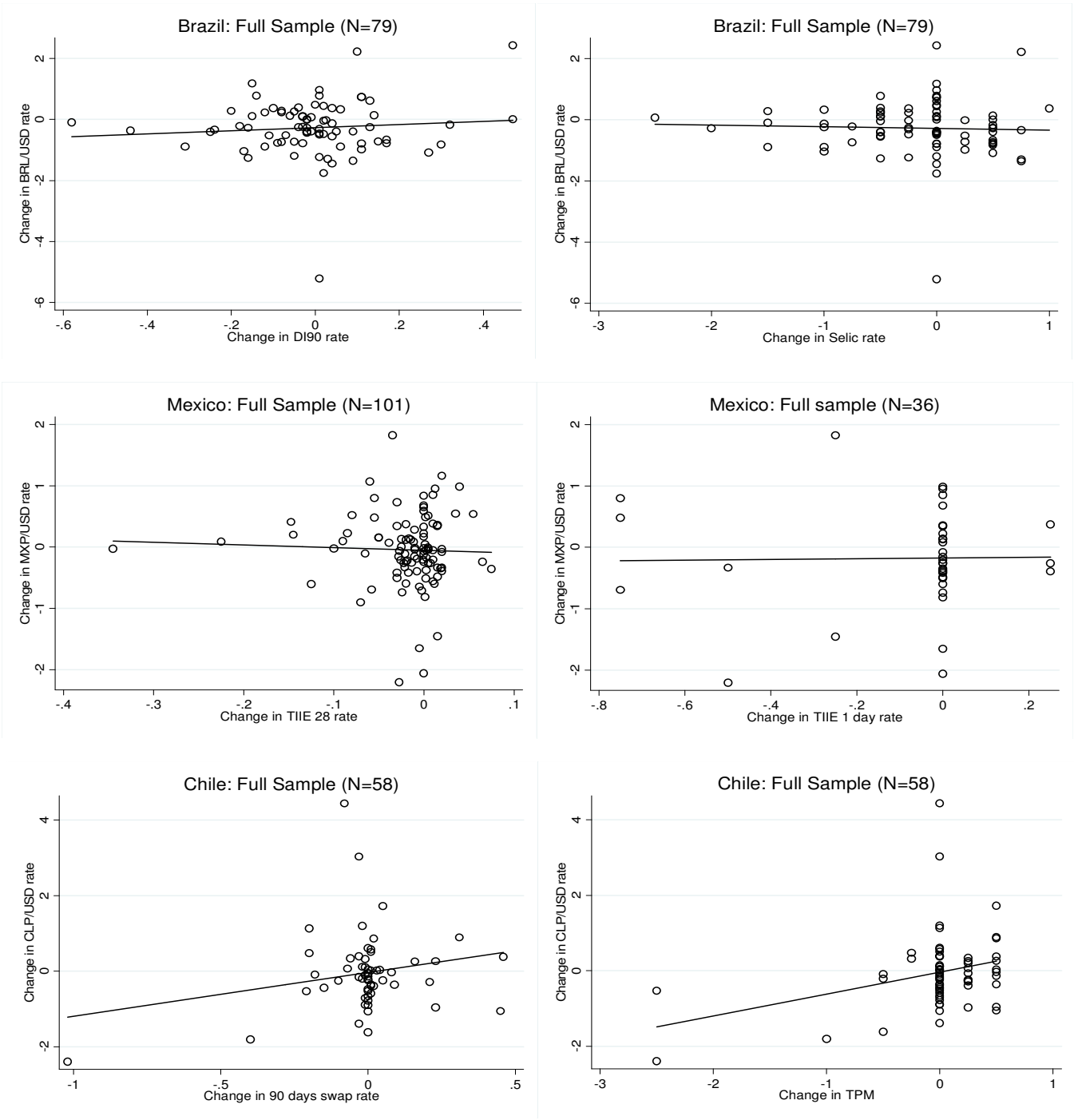

Figure 2 - The Effects of Exchange Market Intervention

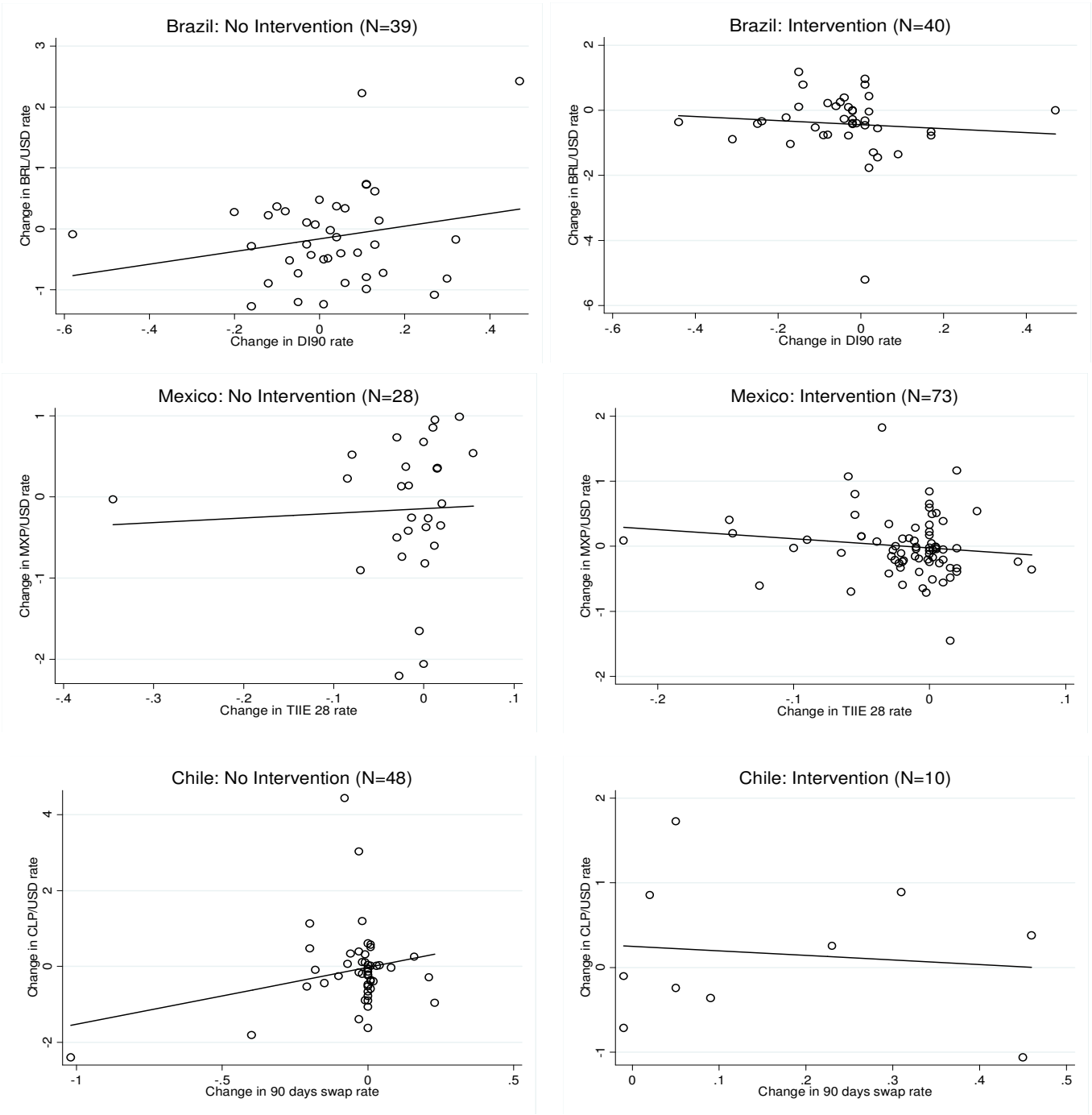

Table 1
The Impact of Monetary Policy on the Exchange Rate

Brazil

D.V.: Change in BRL/USD rate	Full Sample		No Intervention	
	L.S.	L.S.	L.S.	L.S.
d (DI 90)	**0.508**	**0.898**	**1.039**	**1.175**
	0.700	**0.741**	**1.082**	**1.081**
d (3 month T Bill)		-2.386		-0.564
		1.713		3.008
d (VIX)		0.145*		0.170*
		0.069		0.102
d (price of commodities)		-0.126		0.061
		0.256		0.235
no. of observations	79	79	39	39
R2	0.008	0.076	0.048	0.123
RMSE	0.922	0.908	0.796	0.797
F / chi2	0.53	3.80**	0.92	3.73*
Durbin score (chi 2)	0.963	0.982	0.281	0.337
Wu-Hausman (F)	0.955	0.958	0.255	0.287

Mexico

D.V.: Change in MXP/USD rate	Full Sample		No Intervention	
	L.S.	L.S.	L.S.	L.S.
d (TIIE 28)	**-0.435**	**-0.451**	**0.576**	**0.586**
	0.681	**0.683**	**1.253**	**1.323**
d (1 m USD LIBOR)		1.323*		1.357*
		0.658		0.562
d (VIX)		0.014		-0.014
		0.072		0.096
d (price of commodities)		-0.177		-0.137
		0.153		0.478
no. of observations	101	101	28	28
R2	0.002	0.072	0.002	0.093
RMSE	0.602	0.590	0.854	0.866
F / chi2	0.41	1.27	0.21	1.85
Durbin score (chi 2)	0.047	0.043	small N	small N
Wu-Hausman (F)	0.044	0.036	small N	small N

