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Oral FX Interventions in Emerging Markets: the Colombian case

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Abstract

Do oral FX interventions (i.e. announcements made by central bank officials and economic authorities) influence the exchange rate behavior in emerging economies? Following an event study approach, we evaluate whether this type of interventions in the Colombian FX market have an impact on the level or volatility of the exchange rate (U.S Dollar / Colombian peso). We find there is no conclusive evidence of a statistically significant impact. This finding consistently arises across different subsamples and parameters. Robustness tests based on the exchange rate authority that makes the announcement or the mechanism used for actual interventions yield the same conclusion. We interpret these findings as possible evidence of the fact that higher levels of uncertainty (and hence lower credibility levels) or the predominance of global over domestic factors may reduce the effectiveness of oral interventions in emerging economies.

Keywords: oral intervention, exchange rate, communication, event study, Emerging Economies

JEL Codes: F31, E58, G14

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Intervenciones Orales en los Mercados Cambiarios de Economías Emergentes: el caso colombiano

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Resumen

¿Tienen las intervenciones cambiarias orales (i. e. anuncios cambiarios hechos por autoridades del banco central u otras autoridades económicas) influencia sobre el comportamiento de la tasa de cambio en las economías emergentes? Aplicando métodos de estudio de eventos, examinamos si este tipo de intervenciones, en el mercado cambiario colombiano, tienen algún impacto sobre el nivel o la volatilidad de la tasa de cambio (dólar de EEUU versus peso colombiano). Encontramos que no hay evidencia robusta de que exista un impacto estadísticamente significativo. Este resultado surge de forma consistente en todas las sub-muestras y parámetros analizados. Adicionalmente, llevamos a cabo pruebas de robustez diferenciando las autoridades que hacen los anuncios o los mecanismos usados para las intervenciones materiales y encontramos que la conclusión se mantiene. Interpretamos estos resultados como posible evidencia de que mayores niveles de incertidumbre (y los consecuentes menores niveles de credibilidad) o la predominancia de los factores globales sobre los domésticos puedan reducir la efectividad de las intervenciones orales en las economías emergentes.

Palabras clave: intervención oral, tasa de cambio, comunicación, estudio de eventos, economías emergentes

Códigos JEL: F31, E58, G14

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1. Introduction

Do oral FX interventions (i.e., announcements made by central bank officials and economic authorities) influence the exchange rate behavior in emerging economies? The analysis of the impact of oral interventions in the FX market is important due to the recent and increasing use of this strategy to try to influence exchange rate behavior. Some empirical papers for advanced economies underline the relevance of this type of interventions as a policy tool that bolsters the ability of monetary authorities to achieve optimal outcomes. Mirkov et al. (2019) show that oral interventions lowered uncertainty on the future value of euro/Swiss franc exchange rate and steered market beliefs toward franc depreciation, thereby reinforcing the credibility of the Swiss franc cap. Fratzscher (2008) argues that oral FX interventions exhibit greater effects during periods of elevated volatility and market uncertainty independently of the monetary policy stance. Beine et al. (2009) show that oral interventions commenting or confirming actual interventions reinforce the intended effect on exchange rate levels and reduce market volatility. Evidence regarding the impact of oral FX interventions among emerging market economies (EME's) has been barely explored. Hence, it remains unknown whether the relative success documented in advanced settings would prevail in developing contexts.

This study examines whether oral interventions affect exchange rate behavior in Colombia, an emerging economy that operates under inflation targeting and a floating exchange rate regime with discretional FX intervention. We employ daily data for the 2000-2019 period on exchange rate movements and oral interventions. For the identification strategy, we follow an event study approach, that is, we group successive oral interventions as part of single events, which facilitates the study of the foreign exchange within well-defined time windows with respect to the occurrence of each oral intervention (Jansen and de Haan, 2007). Moreover, this method offers flexibility regarding the associated target that the exchange rate authority may have as it allows to assess the intervention effects under different criteria, and therefore for different possible purposes (Bernal and Gnabo, 2009).

Overall, we find no robust evidence that official communications or statements by monetary authorities in Colombia exert any statistically significant effect on exchange rate levels or volatility. This finding consistently arises across different subsamples and

parameters. Our results are also corroborated by conducting a series of tests that separate oral interventions for distinct monetary authorities and different types of actual intervention instruments.

Several reasons may explain the lack of effectiveness of oral interventions in an emerging economy. Firstly, they operate under historically elevated levels of uncertainty, an aspect that could thwart their effect across channels. Under a reduced credibility context announcements made by monetary authorities may have very low impact in FX markets **(**Gomez-Gonzalez et al., 2021) motivating the use of actual rule-based FX interventions and potentially reducing the role of oral interventions (Sarno & Taylor, 2001; Kuersteiner et al., 2018). These considerations should be taken into account by monetary authorities, since oral interventions in certain contexts can have unintended consequences (Dewatcher et al., 2014; Jansen & de Haan, 2005). Secondly, global factors have more incidence than domestic factors on capital flows and exchange rates in EMEs (Mackowiak, 2007; Forbes & Warnock, 2012; Fratzscher, 2012; Rey, 2016), mainly driven by changes in the U.S. monetary policy (Fratzsher et al, 2018; Temesvary et al, 2018; Miranda-Agrippino & Rey, 2020).

