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Evaluating the Effects of the US Monetary Policy Stance on Emerging Economies' Monetary Policy Independence

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Abstract

Using Taylor rule, this paper evaluates the effects of the US monetary policy stance on monetary policy framework in 14 emerging market economies (EMEs). We estimate three different Taylor rule specifications for EMEs central banks- an augmented open economy Taylor rule, a Taylor rule featuring exchange rate expectation and EMEs Taylor rule that incorporates the US Taylor rule. The study uses monthly data for the period 2000 to 2023 and applies pooled and OLS regressions. Generally, the results reveal that EMEs' central banks react to the US monetary policy stance over the full sample period, indicating low degree of monetary independence in EMEs. However, the results for the pre and post 2008 global crises show that EMEs central banks' reactions to the US monetary policy stance have diminished post 2008 global crises, indicating increasing monetary independence in EMEs post 2008 financial crises. Further, the findings show that EMEs' central banks do not react to the US inflation and US output. The country-specific estimates reveal that central banks in 9 out of 14 EMEs react to the US monetary policy stance while 7 EMEs react to the US inflation and output dynamics. Lastly, the findings show that EMEs' policy rates are more sensitive to the US Fed funds rate than to the exchange rate, suggesting that the EMEs central banks adopt pre-emptive stance to dampen exchange rate fluctuations.

1. Introduction

In an increasingly financially integrated world, one of the major policy issues facing central banks in emerging market economies (EMEs) is how to conduct monetary policies in response to monetary policy shocks from the advanced economies (AEs), in particular, the US. This becomes more important given that a change in the US interest rate directly impacts the US dollar which is the dominant currency of international trade and international finance (Degasperi et al., 2024). Through the dominant currency paradigm, the US monetary policy can have a disproportionate impact on global economies and financial conditions (Gopinath et al., 2016; Obstfeld 2020). Studies have shown that the US monetary policy shocks

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have greater spillover effects in EMEs than in AEs (Dedola et al., 2017; Kalemli-Özcan, 2019). A US monetary policy tightening induces capital outflows, depreciates the exchange rates and decreases output in EMEs (Anaya et al., 2017). The US monetary policy stance affects EMEs through the trade channel and the magnitude of the spillover effects depend on weights of the U.S economy in the home economy (Ca'Zorzi et al., 2023). In response to the US monetary policy tightening, central banks in EMEs face the trade-off of either lowering policy rates to lean against a recession or raising it to prevent disruptive currency depreciations (De Leo et al., 2024).

The policy question arising from the impact of the US monetary policy stance on EMEs' monetary policy framework is whether the central banks in EMEs should react to changes in the US fed fund rate or conduct independent monetary policies? A strand of literature has posited that the capacity of EMEs' central banks to react to the US monetary policy shocks or conduct independent monetary policies depends on the types of exchange rate regimes. Frankel et al. (2004) and Borensztein et al. (2001) find that monetary policies in EMEs operating flexible exchange rate regimes are less sensitive to the US monetary policy shocks. This is in line with the Mundell-Fleming hypothesis that a country can only conduct independent monetary policy if it operates a flexible exchange rate regime. However, Degasperi et al. (2024) and Corsetti et al. (2024) find that exchange rate regimes have no effects on countries' vulnerabilities to external disturbances as both exchange rate "fixers and peggers" record similar business cycle fluctuations.

Using an augmented open-economy Taylor rule, this study empirically evaluates monetary policy independence in 14 EMEs by examining their central banks' reactions to the US monetary policy shocks. Studies have shown that monetary policy framework in EMEs can be captured by the Taylor rule (Moura and Carvalho, 2010; Beju, 2015). While a large number of empirical studies have focused on international spill-over effects of the US monetary policy shocks on EMEs (Dedola et al., 2017; Kalemli-Özcan, 2019), there has been few papers examining EMEs' central banks' reactions to the US monetary policy shocks. The few studies that investigate monetary independence in EMEs have focused on a limited number of EMEs from Europe and Asia. Crespo-Cuaresma and Wójcik (2006) investigate the degree of monetary independence in 3 Central and Eastern European countries-Czech Republic, Hungary and Poland. Edwards (2015, 2017) examines monetary independence in 3 Latin American countries. None of these studies has applied Taylor rule to investigate monetary independence in EMEs cutting across different regions. Notable exception is the work by De Leo et al. (2024). Our study is similar to De Leo et al. (2024) who employ a Taylor rule specification to examine central banks' reactions to the US monetary policy shocks in a panel of EMEs and AEs. However, our study differs from De Leo et al. (2024) as we employ 3 different specifications of Taylor rule. Further, we do not only apply panel regression analysis but also conduct country-specific estimates to evaluate each central bank's reaction to the US monetary policy shocks.