Chile

D.V.: Change in CLP/USD rate	Full Sample		No Intervention	
	I.V.	I.V.	I.V.	I.V.
d (swap 90)	**2.258****	**2.206****	**2.428****	**2.296****
	0.445	**0.439**	**0.428**	**0.443**
d (3 month T Bill)		-2.592		-3.999
		2.591		2.797
d (VIX)		0.200*		0.185†
		0.089		0.096
d (price of commodities)		-0.493**		-0.377*
		0.170		0.170
no. of observations	58	58	48	48
R2	0.004	0.434	0.038	0.469
RMSE	1.034	0.764	1.031	0.766
F / chi2	25.79**	49.33**	32.17**	46.22**
Durbin score (chi 2)	7.961**	7.184**	5.235*	5.871*
Wu-Hausman (F)	3.138†	4.707*	2.252	3.619†

Note: Robust standard errors. †, * and ** denote statistical significance at the 10%, 5% and 1% confidence levels, respectively.

Table 2
BCB Monetary Policy Meetings

Meeting	Exogeneity class	Intervention	Event	ΔDI90 (b.p.)	Δe (BRL/USD)
22/01/2003	A	0		30	-0.818
19/02/2003	A	0		-10	0.367
19/03/2003	A	0		11	0.735
23/04/2003	A	0		9	-0.391
21/05/2003	A	0		6	-0.887
18/06/2003	A	0		-3	0.107
23/07/2003	A	0		-8	0.287
20/08/2003	A	0		-1	0.073
17/09/2003	A	0		-16	-0.282
22/10/2003	A	0		6	0.336
19/11/2003	A	0		-58	-0.092
17/12/2003	A	0		4	-0.136
21/01/2004	A	1		47	0.000
18/02/2004	A	0		11	0.727
17/03/2004	A	0		-12	0.224
14/04/2004	A	0		4	0.373
19/05/2004	A	0		47	2.428
16/06/2004	C	0	Government defeat in Senate raises minimum wage	5	-0.398
21/07/2004	B	0	Unemployment statistics released	0	0.479
18/08/2004	A	0		-2	-0.431
15/09/2004	A	0		-7	-0.516
20/10/2004	A	0		27	-1.082
17/11/2004	A	0		13	-0.257
15/12/2004	A	1		17	-0.782
19/01/2005	A	0		14	0.136
16/02/2005	A	0		-5	-0.729
16/03/2005	A	0		32	-0.174
20/04/2005	A	0		11	-0.987
18/05/2005	A	0		15	-0.723
15/06/2005	A	0		-5	-1.202
20/07/2005	A	0		1	-0.497
17/08/2005	C	0	Government overturns minimum wage	13	0.617
14/09/2005	A	0		1	-1.236
19/10/2005	A	1		-25	-0.408
23/11/2005	B	1	Unemployment statistics released	2	-0.045
14/12/2005	A	1		1	0.781
18/01/2006	A	1		-18	-0.219
08/03/2006	A	1		-8	-0.748
19/04/2006	A	1		2	0.440
31/05/2006	A	0		-16	-1.269

(continues on next page)