Our results contribute to the literature that examines the effectiveness of oral interventions on FX markets. Some studies for advanced economies find that oral interventions have an influence on the exchange rate volatility and/or level (Beine et al., 2009a, 2009b; Burkhard & Fischer, 2009; Fratzscher, 2006; 2008a; 2008b; Mirkov et al., 2019; Germaschewski et al., 2021). Among the few studies that analyze this issue within EME's, Zhang et al. (2017) find that in China the effects of oral interventions differ according to the examination criteria employed to evaluate their impact. Our findings are in line with evidence from advanced economies suggesting a limited effect of oral interventions on exchange rate behavior (Jansen & De Haan, 2005, 2007; Dewatcher et al., 2014).

We also contribute to the literature on the effects of oral interventions and transparency by monetary authorities in financial markets (Guthrie & Wright, 2000; Gürkaynak et al., 2005; Conrad & Lamla, 2010; Hansen & McMahon, 2016; Eichler & Littke, 2018; Gertler & Horvath, 2018) and on the effectiveness of exchange rate interventions in emerging markets (Sarno & Taylor, 2001; Daude et al., 2016; Kuersteiner et al., 2018; Fratzscher et al., 2019).

The rest of this study is organized as follow. Section two describes the data we use. Section three provides details on the event study methods that we follow and the different tests we conduct. Section four presents our results and section five concludes.

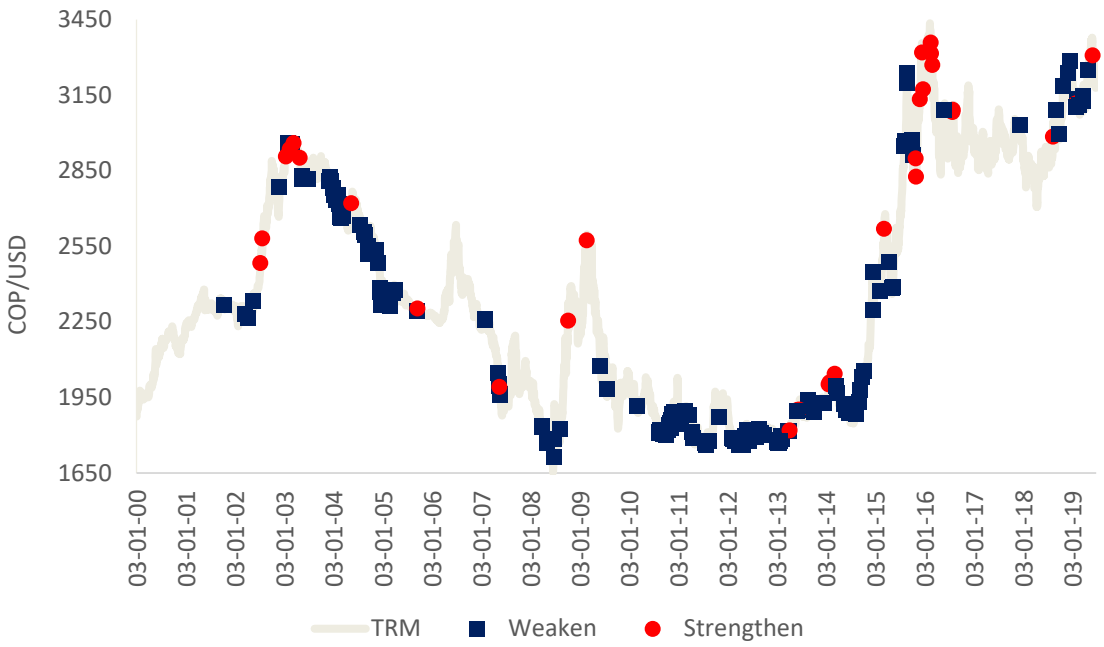
2. Exchange rate policy and oral interventions

Colombian exchange policy operates under exchange rate flexibility with some degree of FX intervention. The main reason behind this exchange rate scheme is that it allows automatic adjustments against shocks to the economy and reducing the volatility of economic activity. It also makes it possible for the interest rate to be used as an independent instrument to control inflation and smooth the path of economic activity. Moreover, it reduces incentives for excessive risk taking by economic agents, which is vital to maintaining financial stability. The central bank of Colombia has a clear FX intervention policy based on announced interventions in the FX market. The intervention policy is aimed at accumulating international reserves, and avoiding strong deviations of the exchange rate that could affect price, financial and macroeconomic stability.

The exchange rate data used in this study, which spans from January 2000 to April 2019, corresponds to the daily representative market rate for the U.S. dollar (USD) against the Colombian peso (COP). Oral interventions consist of press releases issued by the Colombian Central Bank (Banco de la Republica) and unofficial statements made by exchange rate authorities. Press releases announce official information related to future actual interventions (i.e., US dollar sales or purchases), the suspension of ongoing schemes, or changes to any of these mechanisms. Exchange rate authorities include the Governor of the Central Bank of Colombia or any member of its Board of Directors, as well as the President of Colombia or the Minister of Finance. Although oral interventions communicate policy stance with respect to developments in the FX market, they are not necessarily supported by actual interventions and are assumed to be targeted towards influencing exchange rate behavior[1].

[1] Announcements pertaining to non-sterilized interventions are excluded from the analysis since, according to conventional monetary theory and common practice, in these cases it is difficult to distinguish exchange rate concerns from monetary policy objectives.

