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Economic Policy Uncertainty and Exchange rates in Emerging Markets: Short and Long Runs Evidence

Abir Abid[1,2]

[1] University of Orléans, LEO, CNRS-7322, France.
Email : abir.abid@etu.univ-orleans.fr.
[2] University of Tunis, Higher Institute of Management, LR. MACMA, Tunisia.

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Abstract

We revisit the association between fundamentals and exchange rates in emerging markets relying on the role of the Economic Policy Uncertainty (EPU) in explaining /forecasting currency movements. Using ARDL model, we show that EPU plays a key role in explaining exchange rates in short and long runs. We also find that the EPU improves the forecasting power of macroeconomic models of exchange rate in both horizons. Our findings provide an empirical justification of the scapegoat theory.

Key words: Economic policy uncertainty, exchange rates, emerging economies, cointegration.

JEL classification: G15, E44, C22

Introduction

Since the global financial crisis, concerns about Economic Uncertainty (EU) have intensified (Baker *et al.* 2016). The EU reflects "the situation where economic agents lack the knowledge necessary to assess the current situation with sufficient confidence"[1]. Thus, uncertainty is an intrinsically unobservable concept which plays an important role in shaping the economic conjuncture. One of its most discussed features, the Economic Policy Uncertainty (EPU) refers to the particular uncertainty surrounding future evolutions of economic policies (Pástor and Veronesi, 2013; Baker *et al.* 2016). In this regard, the literature concludes adverse effects of EPU on economic activity. This is clear with respect to its depressive effect on investment demand and/or consumption including precautionary spending cutbacks by households and an upward pressure on the cost of finance (Baker *et al.* 2016; Pástor and Veronesi 2013; Gilchrist *et al.* 2014). Furthermore, the EPU is seen as a driving force of financial assets dynamics (Brogaard and Detzel, 2015; Pástor and Veronesi, 2012, Arouri *et al.* 2016).

The aim of this paper is to complement this literature by investigating the extent to which the exchange rates can be determined by EPU. Even though the literature argues significant effects of monetary and real variables on exchange rates (Obstfeld and Rogoff, 1995; Engel and West, 2005; Steinsson, 2008; Ravn *et al.* 2012), notable studies point out that the models of exchange rate determination/prediction fail to provide a close link between macroeconomic variables and exchange rates especially in the short run (Cheung *et al.* 2005, Engel and West, 2005; Meese and Rogoff, 1983)[2]. Relatedly, we assume that the *"scapegoat theory"* of Bacchetta and Van Winscoop, (2004, 2013) provides a potential reason behind such a puzzle. This approach assumes that exchange rate might fluctuate in response to unobservable factors rather than observed macroeconomic ones (Bacchetta and Van Winscoop, 2013). Particularly, when uncertainty occurs, economic agents seek for a scapegoat to account for exchange rates movements which are inconsistent with their prior structural relationship (Fratzscher *et al.* 2015). Hence, in a rational market, excessive weight is attributed to observable variables (scapegoats) in explaining the exchange rate dynamics. Consequently, possible unobservable determinants are ignored (Bacchetta and Van Winscoop, 2013; Pozzi and Sadaba; 2018).

Given that market expectations are influenced by fundamentals and other unobservable factors (Fratzscher *et al.* 2015), much is to be gained through testing whether or not EPU, as an unobservable factor, should be explicitly incorporated into macroeconomic models of exchange

[1] Reference:"The impact of uncertainty in activity in the euro area". European Central Bank publication (2017).
[2] According Meese and Rogoff (1983), a simple random walk model outperforms the macroeconomic models in forecasting exchange rates in the short run.

rates determination. This is particularly important when dealing with short run dynamics for it may thus give an answer to the weak empirical relationship between exchange markets and fundamentals.

