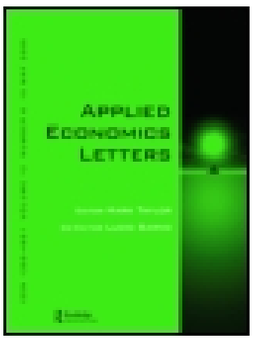

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ARTICLE

Announcements credibility and government securities: evidence from Colombia

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ABSTRACT
This article evaluates the effect of central bank announcements on government securities yields in emerging economy. In particular, based on the Colombian experience, we present empirical evidence to address the effect of credibility scenario in which the central bank announcements are made. The findings denote that credibility performance must be taken into account to verify the impact of monetary policy announcements.

KEYWORDS
Central bank announcements; government securities; credibility

JEL CLASSIFICATION
E58; E63; H50

I. Introduction

The treasury yield is an important variable, which reflects the fiscal pressures and financial stability (Kennedy and Palerm 2014). In the case of emerging economies, the maturity and yields of government securities are associated with capital market development, fiscal discipline and monetary policy framework (de Mendonça and Machado 2013). The central bank's communication is an important tool that promotes transparency in the monetary policy objectives (Born, Ehrmann and Fratzscher 2013). In particular, a fine management of expectations by the central bank influences investors' confidence and risk tolerance (King, Lu, and Pastén 2008).

Most of the time, the monetary policy in developing countries is not associated with the case of central banks with consolidate credibility. The main objective of this study is to analyse the effect of central bank announcements on the government securities yields, under different credibility scenarios. In particular, we present empirical evidence to address this issue based on the Colombian experience. The analysis regarding Colombia is relevant because it is an emerging economy that works with the inflation targeting and has achieved important macroeconomic goals (fiscal rule, investment grade). Furthermore, the Colombian economy shows an important context of credibility building up.

II. Methodology and data

Although there is a better understanding of the monetary policy framework, central bank communication is a source of news and contains unanticipated components. It is important to highlight that marginal information has the potential to cause revisions in the assets pricing (Andersson, Dillén, and Sellin 2006; Fatum and Scholnick 2006).

Monetary policy surprises or unexpected component (*MPS*) are typically defined as the change in the 30-day interest rate on the day of central bank announcement (see Kuttner 2001). Not only central bank communication matters. Other studies, such as Andersson, Hansen, and Sebestyén (2006), Ehrmann and Fratzscher (2007) and Hayo, Kutan, and Neuenkirch (2015) point out that several macroeconomic news can also affect the government securities yields in short and long term.

We consider three measures of macroeconomic news. As indicated by Kennedy and Palerm (2014), the external market volatility impacts the demand for

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assets. Therefore, as a first control variable that affects government securities yields, we used the change of stock market index S&P 500 (ΔVIX). The global economy conditions also affect the government securities yields of emerging economies (Audzeyeva and Schenk-Hoppé 2010). Consequently, the second measure is the US Treasury rate changes (Δi^*). In the case of emerging economies, the change of international trade terms impacts the financial performance (Hilscher and Nosbusch 2010). Thus, given the importance of oil in the Colombian economy, we used oil price changes as a third control variable (ΔOil).

Therefore, the following models are considered:

$$\Delta y_t = \alpha_0 + \alpha_1 MPS + \varepsilon_t{}^0 \quad (1)$$

$$\Delta y_t = \alpha_2 + \alpha_3 MPS + \alpha_4 X_t + \varepsilon_t{}^1 \quad (2)$$

where Δy_t are the changes of government securities yields between t and $t-1$, and t is the day of central bank announcements. We used government securities with maturity of 1, 5 and 10 years. *MPS* is the unanticipated component of monetary policy and $\boldsymbol{X_t}$ is a vector of control variables (ΔVIX, Δi^*, ΔOil).[1] We assume that the residuals (ε_t) can be modelled as a EGARCH (1,1).

III. Empirical evidence

According to Reeves and Sawicki (2007), it is important to consider the performance of credibility when verifying the impact of central bank announcements. Despite this, there are few studies that provide evidence of the link between central bank communication, the credibility scenario and government securities yields. The novelty of this study is the effect of credibility scenario in which the central bank announcements on the policy rate are made.