We contribute to the existing literature by estimating 3 different specifications of an augmented open-economy Taylor rule to evaluate central banks' reactions in 14 EMEs to the US monetary policy shocks. We specify and estimate an augmented open-economy Taylor incorporating hybrid expectations in the foreign exchange markets. We also specify and estimate an augmented open-economy Taylor rule that incorporates the US Taylor rule. This is to investigate whether the central banks in EMEs react to other variables in the US in addition to the US Fed funds rate.

The remainder of the paper is as follows. Section 2 reviews the literature and discusses the theoretical framework. Section 3 outlines the data and the econometric method. Section 4 presents and discusses the empirical results. Section 5 offers conclusion and recommendation.

2. Literature Review and Theoretical Framework

2.1. Literature Review

Given the importance of the US in global economy, a number of studies have examined the impact of the US monetary policy shocks on the AEs and EMEs. For instance, Kim (2001) finds that the US expansionary monetary policy shocks induce economic booms in non-US G-6 countries through the interest rate channel. Similarly, Canova (2005) finds that the U.S. monetary policy shocks lead to significant economic fluctuations in Latin American economies through the interest rate channel. Mackowiak (2007) concludes that the U.S. monetary policy shocks influence price level and output variations in EMEs. Edwards (2010) finds that change in the US Fed funds rate influences domestic interest rate in EMEs. Bi and Anwar (2017) find that the US expansionary monetary policy shocks influence price level and output variations in China. Azad & Serletis (2022) conclude that the US monetary policy uncertainty has adverse impacts on the macroeconomic and financial fundamentals of emerging economies.

Dedola (2017), using BVAR, examines the international spillovers of the US monetary policy shocks on financial and macroeconomic variables in 36 AEs and EMEs. The findings reveal that a surprise US monetary policy tightening depreciates the exchange rate in AEs and EMEs vis-à-vis the dollar, decreases industrial production and GDP. Further, the findings reveal that US monetary policy tightening has greater impact on EMEs' macroeconomic variables. Kalemli-Özcan (2019) examines the spillover effects of the US monetary policy shocks on AEs and EMEs. The results indicate that the US monetary policy shocks have larger spillover effect in EMEs than AEs. The findings show that capital flows to EMEs are more risk-sensitive and in response to a hike in the US policy rate, the EMEs interest rates rise by more than one for one while AEs interest rates rise by less than one for one. Iacoviello & Navarro (2019) employ VAR to examine the effects of the US higher interest rate on economic activity in a panel of 50 AEs and EMEs. The findings reveal that a surprise US monetary policy tightening causes a decline in GDP in all the countries with greater reduction in EMEs. Degasperi et al. (2024) investigate the global transmission of the US monetary policy. The findings reveal that US tight monetary policy has large contractionary impacts in AEs and EMEs.

A few studies have focused on the impact of the US unconventional monetary policy (UMP) on portfolio flows and asset prices in EMEs. For example, Anachoticul and Zhang (2014) show that the US UMP shocks strongly impact asset prices in EMEs through its influence on portfolio flows and global risk aversion. Bowman et al. (2015) conclude that the US UMP shocks significantly impact sovereign bond yields in EMEs but have negligible effects on stock prices and exchange rate.

Aizenman et al. (2016) find that the US UMP shocks impact policy rates and real exchange rates in the periphery countries. Anaya et al. (2017) find that the US UMP shocks affect real and financial conditions in the EMEs resulting in appreciation of the real exchange rate, rise in equity returns, growth in real output and decrease in the lending rates. Lakdawala (2021) shows that US monetary policy decisions had significant effects on the Indian stock markets through an uncertainty channel.