Table 2 (continuation)
BCB Monetary Policy Meetings

Meeting	Exogeneity class	Intervention	Event	ΔDI90 (b.p.)	Δe (BRL/USD)
31/05/2006	A	0		-16	-1.269
19/07/2006	A	1		-4	0.390
30/08/2006	C	0	GDP statistics released	-20	0.272
18/10/2006	A	1		-8	0.225
29/11/2006	C	1	GDP statistics released	-11	-0.528
24/01/2007	A	0		0	-0.023
07/03/2007	A	1		1	-0.317
18/04/2007	A	1		-4	-0.260
06/06/2007	A	1		-15	0.107
18/07/2007	A	1		-2	-0.392
05/09/2007	A	0		2	-0.484
17/10/2007	A	1		-44	-0.369
05/12/2007	A	1		1	-0.462
23/01/2008	B	1	Unemployment statistics released	4	-1.455
05/03/2008	A	1		-6	0.120
16/04/2008	A	1		17	-0.665
04/06/2008	A	1		-2	-0.276
23/07/2008	A	1		-24	-0.335
10/09/2008	C	0	GDP statistics released & Lehman Brothers incident	10	2.223
29/10/2008	C	0	Fed Funds rate slashed to 1% & $ 30 bn credit line from Fed	11	-0.793
10/12/2008	B	1	Income tax reduction	1	-5.210
21/01/2009	A	1		-17	-1.041
11/03/2009	A	0		-12	-0.890
29/04/2009	A	0		-3	-0.252
10/06/2009	A	1		-31	-0.888
22/07/2009	B	1	Unemployment statistics released	4	-0.562
02/09/2009	A	1		2	-1.765
21/10/2009	B	1	Unemployment statistics released	-3	-0.780
09/12/2009	C	1	GDP statistics released	-3	0.091
27/01/2010	A	1		-5	0.254
17/03/2010	A	1		-15	1.179
28/04/2010	A	1		9	-1.350
09/06/2010	A	1		3	-1.292
21/07/2010	B	1	Unemployment statistics released	-9	-0.771
01/09/2010	A	1		-2	-0.424
20/10/2010	B	1	Unemployment statistics released	1	0.968
08/12/2010	C	1	GDP statistics released	-14	0.781
19/01/2011	A	1		-2	0.006
02/03/2011	C	1	GDP statistics released	-1	-0.391
20/04/2011	A	1		-2	-0.013

Table 3
Banxico Monetary Policy Meetings

Meeting	Exogeneity class	Intervention	Event	ΔTIIE28 (b.p.)	Δe (MXP/USD)
10/01/2003	A	0		6	0.538
24/01/2003	A	0		-8	0.519
07/02/2003	C	0	CPI statistics released	-9	0.228
21/02/2003	C	0	GDP statistics released	-3	0.734
28/03/2003	A	0		-7	-0.904
25/04/2003	A	0		-35	-0.029
23/05/2003	A	1		-23	0.088
27/06/2003	A	1		-13	-0.603
25/07/2003	A	1		-7	-0.103
22/08/2003	A	1		-9	0.100
26/09/2003	A	1		-6	1.070
24/10/2003	A	1		-10	-0.023
21/11/2003	A	1		2	-0.032
11/12/2003	C	1	Ortiz wins 2nd term as central bank governor	7	-0.239
23/01/2004	A	1		8	-0.356
20/02/2004	A	1		0	-0.242
12/03/2004	C	1	Central Bank announces change in daily USD auctions	-3	0.005
26/03/2004	A	1		-15	0.407
23/04/2004	A	1		-5	0.156
27/04/2004	A	1		-15	0.202
28/05/2004	C	1	Bilateral treaty with Mercosur announced	2	-0.338
25/06/2004	A	1		-5	0.151
23/07/2004	A	1		-2	-0.107
27/08/2004	A	1		-4	0.070
24/09/2004	A	1		-3	-0.064
22/10/2004	A	1		1	-0.260
26/11/2004	A	1		-3	-0.216
10/12/2004	A	1		1	0.383
28/01/2005	A	1		2	-0.335
25/02/2005	A	1		-2	0.118
23/03/2005	A	1		4	0.542
22/04/2005	A	1		1	-0.044
27/05/2005	B	1	Unemployment statistics released	1	-0.561
24/06/2005	B	1	Unemployment statistics released	-2	-0.236
22/07/2005	A	1		-3	0.345
26/08/2005	A	1		0	0.166
23/09/2005	A	1		-2	0.124
28/10/2005	A	1		-2	-0.591
25/11/2005	A	1		-1	-0.012
09/12/2005	A	1		2	1.162
27/01/2006	A	1		-3	-0.420
24/02/2006	A	1		0	-0.118
24/03/2006	A	1		-1	-0.041
21/04/2006	A	1		0	0.331
26/05/2006	A	1		-1	-0.646
23/06/2006	A	1		1	-0.020
28/07/2006	A	1		0	-0.019
25/08/2006	A	1		-1	0.282
22/09/2006	A	1		0	0.840
27/10/2006	A	1		0	-0.205