Figure 1. Oral interventions in the Colombian FX market (2000-2019)



Press releases and unofficial statements were gathered through queries conducted within the archives of the Colombian Central Bank and specialized news agencies, in this case REUTERS[2]. In total, we recorded 195 oral interventions of which 54 correspond to press releases and 141 to unofficial statements. Based on the information contained in each press release or news article, we constructed a signed categorical variable *I* that indicates the purpose associated with the oral intervention[3]. Following the standard procedure on this issue, we assigned the value of 1 if the oral intervention was aimed at strengthening the domestic currency (appreciate the COP); -1 if the oral intervention was aimed at weakening

[2] We defined a search criterion that would capture, to the greatest extent, the purpose associated with each oral intervention. Initially, we performed a search were, should the result (press release or unofficial statement) contain any combination of the following keywords, it would then be counted as a possible oral intervention: i) exchange rate, peso, dollar, appreciation, depreciation, devaluation, revaluation, volatility, target, concern, competitiveness, purchases, sell, international reserves, FX market, defend, flexibility; ii) Central Bank, Banco de la Republica, or the any of the listed exchange rate authorities.

[3] An example of a press release is: "March 28th, 2008. (…) considering the overall uncertainty arising from current global economic conditions, the Board of Directors of the Central Bank of Colombia authorized the purchase of foreign currency through actions of options to accumulate reserves. These auctions will be undertaken on a monthly basis for the amount of US$150 million and a yearly maximum of US$1.800 million can be accumulated through this mechanism." An example of a news article is: "July 25th, 2011. The President of Colombia, Juan Manuel Santos, committed on Tuesday to maintaining measures against COP appreciation".

the domestic currency (depreciate the COP); and 0 if the aim is not directed towards either of the latter (ambiguous)[4]. In total, we tallied 162 interventions aimed at strengthening the COP and 30 aimed at weakening the COP; we did not find ambiguous oral interventions. Figure 1 shows the distribution of oral interventions that took place in the Colombian FX market during the study period, indicating the purpose for each intervention. There, it can be observed that most of oral interventions have been used to weaken the domestic currency rather than to strengthen it.

3. Methodology

To analyze the impact of oral interventions on the exchange rate behavior we adopt an event study approach[5]. This approach groups successive oral interventions as part of single events. In doing so, it facilitates the study of the foreign exchange within well-defined time windows with respect to the occurrence of each oral intervention (Jansen and de Haan, 2007). Furthermore, the method offers flexibility regarding the associated target that the exchange rate authority may have as it allows to assess the intervention effects from different criteria, and therefore for different possible purposes (Bernal and Gnabo, 2009).

In our event study approach, an event is composed of one or several oral interventions staggered within an arbitrary timespan, and which exhibit the same purpose. Let $x = \{2, 5, 10, 15\}$ denote the maximum number of days t elapsed between two oral interventions in order for these to be considered part of the same event. Event duration u is measured as the sum of days elapsed across oral interventions that are part of the same event[6]. We recorded a total of 192 interventions, which diminish to 67 events as the value of x reaches 15.

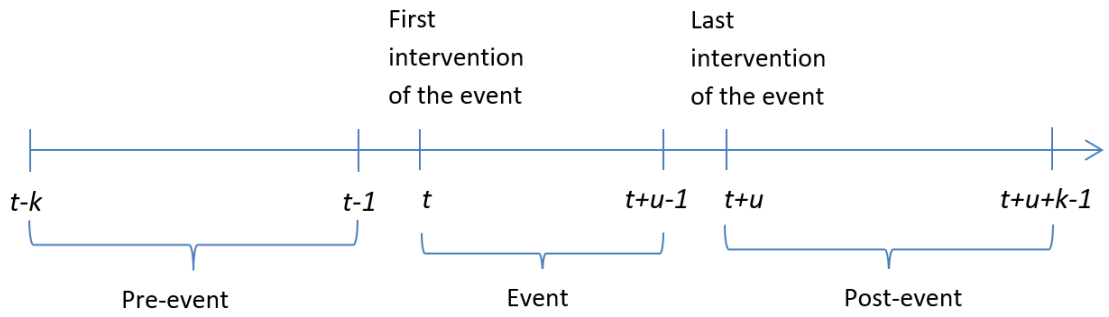
We examine changes on the outcome variable around predefined time frames (windows) before and after the event, attributing any significant differences to oral interventions. In doing so, and as is standard in this method, we assume that other possible factors that affect

[4] An ambiguous case arises when, for example, the oral intervention is concerned with exchange rate volatility instead of exchange rate level.
[5] This approach has been widely used in the existing literature. Several examples include Fratzscher, 2006, 2008; Jansen and de Haan, 2007; Beine et al., 2009a, b; Bernal and Gnabo, 2009; Zhang et al., 2017; Mirkov et al., 2019.
[6] It is worth mentioning that an event can be composed of just one oral intervention, thus having a duration of one day.

the exchange rate behavior in those specific time windows are particular to just one or a few events.

Let k = {2, 5, 10, 15} denote the number of days that take place either before or after the event, which are used to determine changes on the exchange rate[7]. Figure 2 illustrates the event study approach employed in this study, where t corresponds to the day in which the first oral intervention of the event takes place; u denotes the duration of the event under a particular value of x; k indicates the pre and post event windows.