Boeck & Mori (2023) evaluate how the international effects of US monetary policy shocks have changed over the last decades, using TVP-VAR. The results indicate that the adverse international effects of a US tightening have substantially increased over the past three decades. Georgiadis (2015) employs global VAR to assess global spillovers from the US monetary policy shocks. The findings suggest that the US monetary policy shocks generate sizable output spillovers to the rest of the world. Miranda-Agrippino & Rey (2022) examine the effects of the US monetary policy on global financial cycles. The results reveal that a US monetary tightening leads to significant deleveraging of global financial intermediaries, a decline in the provision of domestic credit globally, retrenchments of international credit flows, and tightening of foreign financial conditions. De Leo et al. (2024) apply Taylor rule to investigate EMEs' central bank reaction functions to the US monetary policy shocks. Using OLS, the results show that central banks in EMEs react to the US monetary policy tightening by lowering their policy rates.

A number of studies have compared the effects of the US and EU countries' monetary policy shocks on EMEs' monetary policies. Crespo-Cuaresma and Wójcik (2006) examine how policy rates in a group of three Central and Eastern European (CEE) countries react to the US and Germany's interest rates shocks. The results indicate that domestic interest rates in the CEE countries are more influenced by interest rate changes in Germany than in the US. Ca'Zorzi et al. (2023) compare the spillover effects of the Fed and ECB monetary policy shocks on the global economy. The estimates show that the Fed monetary policy shocks have greater impact on the global economy. The findings further reveal that the Fed monetary policy affects EMEs through the financial channel while ECB monetary policy affects EMEs through the trade channel- commodity prices.

An important empirical question is the influence of exchange rate regimes on monetary policy independence in emerging economies. While a number of studies conclude that the floating exchange rate regime allows monetary independence, others disagree. For instance, Borensztein et al. (2001) compare monetary independence between floaters and non-floaters. The results suggest that countries with floating exchange rates have monetary independence while countries with fixed exchange rates regime lack monetary independence. Frankel et al. (2004), using pooled and country-specific regressions, explore whether the choice of exchange rate regime affects the sensitivity of local interest rates to international interest rates. The results indicate that all exchange rate regimes exhibit high sensitivity of local interest rates to international rates movements. Degasperi et al. (2024), using BVAR, examine the transmission of the US monetary policy shocks to 30 economies and the EU. The findings indicate that flexible exchange rate regime cannot fully insulate domestic economies from the US monetary shocks. Corsetti et al. (2024) examine the effect of the Euro-area monetary policy shocks on 20 of its neighbours. The findings show that the spillover from the Euro-area monetary policy shocks have the same size effects on countries that float and peg their currencies. Rey (2018) concludes that global financial cycles affect emerging economies and that independent monetary policy is only possible if there are restrictions on the capital account.

2.2 Theoretical Framework

To examine the monetary policy reactions in EMEs, we consider three different specifications of Taylor rule for the study. Taylor's (1993) rule postulates a simple instrumental rule for monetary policy. In this rule, the monetary authority adjusts the interest rate in response to inflation and output deviations from potential. The original Taylor rule assumes that central banks use past or current values of inflation and output gap to set up the interest rate. The original Taylor rule has been modified and augmented in different forms. Clarida et al. (1998) suggest the use of a forward-looking version of the Taylor rule where the central banks target expected inflation and output gap instead of past or current values of these variables. This allows the central bank to take various relevant variables into account when forming its forecasts. Ball (2000) and Svensson (2000) extended the Taylor rule to an open economy, thereby incorporating exchange rate.