Table 3 (continuation)
Banxico Monetary Policy Meetings

Meeting	Exogeneity class	Intervention	Event	ΔTIIE28 (b.p.)	Δe (MXP/USD)
24/11/2006	A	1		1	0.511
08/12/2006	C	1	Calderon presents first budget proposal	0	0.044
26/01/2007	A	1		0	0.591
23/02/2007	A	1		0	0.651
23/03/2007	A	1		1	-0.049
27/04/2007	A	1		0	-0.006
25/05/2007	A	1		0	-0.509
22/06/2007	A	1		0	-0.172
27/07/2007	A	1		0	0.491
24/08/2007	B	1	Unemployment statistics released	0	-0.069
21/09/2007	B	1	Unemployment statistics released	-1	-0.155
26/10/2007	A	1		0	-0.709
23/11/2007	A	1		0	-0.052
07/12/2007	C	1	CPI statistics released	-2	-0.221
18/01/2008	A	1		-1	-0.192
15/02/2008	B	1	Bombs near Mexico City police station	0	0.223
14/03/2008	A	1		-3	-0.153
18/04/2008	B	1	Unemployment statistics released	1	-0.208
16/05/2008	A	1		2	-0.480
20/06/2008	B	1	Unemployment statistics released	2	-0.391
18/07/2008	B	1	Unemployment statistics released	-2	-0.258
15/08/2008	A	0		-2	0.374
19/09/2008	C	0	US financial measures & Unemployment statistics	0	-2.060
17/10/2008	A	0		-1	-1.652
28/11/2008	A	0		0	0.680
16/01/2009	A	0		-3	-2.204
20/02/2009	C	1	GDP statistics released	-4	1.827
20/03/2009	A	1		-6	0.483
17/04/2009	C	1	IMF unveils $47 bn flexible credit line to Mexico	-6	0.802
15/05/2009	B	1	Unemployment statistics released	-6	-0.696
19/06/2009	A	1		-2	-0.334
17/07/2009	A	1		2	-1.454
21/08/2009	C	1	GDP statistics released	-1	-0.393
18/09/2009	A	1		-1	0.085
16/10/2009	A	0		-3	0.132
27/11/2009	A	0		1	-0.260
15/01/2010	A	0		0	-0.377
19/02/2010	A	0		2	-0.082
19/03/2010	A	0		1	0.855
16/04/2010	A	0		1	0.346
21/05/2010	A	0		0	-0.817
18/06/2010	A	0		-2	-0.417
16/07/2010	B	0	Federal police dies in car bombing	1	0.953
20/08/2010	C	0	GDP statistics released	2	0.359
24/09/2010	A	0		-2	-0.736
15/10/2010	A	0		-2	0.141
26/11/2010	A	0		4	0.987
21/01/2011	B	0	Unemployment statistics released	2	-0.348
04/03/2011	A	0		-1	-0.253
15/04/2011	A	0		-3	-0.501
27/05/2011	A	0		1	-0.599

Table 4
BCCh Monetary Policy Meetings

Meeting	Exogeneity class	Intervention	Event	Δswap90 (b.p.)	Δe (CLP/USD)
15/06/2006	A	0		0	0.046
13/07/2006	A	0		0	-0.064
10/08/2006	A	0		0	-0.050
07/09/2006	A	0		-1	0.108
12/10/2006	A	0		0	-0.235
16/11/2006	A	0		-3	0.398
14/12/2006	C	0	S&P raises long term foreign currency outlook	-3	-0.156
11/01/2007	A	0		-20	0.471
08/02/2007	A	0		0	-0.521
15/03/2007	A	0		1	-0.380
12/04/2007	A	0		3	0.023
10/05/2007	A	0		1	-0.348
14/06/2007	A	0		1	-0.588
12/07/2007	A	0		17	-0.149
09/08/2007	C	0	CBs in US, Eurozone, Japan inject money into banking system	16	0.258
13/09/2007	A	0		-6	0.345
11/10/2007	A	0		-2	0.117
13/11/2007	C	0	7.7 magnitude quake hits northern Chile	0	-0.471
13/12/2007	A	0		21	-0.284
10/01/2008	A	0		31	-1.382
07/02/2008	A	0		-1	-0.890
13/03/2008	A	0		-2	1.197
10/04/2008	C	0	CB announces US Dollars purchase program	-3	3.025
08/05/2008	A	1		-1	-0.710
10/06/2008	A	1		31	0.893
10/07/2008	A	1		46	0.380
14/08/2008	A	1		2	0.856
04/09/2008	A	1		5	1.726
09/10/2008	C	0	BCCh extends its US Dollar swaps program to $ 5bn	-8	4.431
13/11/2008	B	0	Government workers reject salary offer in national strike	-15	-0.437
11/12/2008	A	0		-3	-1.384
08/01/2009	A	0		-40	-1.798
12/02/2009	A	0		-102	-2.390
12/03/2009	A	0		-21	-0.527
09/04/2009	A	0		0	-0.208
07/05/2009	A	0		-18	-0.088
16/06/2009	C	0	CB announces US Dollars sale program	0	-1.611
09/07/2009	A	0		-1	0.320
13/08/2009	A	0		1	0.506
08/09/2009	A	0		1	0.018
13/10/2009	A	0		0	-0.665
12/11/2009	A	0		0	-1.064
15/12/2009	B	0	Formal invitation to join OECD	-2	-0.190
14/01/2010	A	0		0	-0.902
11/02/2010	A	0		0	-0.770
18/03/2010	B	0	Chile considers new tax to fund reconstruction	0	0.609
15/04/2010	B	0	Chile considers raising corporate tax by 3% in 2011	1	0.576
13/05/2010	A	0		-20	1.133
15/06/2010	C	0	Senate rejects change to mining royalty bill & Moody's upgrade	23	-0.953
15/07/2010	A	0		4	0.038
12/08/2010	A	0		8	-0.024
16/09/2010	A	0		0	-0.140
14/10/2010	A	0		-7	0.065
15/11/2010	A	0		2	-0.391
16/12/2010	A	0		-10	-0.254
13/01/2011	A	1		-1	-0.102
17/02/2011	A	1		5	-0.238
17/03/2011	C	1	GDP statistics released	45	-1.059
12/04/2011	A	1		9	-0.359
12/05/2011	A	1		23	0.259