Figure 2. Relevant time windows for each event



Changes on the exchange rate between pre (-) and post (+) event windows are measured through $\Delta M_{-} = M_{t-1} - M_{t-k}$, $\Delta M_{+} = M_{t+u+k-1} - M_{t+u}$, where M refers to the daily exchange rate level. We test whether oral interventions have any statistically significant effect through the following criteria:

1. Direction, H_0: E $(\Delta M_{+}) = 0$

Establishes if oral interventions cause exchange rate movements in the intended direction after the event has taken place. A successful case under this criterion arises when:

if $I > 0,\ \Delta M_{+} < 0$ or if $I < 0,\ \Delta M_{+} > 0$

2. Reversal, H_0: E $(\Delta M_{+} - \Delta M_{-}) = 0$

[7] The exception to the latter arises when considering the volatility criterion, in which case k = 2 is removed and k = 20 is added.

Determines if oral interventions revert exchange rate trends observed before the event. A successful case under this criterion arises when:

if $\Delta M_- > 0,\ I > 0,\ \Delta M_+ < 0$ or if $\Delta M_- < 0,\ I < 0,\ \Delta M_+ > 0$

3. Smoothing, H_0: E $(\Delta M_+ - \Delta M_-) = 0$

Indicates if oral interventions diminish variations in exchange rate movements after the event relative to before the event. A successful case under this criterion arises when:

if $\Delta M_- > 0,\ I > 0,\ \Delta M_+ < \Delta M_-$ or if $\Delta M_- < 0,\ I < 0,\ \Delta M_+ > \Delta M_-$

For each of the aforementioned criteria we compare successful cases against the total number of events. Assuming outcomes follow a binomial distribution, we establish statistical significance using a 50% prior for favorable cases when employing either the direction or reversal criteria and 75% under the smoothing criterion.

4. Matching, H_0: E $(\Delta M_+ - \Delta M_-) \geq 0$ if $I > 0$ or E $(\Delta M_+ - \Delta M_-) \leq 0$ if $I < 0$

Analyzes the impact of oral interventions considering the difference in the magnitude of exchange rate changes across events. For each event, we calculate the difference in the magnitude of exchange rate changes between pre and post event windows as $D_i \equiv \Delta M_+ - \Delta M_-$ and, assuming these differences follow a *t-student* distribution with *n-1* degrees of freedom, we conduct a one-tailed test that establishes statistical significance of oral interventions over exchange rate behavior.

5. Rank, H_0: E $(\Delta M_+ - \Delta M_-) \geq 0$ if $I > 0$ or E $(\Delta M_+ - \Delta M_-) \leq 0$ if $I < 0$

For each event, we calculate the difference in the magnitude of exchange rate changes between pre and post event windows as $D_i \equiv \Delta M_+ - \Delta M_-$. We then perform a signed-rank test by ranking the absolute value of these differences and calculating the sum of ranks when $D_i \geq 0$ if $I > 0$ or $D_i \leq 0$ if $I < 0$. The resulting sum is compared against the critical value of Wilcoxon's signed test in order to establish statistical significance under this criterion.

Considering that oral interventions made by exchange rate authorities are not necessarily aimed at attaining –or preserving– a particular exchange rate level, but rather reducing volatility, we extend the empirical framework by adding a criterion that measures changes in exchange rate variance after the event[8]. For this purpose, we calculate the variance of daily changes on the exchange rate before and after the event and test the following null hypothesis:

6. Volatility, H_0: E $(V(M_+) - V(M_-)) = 0$

Where $V(M_-) = VAR[\Delta M_{t-k+1}, \Delta M_{t-1}]$ and $V(M_+) = VAR[\Delta M_{t+u+1}, \Delta M_{t+u+k-1}]$.

A successful case under this criterion arises when $V(M_+) < V(M_-)$. As when testing the direction and reversal criteria, we compare successful cases against the total number of events assuming outcomes follow a binomial distribution with a 50% prior for favorable cases.

Hypothesis testing for the criteria outlined above was performed for each type of oral intervention (press releases or news articles), different purposes embedded in the oral intervention (weak or strengthen COP), as well as a combination of these.

4. Results

Results shown in this section are obtained through testing of the criteria outlined in the previous section. To assess whether the effectiveness of oral interventions is influenced by their underlying purpose or the channel through which they are delivered, we extended the analysis toward subsamples that consider these factors as follows:

1. All oral interventions
2. Oral interventions aimed at weakening the COP.
3. Oral interventions aimed at strengthening the COP.
4. News articles
5. Press releases
6. News articles aimed at weakening the COP.

[8] Since we are considering variance under this criterion, the use of a two-day threshold to define pre and post event windows is inconvenient, as there would be limited data. Therefore, we exclude this time frame and include a 20-day threshold instead.

7. Press releases aimed at weakening the COP.
8. News articles aimed at strengthening the COP.
9. Press releases aimed at strengthening the COP.

Table 1 reports the number of oral interventions and events for each subsample.

Table 1. Oral Interventions and events in each subsample

Sample	*N*	*x=2*	*x=5*	*x=10*	*x=15*
All	192	144	119	85	67
Weaken	162	122	98	72	59
Strengthen	30	27	26	22	21
News	141	110	91	70	52
Press releases (PR)	54	53	53	52	47
Weaken-News	120	92	74	57	44
Weaken-PR	45	44	44	43	39
Strengthen-News	21	20	19	16	15
Strengthen-PR	9	9	9	9	9

Source: authors' calculations.