A standard version of Taylor rule is specified as:

$$i_t = \rho i_{t-1} + (1-\rho)\left(\phi_\pi \pi_t + \phi_y y_t\right) + \mu_t \tag{1}$$

The Taylor rule has been extended to an open economy in different versions. We estimate three different Taylor specifications. First, we adopt a modified open economy Taylor rule by Mohanty and Klau (2004) as our baseline equation. We introduce the foreign interest rate represented by the US interest rate in the equation as follows:

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{rf} i_{t-1}^{US} + \mu_t \tag{2}$$

Where i_t is the domestic policy interest rate; π_t is inflation rate; y_t is the output gap; e_t is the natural log of nominal exchange rate where an increase represents depreciation; i_t^{US} is the US Fed funds rate. The coefficient ϕ_r represents interest rate smoothing and shows how central banks gradually adjust interest rates. ϕ_π is the reaction of policy interest rate to inflation. The coefficient ϕ_y is the policy rate reaction to output deviation; ϕ_e is the policy rate reaction to exchange rate deviation. The coefficient ϕ_{rf} represents the reaction of domestic policy rate to the US fed funds rate and it measures the degree of monetary policy independence. If ϕ_{rf} is high and statistically significant, it shows that there is low degree of monetary independence and vice versa.

The second specification of Taylor rule assumes that, in addition to standard target variables, the central banks in the EMEs react to expected changes in the nominal exchange rates. Such a Taylor rule can be written as:

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e \mathrm{E_t} \Delta e_t + \mu_t \tag{3}$$

Berg et al. (2006) propose hybrid expectations in the foreign exchange markets. Assuming deviations from the uncovered interest rate parity (UIP) condition and a risk premium (Gabaix & Maggiori, 2015; Itskhoki & Mukhin, 2021). If the interest parity condition holds, this implies that:

$$e_t = \gamma E_t e_{t+1} + (1-\gamma)e_{t-1} + i_t^{US} - (i_t + \rho_t) \tag{4}$$

where ρ_t is the risk premium. Making $E_t e_{t+1}$ the subject of the formula in eq. (3) and using this to eliminate $E_t e_{t+1}$ from eq.(4), we obtain the following Taylor rule:

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e \Delta e_t + \phi_{rf} i_{t-1}^{US} + \mu_t \tag{5}$$

where Eq.(5) differs from eq.(2) in that the central banks react to expected changes in exchange rate. If the EME monetary policy is independent, we expect ϕ_{rf} to be zero or not statistically significant. The third specification incorporates the US Taylor rule in the EMEs' Taylor rule. This enables us to evaluate whether central banks in EMEs take proactive policy measures in anticipation of changes in US interest rate. Incorporating the US Taylor rule in eq.(5) yields:

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{rf} i_{t-1}^{US} + \phi_{\pi f} \pi_{t-1}^{US} + \phi_{yf} y_{t-1}^{US} + \mu_t \tag{6}$$

where $\phi_r = \left(1 - \beta\left(1 - \frac{1}{\gamma}\right)\right)$; $\phi_\pi = \beta\alpha_\pi$; $\phi_y = \beta\alpha_y$; $\phi_e = \beta\alpha_e\left(\frac{1-\gamma}{\gamma}\right)$; $\phi_f = \frac{\beta}{\gamma}$. The coefficients $\phi_{\pi f}$ and ϕ_{yf} represent the reaction of policy rate in EMEs to the US inflation and output gap respectively. π_{t-1}^{US} and y_{t-1}^{US} are the lagged US inflation and output. If $\phi_{\pi f}$ and ϕ_{yf} are significant, this implies that the EMEs central bank take measures in anticipation of changes in the US interest rate.

3. Data

Data for the study were sourced from the IFS and the FRED databases. The monthly data cover the period 2000-2023 for 14 EMEs. All the countries operate flexible exchange rate regime and have adopted inflation targeting. We collected data on central banks' policy rates and money market rate, exchange rate, CPI, industrial production index (IPI), US Fed Fund rate. The policy rate, money market rate and the US fund rate are used in percentage; CPI, IPI and exchange rate are transformed into logarithmic forms. The output gap is derived by using HP filter. We estimate our models with ordinary least square (OLS) and fixed effect techniques

Table 1 List of Countries

Countries	*Period*
Brazil	2000:M1- 2023:M12
Chile	2000:M1- 2021:M05
Columbia	2001:M - 2019M:09
Czech Republic	2000:M1- 2023:M12
Hungary	2000:M1- 2023:M12
India	2000:M1- 2022:M07
Indonesia	2000:M1- 2019:M04
Malaysia	2000:M1- 2019:M03
Mexico	2000:M1- 2021:M10
Poland	2000:M1- 2023:M12
Russia	2000:M1- 2021:M12
South Africa	2000:M1- 2023:M12
South Korea	2000:M1- 2023:M12
Turkiye	2000:M1- 2023:M12

4. Empirical Results

4.1. Unit Root Test Results

Table 2 presents the stationarity test estimates for the variables, applying Levin, Li & Chu and Im, Pesaran & Shin. All the variables are stationary at levels.