Table 5
The Impact of Monetary Policy on the Exchange Rate - By Classes of Exogeneity

Brazil

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (DI 90)	**0.898**	**1.175**	**0.859**	**1.093**	**0.707**	**1.091**
	0.741	**1.081**	**0.773**	**1.150**	**0.757**	**1.161**
d (3 month T Bill)	-2.386	-0.564	-1.590	1.556	-0.121	1.427
	1.713	3.008	1.662	2.339	1.477	2.472
d (VIX)	0.145*	0.170*	0.167*	0.230*	0.198**	0.237*
	0.069	0.102	0.067	0.100	0.061	0.098
d (price of commodities)	-0.126	0.061	-0.162	0.074	0.070	0.135
	0.256	0.235	0.273	0.269	0.173	0.273
no. of observations	79	39	70	34	62	33
R2	0.076	0.123	0.077	0.141	0.133	0.161
RMSE	0.908	0.797	0.899	0.723	0.659	0.717
F / chi2	3.80**	3.73*	3.01*	1.91	2.64*	2.23†

Mexico

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (TIIE 28)	**-0.451**	**0.586**	**0.034**	**0.847**	**-0.019**	**0.548**
	0.683	**1.323**	**0.684**	**1.654**	**0.682**	**1.644**
d (1 m USD LIBOR)	1.323*	1.357*	1.341*	1.407*	1.373†	1.433*
	0.658	0.562	0.665	0.673	0.697	0.657
d (VIX)	0.014	-0.014	0.011	-0.002	0.013	-0.004
	0.072	0.096	0.073	0.092	0.079	0.091
d (price of commodities)	-0.177	-0.137	-0.088	0.113	-0.078	0.171
	0.153	0.478	0.140	0.495	0.143	0.494
no. of observations	101	28	89	24	78	22
R2	0.072	0.093	0.066	0.127	0.072	0.146
RMSE	0.590	0.866	0.543	0.807	0.558	0.805
F / chi2	1.27	1.85	1.13	1.73	1.08	1.82

Chile

Exogeneity classes	All		excluding C		excluding B & C	
	I.V.		I.V.		I.V.	
	all	no interv.	all	no interv.	all	no interv.
d (swap 90)	**2.206****	**2.296****	**2.455****	**2.401****	**2.510****	**2.525****
	0.439	**0.443**	**0.330**	**0.290**	**0.361**	**0.330**
d (3 month T Bill)	-2.592	-3.999	-0.896	-2.831	-0.630	-2.556
	2.591	2.797	2.941	2.284	2.920	2.197
d (VIX)	0.200*	0.185†	0.111	0.111	0.161†	0.181†
	0.089	0.096	0.077	0.086	0.097	0.102
d (price of commodities)	-0.493**	-0.377*	-0.210	-0.102	-0.210	-0.081
	0.170	0.170	0.155	0.159	0.150	0.141
no. of observations	58	48	50	41	46	37
R2	0.434	0.469	0.318	0.358	0.330	0.386
RMSE	0.764	0.766	0.589	0.544	0.595	0.539
F / chi2	49.33**	46.22**	76.83**	108.09**	70.86**	99.85**

Note: Robust standard errors are reported. †, * and ** denote statistical significance at the 10%, 5% and 1% confidence levels, respectively.