The contribution of this paper is threefold: First, we consider the EPU as an alternative of unobservable variables discussed in the *scapegoat* theory. Second, we relate different strands of the literature that involved separately: (i) the one the weak empirical performance of macroeconomic factors on exchange rate movements, (ii) the literature on possible omission of unobservable factors that can explain such a weakness and (iii) the literature on the relationship between the economic policies and the macroeconomics (Alesina *et al.* 1997, among others). Then, using the AutoRegressive Distributed Lag (*ARDL*) approach, we provide a coherent picture not only of the long and short dynamics between the variables, but we also appreciate the explanatory (forecasting) power of EPU on exchange rates with an in-sample (out of sample) analysis. To the best of our knowledge, our study is the first to investigate simultaneously the short and long runs EPU's effects on exchange rate in emerging markets. Moreover, the direct effects of EPU on exchange markets, especially in emerging economies, does not yet garner a great deal of attention. This context is relevant since emerging countries have (i) high levels of uncertainty comparing to advanced economies (Bloom, 2014), (ii) experienced strong currencies fluctuations after the shift from fixed to floating exchange regime which is known to be weakly explained by fundamentals (Engel and West, 2005) and (iii) trade structures primarily based on volatile commodities prices resulting in strong currencies movements (Guesmi and Nguyen, 2012).

In what follows, section 2 provides further details on the methodology and the data used. Results survey is presented in section 3. Finally, section 4 concludes the work.

2. Empirical model and data

2.1. The baseline model

In order to test the extent to which EPU affects exchange rates movements, the *ARDL* bound testing developed by Pesaran, Shin and Smith (2001) is applied for several reasons. First, it covers not only the long-run (cointegration equation) but also the short-run dynamics using an Error Correction Representation of the model (*ARDL-ECM*). Second, unlike traditional models of cointegration such as Engle and Granger (1987), this approach has the advantages of (i) considering a mixture of stationary and non-stationary time series, (ii) being among the most effective cointegration approaches in small samples (Ozturk and Acaravci, 2011) and (iii) managing a possible endogeneity problems (Pesaran *et al.* 2001).

In line with the scapegoat approach, we attempt to introduce the EPU as an unobservable explanatory variable of exchange rate movements in the following *ARDL* specification:

$$\Delta \boldsymbol{S}_t = \alpha + \beta S_{t-1} + \sum_{k=1}^{n} \gamma_k Y_{t-1}^k + \sum_{i=1}^{p} \delta_i \Delta S_{t-i} + \sum_{k=1}^{n} \sum_{j=0}^{q_k} \theta_k \Delta Y_{t-j}^k + \boldsymbol{\varepsilon_t} \quad \textbf{(1)}$$

Where, (S_t) is the exchange rate at time t, Y^k is the kth variable from *n* macroeconomic fundamentals detailed below, q_k is the optimal lag for the kth variable, chosen according to the information criteria and ε_t is the error term. Based on theoretical considerations, we use as macroeconomic variables the short-term interest rate "*IR*", foreign reserves excluding gold "*FR*", the money supply "*M1*" that captures central banks' concerns regarding money market dynamics, the consumer price index "*CPI*" to control for inflation, the terms of trade "*TOT*" and the industrial production index "*IPI*" respectively used as proxies of foreign trade stance and output.

The most straightforward way to analyse the impact of the EPU is to extract it from the unobservable factors that $\boldsymbol{\varepsilon_t}$ in Eq.1 may contain. Accordingly, our estimated model is reformulated as follows:

$$\Delta \boldsymbol{S}_t = \alpha + \beta S_{t-1} + \sum_{k=1}^{n} \gamma_k Y_{t-1}^k + \sum_{i=1}^{p} \delta_i \Delta S_{t-i} + \sum_{k=1}^{n} \sum_{j=0}^{q_k} \theta_k \Delta Y_{t-j}^k + \vartheta EPU_t + \sum_{i=1}^{p} \rho_i \Delta EPU_{t-i} + \boldsymbol{\varepsilon_t^{\perp}} \quad (2)$$

Where, the new error term $(\boldsymbol{\varepsilon_t^{\perp}}) = \varepsilon_t - [\vartheta EPU_t + \sum_{i=1}^{p} \rho_i \Delta EPU_{t-i}]$ and represents potential unobservable factors other than the EPU that may affect the variable of interest.