Table 2 Stationarity Test Results

Variables	*Levin, Li & Chu*		*Im, Pesaran & Shin*	
	Level	*1st difference*	*Level*	*1st difference*
CB rate	-2.177**	-20.58**	-4.53**	-30.531**
Inflation	-19.141-**	32.417	-20.659**	-37.514**
Exchange rate	-11.963**	-71.867**	2.23	-61.25**
Industr. Prod.	-1.29*	-3.385**	0.586	-27.138**
US Fed fund rate	-5.603**	-12.749**	-6.371**	-15.26**
US inflation	-42.352**	41.15	-38.086**	-39.608**
US indust. Prod.	-4.121**	30.098	-6.46**	-9.351**

4.1 Panel Estimates

Table 3 shows the results for panel estimates for all the models. The estimates show that there are statistically positive significant responses of EMEs central banks' policy rates to the US Fed fund rate. This implies that EMEs central banks tighten monetary policies and increase policy rates in response to the US monetary policy tightening. These positive responses to the US monetary policy tightening might be an attempt to stem capital outflows from EMEs and prevent exchange rate depreciations. This is in line with the findings by Kalemli-Özcan (2019). Thus, the results indicate lack of monetary policy independence in EMEs. The estimates, however, reveal statistically insignificant negative responses of policy rate in EMEs to the US inflation and output gap. This suggests that central banks in EMEs do not react to the US economics' conditions.

The estimates on domestic economies show evidence of policy smoothing and reveal that central banks in EMEs respond strongly to inflation. This suggests that central banks in EMEs adjust the policy rates gradually and adjust policy rates more than the change in price levels. Further, the estimates reveal statistically insignificant negative responses of policy rates to output gaps. This implies that EMEs' central banks do not responds to output dynamics. Finally, the estimates show mixed reaction to exchange rate in the models. In models 1 and 4, the central banks react negatively to exchange rate but react positively in model 2.

Table 3 Pooled Estimates for Full Sample (2000-2023)

Variables	*OLS*	*Fixed Effect*
Model 1: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{r^f} i_{t-1}^{US} + \mu_t}$		
ϕ_r	0.55^{**} (0.00)	0.46^{**} (0.00)
ϕ_π	1.39^{**} (0.00)	1.06^{**} (0.00)
ϕ_y	−0.01 (0.53)	−0.02 (0.22)
ϕ_e	-0.003^{**} (0.00)	-0.02^{**} (0.00)
ϕ_{r^f}	0.47^{**} (0.00)	0.54^{**} (0.00)
$R^2 = 0.41; DW = 2.64$		$Hausman\ Tests = 242.64$ (0.00)
Model 2: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e \Delta e_t + \phi_{r^f} i_{t-1}^{US} + \mu_t}$		
ϕ_r	0.56^{**} (0.00)	0.47^{**} (0.00)
ϕ_π	1.34^{**} (0.00)	0.77^{**} (0.00)
ϕ_y	−0.01 (0.48)	−0.02 (0.28)
ϕ_e	0.2^{**} (0.00)	0.18^{**} (0.00)
ϕ_{r^f}	0.47^{**} (0.00)	0.59^{**} (0.00)
$R^2 = 0.41; DW = 2.65$		$Hausman\ Tests = 224.66$ (0.00)
Model 3: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{r^f} i_t^{US} + \mu_t}$		
ϕ_r	0.56^{**} (0.00)	0.48^{**} (0.00)
ϕ_π	1.41^{**} (0.00)	0.81^{**} (0.00)
ϕ_y	−0.01 (0.58)	−0.02 (0.34)
ϕ_{r^f}	0.5^{**} (0.00)	0.58^{**} (0.00)
$R^2 = 0.41; DW = 2.66$		$Hausman\ Tests = 231.6$ (0.00)
Model 4: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{r^f} i_{t-1}^{US} + \phi_{\pi^f} \pi_{t-1}^{US} + \phi_{y^f} y_{t-1}^{US} + \mu_t}$		
ϕ_r	0.55^{**} (0.00)	0.45^{**} (0.00)
ϕ_π	1.39^{**} (0.00)	1.07^{**} (0.00)
ϕ_y	−0.004 (0.85)	−0.01 (0.5)
ϕ_e	-0.003^{**} (0.00)	-0.02^{**} (0.00)
ϕ_{r^f}	0.48^{**} (0.00)	0.56^{**} (0.00)
ϕ_{π^f}	−0.027 (0.4)	−0.2 (0.52)
ϕ_{y^f}	−0.04 (0.38)	−0.06 (0.24)
	$R^2 = 0.41; DW = 2.64$	$Hausman\ Tests = 239.17$ (0.00)
Model 5: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{r^f} i_{t-1}^{US} + \phi_{\pi^f} \pi_{t-1}^{US} + \phi_{y^f} y_{t-1}^{US} + \mu_t}$		
ϕ_r	0.56^{**} (0.00)	0.647^{**} (0.00) FE
ϕ_π	1.41^{**} (0.00)	0.81^{**} (0.00)
ϕ_y	−0.003 (0.88)	−0.01 (0.59)
ϕ_{r^f}	0.48^{**} (0.00)	0.59^{**} (0.00)
ϕ_{π^f}	−0.25 (0.44)	−0.19 (0.59)
ϕ_{y^f}	−0.04 (0.4)	−0.04 (0.4)
	$R^2 = 0.41; DW = 2.66$	$Hausman\ Tests = 229.17$ (0.00)