Table 6

The Impact of Monetary Policy on the Effective Exchange Rate (basket of 4 currencies)

Brazil

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (DI 90)	**1.049**	**1.446**	**0.991**	**1.394**	**0.739**	**1.391**
	0.804	**1.124**	**0.839**	**1.189**	**0.814**	**1.200**
d (3 month T Bill)	-2.415	-0.848	-1.259	1.488	0.809	1.354
	2.149	3.580	2.112	3.194	1.609	3.273
d (VIX)	0.144†	0.164†	0.183*	0.242*	0.214**	0.249*
	0.085	0.093	0.085	0.117	0.079	0.114
d (price of commodities)	-0.126	0.098	-0.208	0.068	0.113	0.132
	0.308	0.250	0.326	0.278	0.194	0.283
no. of observations	79	39	70	34	62	33
R2	0.060	0.126	0.066	0.156	0.126	0.174
RMSE	1.066	0.862	1.064	0.787	0.735	0.782
F / chi2	1.94	1.99	2.11†	1.65	2.21†	1.94

Mexico

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (TIIE 28)	**-0.366**	**0.624**	**0.142**	**0.890**	**0.132**	**0.622**
	0.680	**1.360**	**0.676**	**1.707**	**0.674**	**1.708**
d (1 m USD LIBOR)	1.413*	1.447**	1.431*	1.500*	1.460*	1.525*
	0.611	0.513	0.615	0.603	0.647	0.591
d (VIX)	0.010	-0.015	0.009	-0.001	0.011	-0.002
	0.074	0.098	0.076	0.094	0.082	0.094
d (price of commodities)	-0.196	-0.151	-0.120	0.093	-0.110	0.152
	0.154	0.490	0.142	0.516	0.145	0.518
no. of observations	101	28	89	24	78	22
R2	0.080	0.100	0.077	0.131	0.082	0.149
RMSE	0.597	0.890	0.553	0.835	0.568	0.835
F / chi2	1.76	2.68†	1.65	2.34†	1.54	2.44†

Chile

Exogeneity classes	All		excluding C		excluding B & C	
	I.V.		I.V.		I.V.	
	all	no interv.	all	no interv.	all	no interv.
d (swap 90)	**2.308****	**2.492****	**2.485****	**2.555****	**2.518****	**2.638****
	0.484	**0.522**	**0.384**	**0.365**	**0.410**	**0.398**
d (3 month T Bill)	-1.514	-2.630	1.017	-1.268	1.148	-1.056
	2.701	2.889	2.847	2.087	2.952	2.321
d (VIX)	0.258**	0.254**	0.172*	0.175*	0.210†	0.237*
	0.085	0.093	0.076	0.082	0.108	0.107
d (price of commodities)	-0.646**	-0.578**	-0.349†	-0.293†	-0.353†	-0.276†
	0.192	0.176	0.186	0.174	0.182	0.161
no. of observations	58	48	50	41	46	37
R2	0.471	0.524	0.286	0.358	0.293	0.372
RMSE	0.805	0.791	0.662	0.601	0.665	0.595
F / chi2	45.05**	49.47**	47.40**	59.98**	43.86**	59.46**

Note: Robust standard errors are reported. †, * and ** denote statistical significance at the 10%, 5% and 1% confidence levels, respectively.

Table A1

The Impact of Monetary Policy on the Exchange Rate (CDS)

Brazil

D.V.: Change in BRL/USD rate	Full Sample		No Intervention	
	L.S.	L.S.	L.S.	L.S.
d (DI 90)	**0.774**	**0.832**	**0.987**	**1.039**
	0.675	**0.647**	**0.969**	**0.971**
d (3 month T Bill)	-2.095	-2.118	0.300	-0.093
	1.536	1.655	2.031	2.656
d (CDS)	2.036**	1.856**	1.736**	1.576**
	0.524	0.545	0.581	0.492
d (VIX)		0.070		0.086
		0.076		0.072
d (price of commodities)	-0.194	-0.134	-0.002	0.063
	0.213	0.258	0.225	0.240
no. of observations	79	79	39	39
R2	0.155	0.163	0.263	0.280
RMSE	0.868	0.870	0.731	0.733
F / chi2	4.10**	4.78**	4.02**	4.15**

Mexico

D.V.: Change in MXP/USD rate	Full Sample		No Intervention	
	L.S.	L.S.	L.S.	L.S.
d (TIIE 28)	**-0.836**	**-0.087**	**-0.714**	**-0.766**
	0.692	**0.715**	**1.584**	**1.640**
d (1 m USD LIBOR)	1.550**	1.519**	1.608**	1.559**
	0.302	0.329	0.233	0.252
d (CDS)	4.817**	4.995**	6.118**	6.324**
	0.730	0.883	1.616	1.662
d (VIX)		-0.032		-0.050
		0.068		0.088
d (price of commodities)	0.012	-0.008	0.435	0.380
	0.165	0.134	0.531	0.440
no. of observations	101	101	28	28
R2	0.288	0.293	0.388	0.403
RMSE	0.517	0.517	0.711	0.718
F / chi2	21.94**	28.74**	21.25**	33.65**