Once the *ARDL* coefficients estimated, the next step is to check for the presence of cointegration using the Pesaran *et al.* (2001)'s bound testing. If such a property is retained, firstly, the following Eq.3 of the long-run elasticity is estimated:

$$S_t = \mathrm{A} Z_t + \nu_t \quad (3)$$

Where, Z_t a vector including a constant, the macroeconomic factors detailed above and the EPU index, A is the loading matrix that captures the response dynamics of the exchange rate to the explanatory variables.

Secondly, the short-run elasticity as reflected in the *ARDL-ECM* model in Eq.4 is estimated:

$$\Delta \boldsymbol{S}_t = \alpha + \sum_{i=1}^{p} \delta_i \Delta S_{t-i} + \sum_{k=1}^{n} \sum_{j=0}^{q_k} \theta_k \Delta Y_{t-j}^k + \sum_{i=1}^{p} \rho_i \Delta EPU_{t-i} + ECT_{\mathrm{t-1}} + \mu_{\mathrm{t}} \quad (4)$$

Where ECT is the Error Correction Term extracted from the Eq. 3.

2.2. Data

This empirical investigation is centred on five emerging economies, namely, South Korea, India, Brazil, Mexico and Chile. Our analysis is performed on a country-by-country basis using data set that comprises monthly observations covering the period from 01:2000 to 12:2016[3]. The data on macroeconomic fundamentals are collected from several databases, namely, the Federal Reserve Bank of Saint Louis (FRED), the OECD and DataStream. Our measure of EPU is the Baker *et al.* (2016)'s index, which is a monthly coverage of newspapers articles containing terms related to "uncertainty", "economy" and "policy" [4]. As there is no objective or perfect measure of policy uncertainty, many proxies have been developed in the recent literature. The selected index is advantageous since it does not refer to a specific agent category (such as disagreement among forecasters) or a specific market (such as the VIX as a proxy of financial uncertainty).

3. Empirical findings and discussion

3.1. Preliminary tests

The estimation of the *ARDL* model evolves some preliminary tests. First, we conduct the KPSS unit root test primarily to avoid the inclusion of I(2) variables not appropriate in such an approach. Our findings show that all exchange rate series are I(1) and the explanatory variables display a mixture of I(0) and I(1) series. Accordingly, our variables reflect the properties required by *ARDL* model.

Next, we check for the presence of cointegration relationship using the bound testing procedure of Pesaran *et al.* (2001). As revealed in Table 1, F-statistics lie above the upper bounds in all cases. Such a result reflects the rejection of the null hypothesis of no cointegration for all the countries and supports the adequacy of long and short runs estimations outlined in Eqs 3 and 4. Finally, we check for the stability of the models using the tests of cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ). The obtained results broadly support the stability of all the estimated models[5].

[3] Exceptionally, the sample starts in January 2003 for India due to the availability the EPU index.
[4] More information about the EPU index of Baker *et al.* (2016) is available in the official website of the paper www.policyuncertainty.com.
[5] Results not provided here but available upon request.

Table.1 Results of the cointegration test

	South Korea		Brazil		India		Mexico	Chile
F-statistic	*4.10****		*2.94**		*4.22**		*4.10****	*5.46****
Critical Values	***1%***		***2.5%***		***5%***		***10%***	
	UB	***LB***	***UB***	***LB***	***UB***	***LB***	***UB***	***LB***
	2.73	*3.9*	*2.43*	*3.51*	*2.17*	*3.21*	*1.92*	*2.89*

This Table reports the Pesaran *et al.* (2001) bound test of cointegration. H0 assumes no cointegration relationship. * and ***reflect the rejection of the null hypothesis at 1 and 10% levels respectively. UB and LB are respectively upper and lower bounds for the model with constant and without trend. See, the Table of Pesaran *et al.* (2001) for more details on bounds values. H0 is rejected when the calculated F-statistic is greater than the upper bound value.