Table 4 presents the panel results for the pre and post 2008 global financial crises. This is to evaluate whether there has been a time variation in EMEs central banks' responses to the US monetary policy stance. Similar to the full sample, the estimates show that central banks in EMEs react to the US monetary policy in pre and post 2008 global financial crises. However, a comparison of the coefficient estimates reveals that EMEs central banks' reactions to the US monetary policy are stronger in pre-global crises than in post-global crises. This implies that EMEs central banks' reactions to the US monetary policy shocks have diminished after the 2008 global crises, indicating greater monetary autonomy after the 2008 global crises.

Table 4 Panel Results for Pre (2000-2009) and Post 2008 Global Financial Crises

Model 1: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{r^f} i^{US}_{t-1} + \mu_t}$				
	Pre- global crisis period		Post-global crisis period	
Variables	*OLS*	*Fixed Effect*	*OLS*	*Fixed Effect*
ϕ_r	0.47** (0.00)	0.32** (0.00)	0.99** (0.00)	0.99** (0.00)
ϕ_π	2.85** (0.00)	2.29** (0.00)	0.17** (0.00)	0.15** (0.00)
ϕ_y	−0.01 (0.51)	−0.06 (0.16)	0.007** (0.00)	0.007** (0.00)
ϕ_e	−0.005** (0.00)	−0.03 (0.1)	0.0001 (0.82)	0.002** (0.00)
ϕ_{r^f}	0.33** (0.02)	0.44** (0.02)	0.03** (0.01)	0.006 (0.64)
	$R^2 = 0.35$; $Hausman\ Tests = 0.00\ (1.00)$		$R^2 = 0.98$; $Haus.Test = 15.95(0.01)$	
Model 2: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e \Delta e_t + \phi_{r^f} i^{US}_{t-1} + \mu_t}$				
ϕ_r	0.31** (0.00)	0.48** (0.00)	0.99** (0.00)	0.99** (0.00) RE
ϕ_π	2.12** (0.00)	2.66** (0.00)	0.17** (0.00)	0.17** (0.00)
ϕ_y	−0.05 (0.24)	−0.02 (0.62)	0.007** (0.00)	0.007** (0.00)
ϕ_e	0.42** (0.00)	0.42** (0.00)	0.01* (0.07)	0.006* (0.06)
ϕ_{r^f}	0.43** (0.00)	0.28** (0.04)	0.03** (0.01)	0.03** (0.01)
	$R^2 = 0.36$; $Hausman\ Tests = 0.00\ (1.00)$		$R^2 = 0.98$; $Haus.Test$=1.59 (0.9)	
Model 3: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{r^f} i^{US}_t + \mu_t}$				
ϕ_r	0.49** (0.00)	0.32** (0.00)	0.99** (0.00)	1.00** (0.00) RE
ϕ_π	2.81** (0.00)	2.27** (0.00)	0.17** (0.00)	0.17** (0.00)
ϕ_y	−0.03 (0.57)	−0.06 (0.21)	0.01* (0.00)	0.007* (0.00)
ϕ_{r^f}	0.32** (0.02)	0.47** (0.02)	0.03** (0.01)	0.03** (0.01)
	$R^2 = 0.34$; $Hausman\ Tests = 0.00\ (1.00)$		$R^2 = 0.98$; $Haus.Test$=1.28 (0.86)	