Chile

D.V.: Change in CLP/USD rate	Full Sample		No Intervention	
	I.V.	I.V.	I.V.	I.V.
d (swap 90)	**1.705****	**1.987****	**1.716****	**1.988****
	0.450	**0.492**	**0.506**	**0.531**
d (3 month T Bill)	-4.574*	-2.024	-6.053**	-3.698
	2.111	2.302	2.169	2.383
d (CDS)	7.563*	6.341†	8.893**	7.656*
	3.416	3.453	3.289	3.252
d (VIX)		0.179†		0.156
		0.093		0.098
d (price of commodities)	-0.330†	-0.355*	-0.102	-0.149
	0.186	0.169	0.170	0.145
no. of observations	58	58	48	48
R2	0.436	0.472	0.486	0.517
RMSE	0.763	0.737	0.754	0.730
F / chi2	59.59**	60.11**	56.88**	57.53**

Note: Robust standard errors. †, * and ** denote statistical significance at the 10%, 5% and 1% confidence levels, respectively.

Table A2
The Impact of Monetary Policy on the Exchange Rate - By Classes of Exogeneity (CDS)

Brazil

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (DI 90)	**0.774**	**0.987**	**0.708**	**0.842**	**0.516**	**0.835**
	0.675	**0.969**	**0.669**	**1.042**	**0.651**	**1.060**
d (3 month T Bill)	-2.095	0.300	-1.317	1.688	-0.052	1.515
	1.536	2.031	1.322	1.142	1.010	1.136
d (CDS)	2.036**	1.736**	2.107**	1.797**	1.954**	1.796**
	0.524	0.581	0.549	0.498	0.526	0.503
d (price of commodities)	-0.194	-0.002	-0.223	0.110	0.024	0.171
	0.213	0.225	0.262	0.259	0.186	0.263
no. of observations	79	39	70	34	62	33
R2	0.155	0.263	0.166	0.346	0.244	0.367
F / chi2	4.10**	4.02**	3.88**	3.71*	3.57*	3.47*

Mexico

Exogeneity classes	All		excluding C		excluding B & C	
	L.S.		L.S.		L.S.	
	all	no interv.	all	no interv.	all	no interv.
d (TIIE 28)	**-0.836**	**-0.714**	**-0.353**	**-0.502**	**-0.415**	**-0.712**
	0.692	**1.584**	**0.749**	**2.010**	**0.753**	**2.020**
d (1 m USD LIBOR)	1.550**	1.608**	1.497**	1.612**	1.497**	1.627**
	0.302	0.233	0.354	0.236	0.375	0.235
d (CDS)	4.817**	6.118**	3.669**	5.866*	3.456*	5.552*
	0.730	1.616	1.359	2.577	1.539	2.447
d (price of commodities)	0.012	0.435	-0.047	0.356	-0.033	0.399
	0.165	0.531	0.181	0.594	0.193	0.588
no. of observations	101	28	89	24	78	22
R2	0.288	0.388	0.127	0.262	0.124	0.278
F / chi2	21.94**	21.25**	5.96**	13.16**	5.11**	13.43**

Chile

Exogeneity classes	All		excluding C		excluding B & C	
	I.V.		I.V.		I.V.	
	all	no interv.	all	no interv.	all	no interv.
d (swap 90)	**1.705****	**1.716****	**2.169****	**1.681****	**2.171****	**2.011****
	0.450	**0.506**	**0.276**	**0.588**	**0.274**	**0.232**
d (3 month T Bill)	-4.574*	-6.053**	-2.516	-4.600*	-2.684	-4.886*
	2.111	2.169	2.734	2.067	2.830	2.009
d (CDS)	7.563*	8.893**	3.944	4.947†	3.500	4.091
	3.416	3.289	2.459	2.797	2.565	2.632
d (price of commodities)	-0.330†	-0.102	-0.142	-0.014	-0.157	-0.011
	0.186	0.170	0.151	0.201	0.164	0.185
no. of observations	58	48	50	41	46	37
R2	0.436	0.486	0.316	0.362	0.321	0.359
RMSE	0.763	0.754	0.590	0.580	0.599	0.551
F / chi2	59.59**	56.88**	113.82**	5.62**	114.24**	92.14**

Note: Robust standard errors are reported. †, * and ** denote statistical significance at the 10%, 5% and 1% confidence levels, respectively.

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