3.2. Long-run dynamics

We start the assessment of our results with the long-run elasticities reported in the part (A) of Table 2. A first look at the results shows interesting long-run explanatory power of EPU and macroeconomic variables on exchange rates as the coefficients of determination (R^2) vary between 0.69 and 0.94. The EPU coefficients are statistically significant and of the expected sign, suggesting that EPU has a negative impact on exchange rate movements. Moreover, our findings highlight suitable individual explaining power of the macroeconomic variables *i.e.* a higher number of significant coefficients in each country. Thus, we support the literature suggesting that macroeconomic factors significantly explain exchange rate movements at least in the long run.

Turning to the core question of the paper, our results support the long-run negative effect of the EPU on exchange rate for all countries excepting India[6]. Hence, a rise in the domestic EPU leads to local currency depreciation and vice versa. When the EPU is high, economic agents adjust their expectations about the future of economic policies (Krol, 2014; Denis and Kannan, 2013; Creal and Wu, 2017; Fernández-Villaverde *et al.* 2015; Chuliá *et al.* 2017).). They adopt a 'wait-and-see' attitude by reporting /cancelling their investment or consumption decisions which lead to a depreciation of the local currency (Cheng, 2017)[7]. Moreover, with increased EPU in a context of general uncertainty, ambiguity adverse agents require higher ambiguity premium to hold financial assets (Gábor-Tóth and Georgarakos, 2019; Brenner and Izhakian, 2018). This reduces the attractiveness of financial markets to both national and international investors. Naturally, exchange rates depreciate.

[6] The EPU effect on exchange rate in India is negative but statistically not significant.
[7] See Bloom (2009) for the 'wait and see' attitude of economic agent regarding uncertainty.

***Table 2. ARDLs-ECMs* estimation results**

A. Long-run relationship (dependent variable (S))

	South Korea	***Brazil***	***India***	***Mexico***	***Chile***
c	*-15.0820***(0.986)*	*0.537(1.243)*	*-5.294***(0.132)*	*3.572**(1.584)*	*-2.555**(1.04)*
EPU	*-0.054***(0.007)*	*-0.060***(0.018)*	*-0.004(0.007)*	*-0.024***(0.007)*	*-0.079***(0.015)*
IR	*0.1361***(0.018)*	*-0.194***(0.055)*	*0.356***(0.063)*	*0.003(0.016)*	*0.025***(0.009)*
FR	*0.105***(0.034)*	*0.316***(0.021)*	*0.095**(0.046)*	*0.338***(0.052)*	*0.449***(0.048)*
M1	*0.092**(0.043)*	*-0.458***(0.113*	*-0.080(0.076)*	*-0.573***(0.105)*	*-0.355***(0.093)*
CPI	*-1.702***(0.208)*	*-0.686***(0.158)*	*-0.084***(0.078)*	*0.121(0.295)*	*-0.232(0.285)*
TOT	*0.084(0.079)*	*0.520***(0.109)*	*0.390***(0.057)*	*0.366***(0.054)*	*0.680***(0.07)*
IPI	*0.415***(0.085)*	*1.371***(0.180)*	*0.688***(0.132)*	*0.121(0.192)*	*0.262(0.107)*
R²	*0.83*	*0.81*	*0.93*	*0.94*	*0.69*