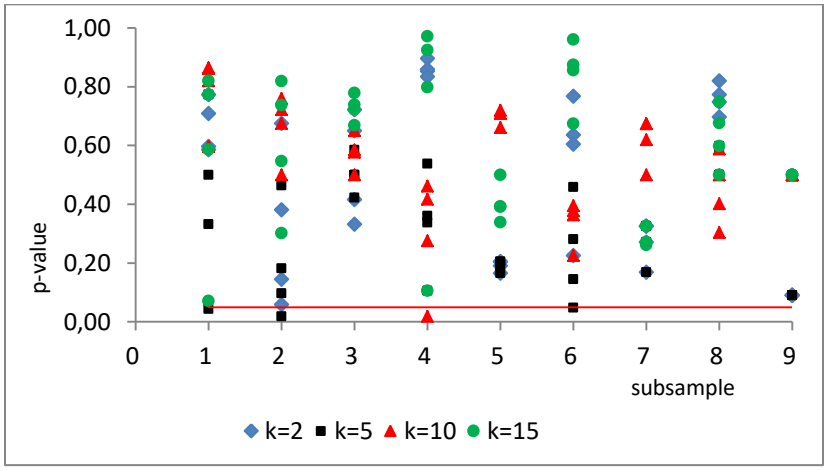
Figure 3 shows the p-value resulting from the tests performed for each of the proposed criteria using different subsamples and parameter values.[9] The red line marks the 5% level of statistical significance. Only in four cases out of 144 under the direction criterion (panel A) and in eleven cases out of 96 under the signed-rank test (panel E) did we find statistically significant effects. Furthermore, no significant results are observed under the reversal, smoothing or the matched-sample criteria (panels B, C and D, respectively).[10] Consequently, we conclude that there is no conclusive evidence of statistically significant effects of oral interventions on exchange rate behavior in Colombia.

[9] Regarding parameter values, we specifically refer to values of *x* (the maximum number of days between two interventions in the same event) and *k* (the pre/post event window length).

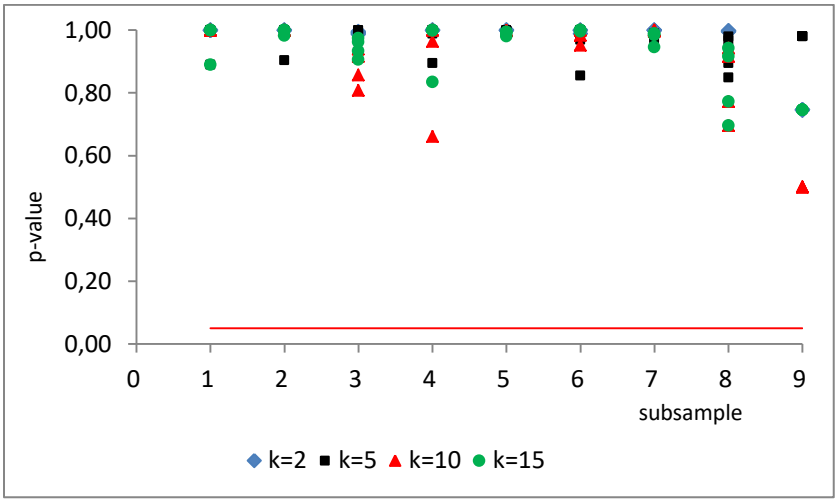
[10] The matched-sample and signed-rank tests require the separation of events according to the intention of the intervention (strengthening or weakening the Colombian peso), and hence they are not implemented for those subsamples that include both intentions (i.e. 1, 4 and 5).