A measurement of credibility is essential. The index *CRED* developed by De MENDONÇA (2007) is intuitive. However, it is necessary to make an adjustment to this index so that it takes into account the different impacts of negative and positive deviations of inflation expectations from target (Levieuge, Lucotte, and Ringuedé 2015). The credibility is maximum when the inflation expectations ($E(INF)$) are equal to the inflation target (INF^*) and decreases in an asymmetrical way when inflationary expectations deviate from this target. Also, when the expected inflation exceeds the upper bound or is negative, the *CRED* is equal to 0. That is,

$$CRED_t = \begin{cases} 1 \quad if \quad E(INF_t) = INF_t{}^* \\ 1 - \left(\frac{1}{INF_t{}^{upper} - INF_t{}^*}\left[E(INF_t) - INF_t{}^*\right]\right)^2 \quad \text{if} \quad INF_t{}^{lower} < E(INF_t) < INF_t{}^{upper} \\ 1 - \left(\frac{1}{-INF_t{}^{lower}}\left[E(INF_t) - INF^{lower}\right]\right)^2 \quad \text{if} \quad 0 < E(INF_t) \leq INF_t{}^{lower} \\ 0 \quad \text{if} \quad E(INF_t) \geq INF_t{}^{upper} \\ E(INF_t) \leq 0 \end{cases} \quad (3)$$

The behaviour over time regarding inflation expectations (in 12 months) is presented in Figure 1. The expected inflation was built taking the weighted arithmetic average of the mean forecast for the current and the next year (see Levieuge, Lucotte, and Ringuedé 2015).

Figure 2 shows the behaviour of credibility over time. The credibility performance in Colombia allows one to identify two stages in the period. The first stage – "maturation period" (January 2010 to June 2012) –is marked by a period of unstable by a learning in the management of inflation expectations due to the external boom experienced by the Colombian economy. In this period, the average of credibility was 0.64. The second stage – "wisdom period" (August 2012 to December 2015) – is characterized by greater domestic stability and an improvement in the central bank's ability to guide expectations. The average of credibility was 0.93.

[1] See Table A1 (Appendix) for sources of data of the variables.

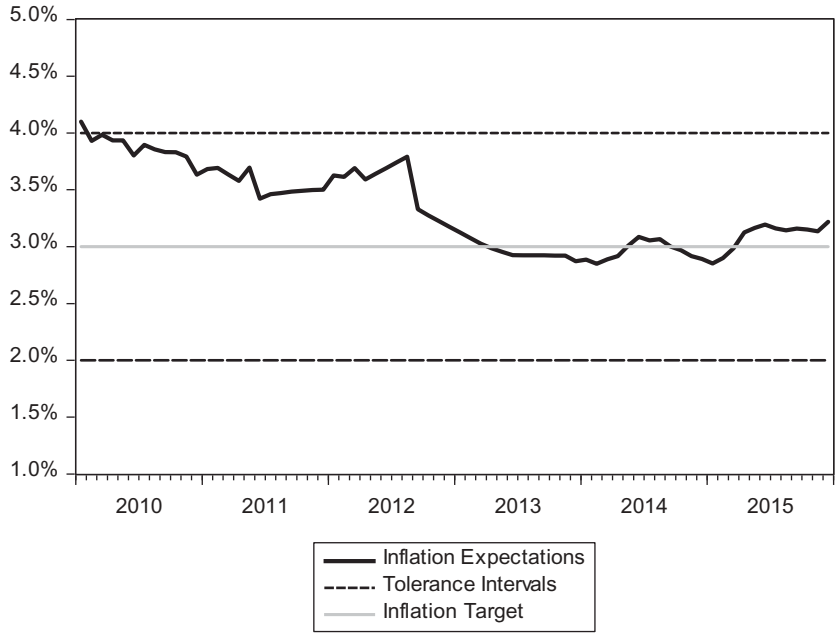

Figure 1. Inflation expectations and inflation target.
Source of data: Central Bank of Colombia.

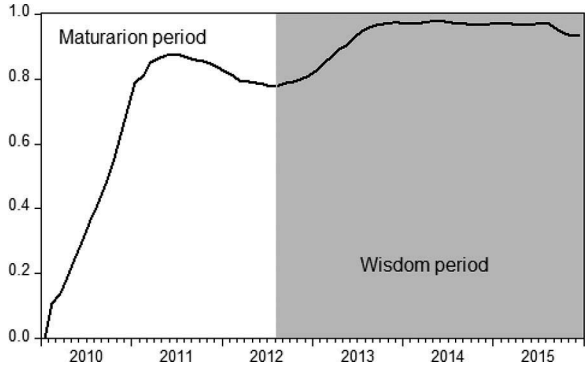

Figure 2. Credibility in Colombia.

Models 1 and 2 are estimated for the period between January of 2010 and December of 2015. Three basic scenarios are considered: the total period, the maturity period and wisdom period. The results of the estimations are presented in Table 1.[2]

The view that unexpected increases in the policy rate press up the government securities yields is confirmed. The coefficient of *MPS* is significant in all estimated models. For the full period, the results suggest that *MPS* increases between 65 and 70 basis points the change in the government securities yields of 1 year. For the 5-year securities, the response is 35 basis points, and for the 10-year securities, the response is almost 30 basis points. That is, the effects of policy surprises are decreasing for government securities with greater maturity. An usual result in the empirical literature (Andersson, Hansen, and Sebestyén 2006; Ehrmann and Fratzscher 2007; Hayo, Kutan, and Neuenkirch 2015).