B. Error Correction Representation of ARDL models (dependent variable $\Delta(S)$)

South Korea		***Brazil***		***India***		***Mexico***		***Chile***	
C	*0.001(0.002)*	*c*	*-0.011**(0.005)*	*c*	*0.009***(0.002)*	*c*	*0.003(0.003)*	*c*	*0.004(0.004)*
ECT_{t-1}	***-0.157***(0.044)***	ECT_{t-1}	***-0.058**(0.023)***	ECT_{t-1}	***-0.147***(0.037)***	ECT_{t-1}	***-0.065*(0.028)***	ECT_{t-1}	***-0.070**(0.033)***
$\Delta(S)_{t-1}$	*0.388***(0.100)*	$\Delta(S)_{t-1}$	*0.557***(0.086)*	$\Delta(S)_{t-1}$	*0.283***(0.080)*	$\Delta(EPU)$	*-0.005*(0.002)*	$\Delta(S)_{t-1}$	*0.343***(0.086)*
$\Delta(EPU)$	*-0.007*(0.003)*	$\Delta(S)_{t-2}$	*-0.149**(0.065)*	$\Delta(EPU)$	*-0.007***(0.002)*	$\Delta(IR)$	*-0.075***(0.026)*	$\Delta(EPU)$	*-0.022***(0.006)*
$\Delta(FR)$	*0.718***(0.154)*	$\Delta(S)_{t-3}$	*0.142*(0.083)*	$\Delta(FR)$	*0.277***(0.057)*	$\Delta(FR)$	*0.100**(0.048)*	$\Delta(EPU)_{t-1}$	*-0.013*(0.007)*
$\Delta(FR)_{t-4}$	*0.199**(0.086)*	$\Delta(EPU)$	*-0.032***(0.006)*	$\Delta(FR)_{t-5}$	*0.117*(0.065)*	$\Delta(FR)_{t-4}$	*0.122***(0.046)*	$\Delta(EPJ)_{t-3}$	*-0.014*(0.008)*
$\Delta(M1)$	*-0.092**(0.045)*	$\Delta(IR)$	*-0.190*(0.106)*	ΔCPI_{t-3}	*0.537***(0.182)*	$\Delta(FR)_{t-6}$	*-0.087*(0.046)*	$\Delta(EPU)_{t-8}$	*-0.016***(0.006)*
$\Delta(CPI)$	*-0.856**(0.431)*	$\Delta(IR)_{t-2}$	*-0.212**(0.099)*	$\Delta(CPI)_{t-6}$	*0.389**(0.184)*	$\Delta(M1)$	*-0.381***(0.107)*	$\Delta(IR)$	*0.026**(0.011)*
$\Delta(CPI)_{t-1}$	*0.888**'(0.413)*	$\Delta(IR)_{t-5}$	*0.190**(0.073)*	$\Delta(TOT)_{t-3}$	*0.160*(0.082)*	$\Delta(M1)_{t-1}$	*-0.199*(0.114)*	$\Delta(IR)_{t-6}$	*-0.023**(0.011)*
$\Delta(CPI)_{t-3}$	*-1.166**(0.470)*	$\Delta(FR)_{t-2}$	***0.092*(0.050)***	ΔTOT_{t-5}	*-0.262**(0.101)*	$\Delta(TOT)$	*0.841***(0.069)*	$\Delta(FR)$	*0.140***(0.053)*
$\Delta(CPI)_{t-6}$	*-0.868**(0.417)*	$\Delta(M1)_{t-4}$	*0.196***(0.052)*	$\Delta(IPI)$	*0.105*(0.055)*	$\Delta(TOT)_{t-2}$	*0.193***(0.098)*	$\Delta(M1)$	*-0.296**(0.131)*
$\Delta(IPI)$	*-0.151***(0.064)*	$\Delta(CPI)_{t-3}$	*-2.512**(1.230)*			$\Delta(IPI)$	*-0.304**(0.134)*	$\Delta(CPI)$	*-1.504**(0.581)*
		$\Delta(CPI)_{t-4}$	*2.368**(0.929)*			$\Delta(IPI)_{t-3}$	*0.313**(0.129)*	$\Delta(CPI)_{t-5}$	*-1.642***(0.605)*
								$\Delta(CPI)_{t-6}$	*1.256**(0.609)*
								$\Delta(TOT)_{t-5}$	*0.410**(0.189)*
								$\Delta(IPI)_{t-7}$	*-0.123**(0.059)*
R²	*0.68*	*R²*	*0.50*	*R²*	*0.55*	*R²*	*0.69*	*R²*	*0.55*
F-statistic	*8.10*	***F-statistic***	*4.91*	***F-statistic***	*4.21*	***F-statistic***	*10.50*	***F-statistic***	*2.94*