Figure 3. Impact of oral interventions on the exchange rate: test results

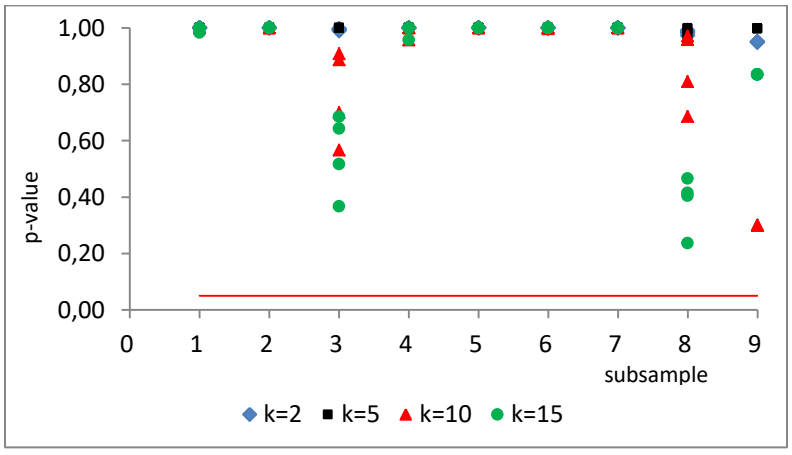
Panel A: Direction test



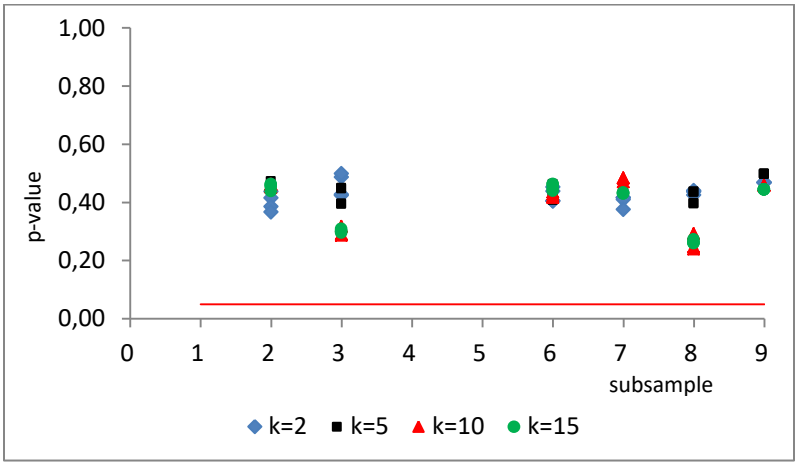
Panel B: Reversal test



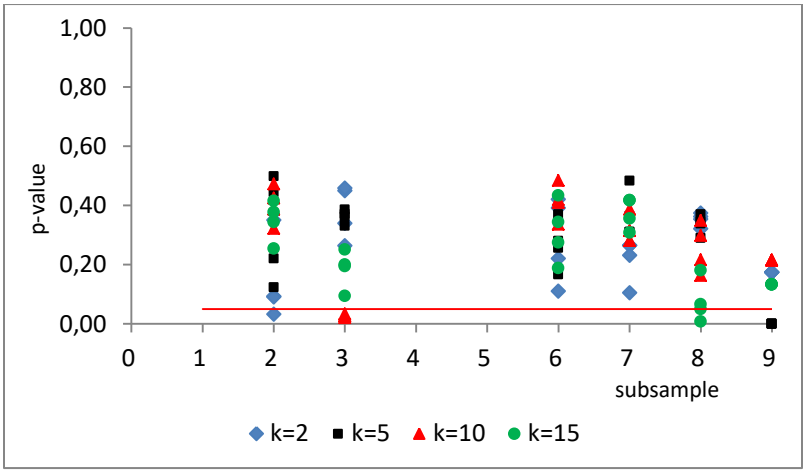
Panel C: Smoothing test



Panel D: Matched-sample test



Panel E: Signed-rank test



Source: authors' calculations.

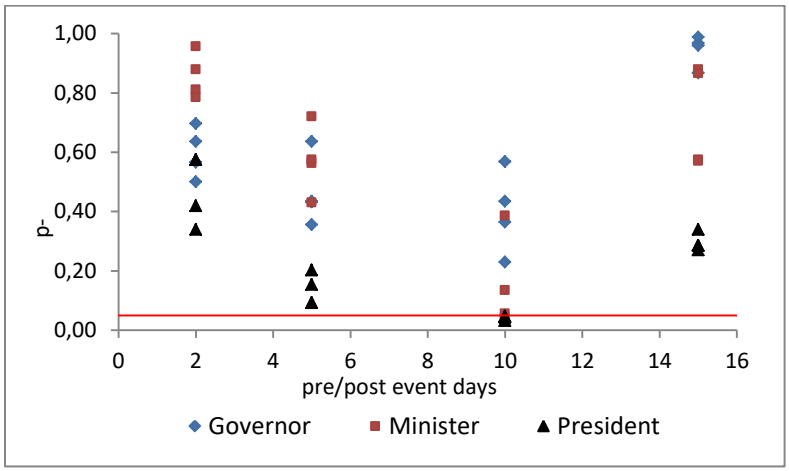
Along the same line of the previous analysis and as another way to check robustness, we assess whether the effectiveness of oral interventions is influenced by the specific exchange rate authority that makes the corresponding announcement. In particular, we conduct tests (direction, reversal and smoothing) for those news-related oral interventions made by the President, the Minister of Finance or the Governor of the central bank.[11] Results are reported in Figure 4.

[11] The number of interventions from the other members of the central bank's Board of Directors was very small, and thus these cases were not considered for this specific exercise.

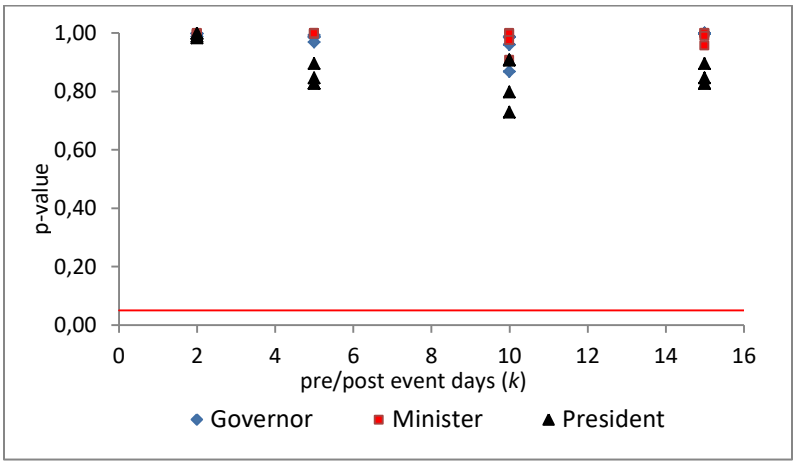
Only in five cases out of 48 under the direction criterion (panel A) did we find statistically significant effects. Furthermore, no significant results are observed under the reversal or the smoothing criterion (panels B and C, respectively). Consequently, we conclude that there is no evidence of statistically significant effects of oral interventions on exchange rate behavior in Colombia, according to specific authority that makes the announcement.