It is possible to check if there is a difference in the impact of *MPS* for the two stages of credibility. The results point out that the effects of unexpected changes in the policy rate are greater when monetary policy is more credible. This theoretical perspective, empirically untested, is highlighted by Reeves and Sawicki (2007). As it can be observed, the coefficient associated with *MPS* is higher for all securities in the wisdom period. In the case of 1-year and 5-year securities, the results show an effect between 60% and 70% higher when the announcement is made in the wisdom period in relation to the maturation period.

In general, the signs of the coefficients on the control variables are in line with the theoretical perspective. Despite this, the coefficient parameters are only significant for short-term securities. The parameter associated with the external interest rate (Δi^*) is positive and suggests that increases in external profitability raise the required yield in short-term government securities (Audzeyeva and Schenk-Hoppé 2010). As observed by Kennedy and

[2]Tests regarding unit root are available upon request to the authors.

Table 1. Effects of monetary policy surprises on government securities yields.

	Total period (2008–2015)						Maturation period (2010–2012M07)						Wisdom period (2012M08–2015)					
	1 Year		5 Years		10 Years		1 Year		5 Years		10 Years		1 Year		5 Years		10 Years	
Regressors	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	−0.0001	−0.0003*	1.29E-05	0.0003	0.0002***	1.54E-05	−0.0003**	−0.0003***	−0.0002	−0.0002	−0.0002**	−0.0008***	7.29E-05	−0.0002	0.0001	0.0003	0.0002	5.46E-05
	(0.0001)	(00002)	(0.0001)	(0.0002)	(5.71E-05)	(0.0002)	(0.0001)	(9.08E-05)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(5.73E-05)	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
MPS	0.7094***	0.6552***	0.3705***	0.3714***	0.3103***	0.2761***	0.5617***	0.5355***	0.4493***	0.4393***	0.3026***	0.3039***	0.9410***	0.9407***	0.6061***	0.5900**	0.3675***	0.3152**
	(0.0575)	(0.0871)	(0.1196)	(0.0957)	(0.0557)	(0.1055)	(0.0590)	(0.0195)	(0.0983)	(0.0804)	(0.1103)	(0.1155)	(0.0795)	(0.1318)	(0.1088)	(0.2488)	(0.1152)	(0.1663)
ΔVIX		0.0002**		0.0002		0.0002		0.0005***		5.84E-05		7.41E-05		0.0001**		0.0002		0.0002
		(0.0001)		(0.0002)		(0.0001)		(3.52E-05)		(7.82E-05)		(0.0002)		(0.0002)		(0.0002)		(0.0001)
Δi^*		0.0471***		0.0539***		0.0200		0.0347***		0.0333***		0.0400		0.0482***		0.0550**		0.0388**
		(0.0164)		(0.0201)		(0.027)		(0.0061)		(0.0100)		(0.0358)		(0.0158)		(0.0278)		(0.0202)
ΔOil		−0.0001***		−1.93E-05		1.99E-05		−0.0001***		6.34E-05		0.0002		−0.0001**		−0.0003**		0.0002
		(0.0001)		(0.0002)		(0.0002)		(5.05E-05)		(8.79E-05)		(0.0002)		(0.0002)		(0.0001)		(0.0001)
Log likelihood	410.08	411.25	385.96	382.36	383.84	393.86	178.34	188.58	168.44	172.09	172.26	173.85	241.58	241.56	224.89	229.20	219.87	224.20
Obs.	72	72	72	72	72	72	31	31	31	31	31	31	41	41	41	41	41	41

Note: Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.10. SEs are in parentheses.

Palerm (2014), the securities yields are affected by investors' risk perception (ΔVIX). Finally, regarding the oil price changes, it is observed that it provokes a negative effect on securities yields.

IV. Conclusions

The results of this study allow us to make two key observations. First, the unanticipated monetary policy announcements increase government securities yields, with great effects for short-term securities. Second, the credibility scenario is important in emerging economies where credibility is not consolidated. More precisely, in a scenario of high credibility, an unanticipated announcement can have greater effects on the government securities yields.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix

Table A1. Data and source.

Variable name	Description	Source
Y	Government securities yields	Central Bank of Colombiahttp://www.banrep.gov.co/node/36055
CRED	Monetary credibility index	Devised by authors
MPS	Calculated with IBR rate 30-day	Central Bank of Colombia (http://www.banrep.gov.co/es/ibr)
*i**	US treasury rate (1 month)	Reserva Federal de *St. Louis* (http://research.stlouisfed.org/)
Oil	Oil price changes (WTI)	Reserva Federal de *St. Louis*
VIX	Volatility of the stock market index S&P 500	Reserva Federal de *St. Louis*