Significance of the coefficients estimated at 1, 5 and 10% levels is indicated respectively by *,**and***. Standard deviations are mentioned between parentheses. ECTs are error correction terms. Optimal lag for each variable is selected on consideration to AIC information criterion. Then, the following *ARDL* lags are retained : South Korea (2, 7, 0, 5, 1,7. 0, 8) ; India (2, 1, 4, 7, 0, 7, 6, 2); Brazil (4, 1, 6, 3, 5, 5, 2, 0); Mexico (3, 5, 1, 7, 3, 0, 4, 4)and Chile (3, 8, 8, 8, 1, 8, 6, 8). Note that our variables are introduced in the model in the following order (*S*) ; (*EPU*) ; (*IR*) ; (*FR*) ; (*M1*) ; (*CPI*) ; (*TOT*) and (*IPI*). Regarding the short-run dynamics, only significant coefficients are reported in order to save space and provide clear information. Then, we conducted Fisher test of joint nullity of coefficients to compare between two models: unconstrained ECM (our baseline model) and constrained ECM (after moving non-significant coefficients). In doing so, unconstrained specification is chosen for all countries. The results of our Fisher test can be provided upon request. As for residual diagnostic, we have a sustained interest in the quality of the model using diagnostic tests such as serial correlation (Breusch-Godfrey LM test), heteroscedasticity tests (Breusch-Pagan-Godfrey) or stationarity of the residuals (ADF). The results of these tests will be provided upon request.

3.3. Short-run dynamics

The second question of interest is whether the significant effect of EPU on exchange rate also holds in the short run. The results of the *ARDL-ECM* models are summarized in part B of Table 2. Our findings reveal that the Error Correction Terms (ECTs) are negative and statistically significant, which ensures a long-run equilibrium convergence in the model. Specifically, a closer look at the magnitude of the estimated ECTs indicates that nearly 16%, 6%, 15 %, 6.5% and 7% of any disequilibrium between the exchange rates and the explanatory variables respectively in Korea, Brazil, India, Mexico and Chile is corrected within one month. Given that the higher the ECT is, the higher the speed of adjustment would be, the exchange rate adjustment is faster in Asian than in Latin American economies. Therefore, the latter are more vulnerable to fundamental shocks than the former.

Interestingly, our estimation is an empirical illustration of the scapegoat theory since the coefficients of determination R^2 (Table 2) are relatively high (ranging from 0.5 to 0.69) compared to other studies not taking the EPU into account (e.g. Baku, 2019). Such evidence sheds lights on the higher explanatory power of our specification in the short run. Similarly to the long-run evidence, we find that in all countries the exchange rate changes significantly decrease in response to higher EPU changes. For example, Brazil and Chile have migrated to the floating regime in 1999, nearly after the emerging financial crisis and namely one year before the beginning of our sample period. Thus, economic change resulted in increased uncertainty surrounding economic policies causing the depreciation of the local currency.

Regarding the macroeconomic impacts, it appears from Table. 2 that monetary variables perform better in explaining exchange rate changes than real ones in the short run. Precisely, the terms of trade affect exchange rates changes in Mexico, Brazil and India. The latter, with Korean currency changes, are also impacted by industrial production changes. However, Chilean currency is not significantly sensitive to any of the two factors. Conversely, strong effects of the monetary variables are broadly observable. In fact, currency changes in Latin American countries significantly react to all monetary variables. In Asian economies, by contrast, interest rates alone do not significantly explain currency movements in any country[8]. Such a slight difference can be driven by country-specific actions implemented to reduce currency fluctuations. Asian economies' central banks massively hold foreign reserves in order to prevent exchange rates

[8] Money supply changes only impact exchange rate movements in Korea.

appreciation (Hernandez and Montiel, 2001; Aizenman *et al.* 2010). However, policy intervention in Latin American countries can be through foreign reserves and/or interest rates manipulation[9]. For example, the Brazilian economy adopts the Real plan to support the exchange rate appreciation by offering higher interest rates to encourage foreign capital inflows.