Figure 4. Impact of oral interventions on the FX according to the autorithy's job title: test results

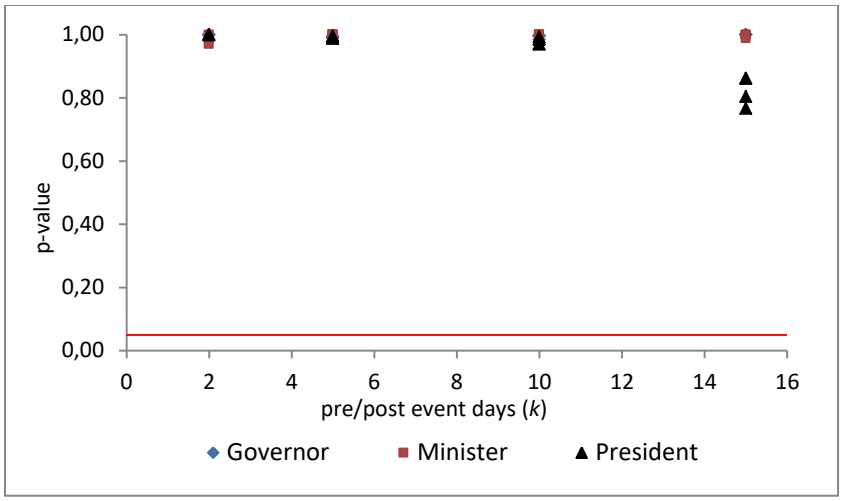
Panel A: Direction test



Panel B: Reversal test



Panel C: Smoothing test



Source: authors' calculations.

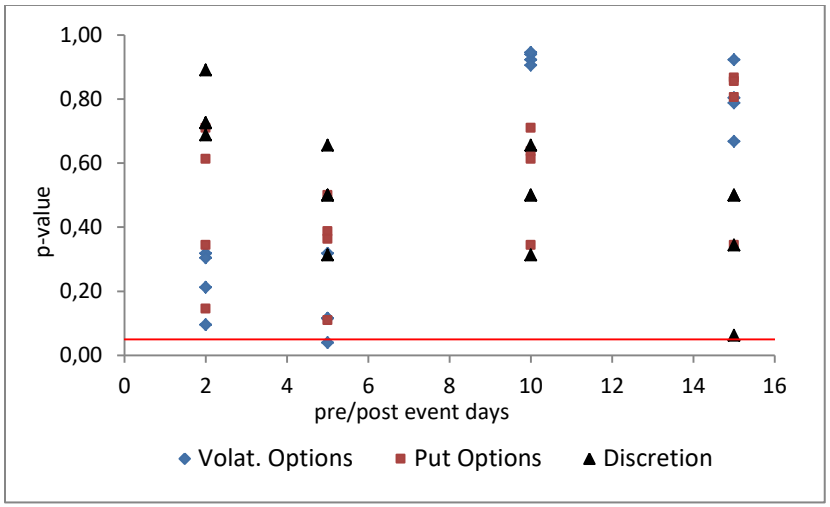
We also check whether the specific mechanisms that were being used for actual interventions (i.e. US dollar sales or purchases) -in times close to the moment in which each oral intervention occurs- might have different effects on the market perception of the oral interventions, and therefore whether such mechanisms affect our previous results. We conduct tests (direction, reversal and smoothing) for three separate mechanisms: sale of options to control exchange rate volatility, sale of put options to accumulate international reserves[12] and discretionary purchase or sale of foreign currency directly on the exchange market. Results are reported in Figure 5.

Only in one case out of 48 under the direction criterion (panel A) did we find statistically significant effects. Furthermore, no significant results are observed under the reversal or the smoothing criterion (panels B and C, respectively). Consequently, we conclude that there is no evidence of statistically significant effects of oral interventions on exchange rate behavior in Colombia, according to the mechanism used for actual interventions.

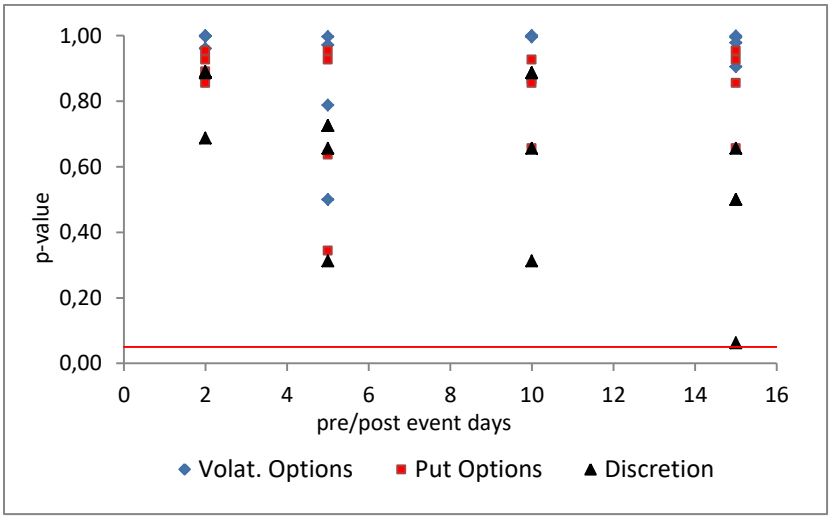
[12] Sales of call options to accumulate reserves are not included due to the small sample size (five interventions only).

Figure 5. Impact of oral interventions on the FX according to the mechanism used for actual interventions: test results.

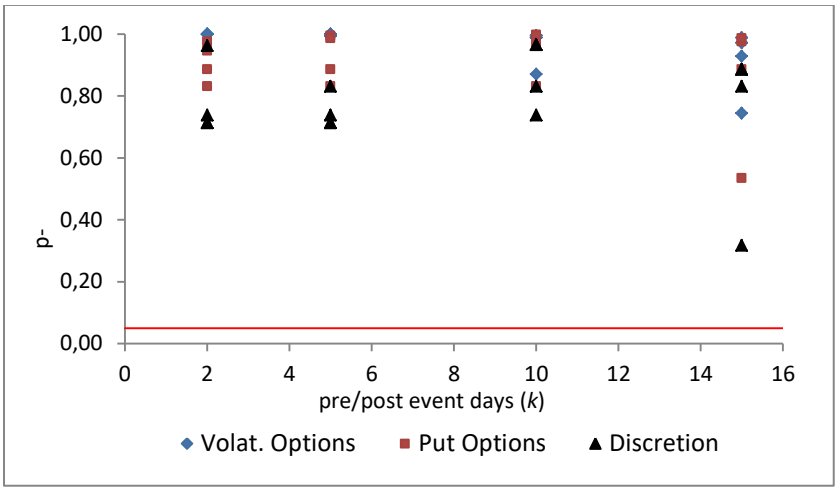
Panel A: Direction test



Panel B: Reversal test

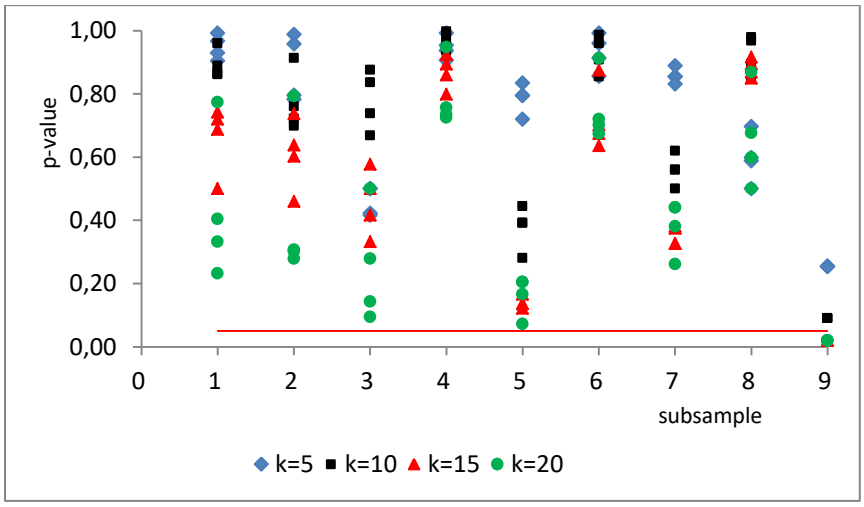


Panel C: Smoothing test



Source: authors' calculations.

Figure 6. Impact of oral interventions on the exchange rate volatility: test results



Source: authors' calculations.

The final set of results corresponds to the volatility test. This test, as previously explained, establishes if oral interventions reduce foreign exchange variance. Figure 6 shows the p-value for each of the conducted tests. The red line marks the 5% level of statistical significance. Only in eight cases out of 144 there are statistically significant reductions of the exchange rate volatility. Therefore, we conclude that the results for the volatility test

show no evidence of significant effects of oral interventions on the variance of the exchange rate in Colombia.

In summary, our results suggest that for the Colombian case there is no robust evidence of the impact of oral interventions on exchange rate level or volatility. This finding consistently arises across different subsamples and parameters. Robustness tests based on exchange rate authorities and the mechanism used for actual interventions yield the same conclusion.

5. Conclusion

It has been common practice for many central banks to intervene FX markets occasionally by trading currencies (i.e. actual interventions) with the purpose of limiting volatility or pushing exchange rates back to some desired level. However, in recent years and particularly in advanced economies, it has become a usual approach to intervene such markets through official communications or informal statements made by policymakers (i.e. oral interventions), without the support of actual interventions.

Previous literature has found some evidence on the effectiveness of oral FX interventions but it is mainly focused on the case of advanced economies. This study contributes to the related literature by examining the evidence in the case of Colombia, an emerging economy that operates under inflation targeting and a floating exchange rate regime with discretional FX intervention. Particularly, we analyze exchange rate using daily data from January 2000 to April 2019. Oral interventions consist of press releases issued by the Colombian Central Bank (Banco de la Republica) and unofficial statements made by exchange rate authorities in the country. To analyze the impact of oral interventions on the exchange rate behavior we follow an event study approach, which groups successive oral interventions as part of single events. This approach offers high flexibility regarding, inter alia, the length of the time windows analyzed and the different purposes of interventions.

Based on the analysis of the whole sample and different subsamples (e.g. press releases only or informal statements only) and using six different criteria (direction, reversal, smoothing, matching, signed rank and volatility) we found no conclusive evidence of statistically significant effects of oral interventions on exchange rate behavior in Colombia.

As another way to check robustness, we assess whether the effectiveness of oral interventions is influenced by the specific exchange rate authority that makes the corresponding announcement or the specific mechanisms that were being used for actual interventions (in times close to the moment in which each oral intervention occurs). In these cases, the obtained results yield the same conclusion: there is no robust evidence of the impact of oral interventions on exchange rate level or volatility for the Colombian case.

We believe our results are related to the fact that higher levels of uncertainty (and hence lower credibility levels) or the predominance of global over domestic factors may reduce the effectiveness of oral interventions in emerging economies.

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