3.3. Forecasting exchange rates movements

As a last step, we test the forecasting power of our model relying on out-of-sample forecasts. Attempting to appreciate the predictability of exchange rate fluctuation by the EPU, we implement a two-stage procedure that compares forecasts from two models: with or without the EPU. First, we apply our baseline model for each country 3 times, reserving each time 12, 36 and 60 months respectively in order to conduct short (1-year), medium (3-year) and long (5-year) runs forecasts. Then, the analysis is centred on the Root Mean Square Error (RMSE) and MAE (Mean Absolut Error) criteria widely used in time series studies to evaluate the forecasting accuracy. The corresponding results are reported in Table 3.

Table 3. Out-of-sample forecasts results

	RMSE			***MAE***		
	SR	***MR***	***LR***	***SR***	***MR***	***LR***
South Korea						
Model (a)	0.014	0.013	0.015	0.011	0.011	*0.013*
Model (b)	0.015	0.015	0.016	0.013	0.012	*0.013*
Brazil						
Model (a)	0.032	0.032	0.031	0.026	0.026	0.025
Model (b)	0.034	0.035	0.033	0.030	0.027	0.026
India						
Model (a)	0.011	0.017	0.020	0.008	*0.013*	*0.015*
Model (b)	0.013	0.017	0.021	0.009	*0.013*	*0.015*
Mexico						
Model (a)	0.015	0.012	0.013	0.013	0.010	0.011
Model (b)	0.018	0.013	0.014	0.016	0.011	0.012
Chile						
Model (a)	0.017	0.021	0.021	0.013	0.016	0.016
Model (b)	0.020	0.024	0.023	0.015	0.018	0.018

Model (a) is the model including EPU and model (b) is the one incorporating either EPU or macroeconomic variables. SR, MR and LR refer respectively to short run, medium run and long run forecast horizons.

Our evidence shows that models with EPU generally provide the lowest RMSE and MAE for all countries[10]. Accordingly, these models produce better forecasts of exchange rate movements than those without EPU in short, medium and long horizons. Therefore, we argue for the significant role of EPU in predicting exchange rate in different horizons. This appears to be particularly

[9] Several central banks in Latin American countries are losing foreign reserves. For example, Brazil and Argentina have experienced high levels of inflation resulting in lower competitiveness and decrease in foreign reserves. As a result, the national currencies decreased. Moreover, since the adoption of the inflation-targeting regime, the interest rate has played a key role in policy intervention in these countries.

[10] Only the medium- and long-run forecasts of India and the long-run forecast for South Korea present equality in MAE criteria between the two models.

interesting since the long-run fluctuations of exchange rates are determined by macroeconomic variables, but short-run fluctuations are difficult to predict (Beckmann and Czudaj, 2017).

4. Conclusion

In this study, we revisit the association between macroeconomic fundamentals and exchange rate in emerging markets relying on the potential explaining and/or predicting role of EPU. Our main findings suggest that the local currency is negatively driven by EPU in almost of the countries. Particularly, we show that introducing the EPU into macroeconomic models of exchange rates translates in higher explanatory power of such models and improve their forecasting ability in the short as well as in the long run. Thus, our findings (i) take a step further from some studies showing modest empirical performance of fundamentals in explaining currency movements in emerging economies (e.g. Fratzscher, 2003) and (ii) provide an empirical justification of the scapegoat theory. Then, we suggest that macroeconomic models of exchange rates "are not as bad as you think" (Engel *et al.* 2008) when unobservable variables are considered. Overall, we contend that EPU is valuable information to which emerging economies decision makers should account in their exchange rate policy management.

A natural extension of our study is to ask whether foreign EPU accounts for currency fluctuations. This question is with prominent importance since the recent literature is extensively providing evidence of emerging markets integration and spillover effects of foreign EPU to financial markets (Gauvin *et al.* 2014; Su *et al.* 2018; Arouri *et al.* 2016 among others).

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