Model 4: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{r^f} i^{US}_{t-1} + \phi_{\pi^f} \pi^{US}_{t-1} + \phi_{y^f} y^{US}_{t-1} + \mu_t}$				
ϕ_r	0.47** (0.00)	0.47** (0.00) RE	0.99** (0.00)	1.00** (0.00) FE
ϕ_π	2.86** (0.00)	2.84** (0.00)	0.17** (0.00)	0.14** (0.00)
ϕ_y	−0.01 (0.78)	−0.02 (0.72)	0.007* (0.00)	0.004* (0.04)
ϕ_e	0.005** (0.00)	−0.005** (0.00)	0.001 (0.72)	0.002** (0.00)
ϕ_{r^f}	0.37** (0.02)	0.36** (0.02)	0.03** (0.02)	−0.003 (0.83)
ϕ_{π^f}	−0.42 (0.51)	−0.4 (0.51)	0.08** (0.02)	0.07* (0.06)
ϕ_{y^f}	−0.07 (0.57)	−0.05 (0.67)	0.001 (0.82)	0.02* (0.06)
	$\mathrm{R}^2 = 0.35$; Haus. Test =0.00(1.00)		$\mathrm{R}^2 = 0.98$; Haus. Test=20.34(0.00)	
Model 5: $\boldsymbol{i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{r^f} i^{US}_{t-1} + \phi_{\pi^f} \pi^{US}_{t-1} + \phi_{y^f} y^{US}_{t-1} + \mu_t}$				
ϕ_r	0.49** (0.00)	0.49** (0.00) RE	0.99** (0.00)	1.00** (0.00) RE
ϕ_π	2.81** (0.00)	2.8** (0.00)	0.17** (0.00)	0.17** (0.00)
ϕ_y	−0.01 (0.82)	−0.02 (0.76)	0.01* (0.00)	0.004 (0.03))
ϕ_{r^f}	0.36** (0.02)	0.35** (0.02)	0.03** (0.02)	0.3** (0.04)
ϕ_{π^f}	−0.39 (0.54)	−0.37 (0.54)	0.08** (0.02)	0.08** (0.03)
ϕ_{y^f}	−0.06 (0.6)	0.04 (0.71)	0.001 (0.81)	0.01** (0.03)
	$R^2 = 0.34$; $Haus.Test$=0.00(1.00)		$R^2 = 0.98$; $Haus.Test = 0.03^{**}\ (0.02)$	

Table 5 presents the country-specific estimates for the benchmark open-economy Taylor rule in eq. (2) in the 14 countries. The estimates for the responses of policy rates in EMEs to the US Fed funds rate are mixed. The results suggest significant positive responses of the policy rates to the US Fed funds rate in 9 EMEs. This implies that the central banks in these 9 economies increase their policy rates when the US Fed hikes its rate. This suggests that central banks in EMEs increase policy rates to stem capital outflows and prevent exchange rate depreciation occasioned by portfolio rebalancing emanating from the US monetary policy tightening. This shows lack of monetary independence in these 9 economies. This is line with the findings by Edwards (2015) for Latin American countries. For other countries, the findings show insignificant negative responses to the US monetary policy tightening. This suggests that policy rates in these countries are not sensitive to the monetary policy stance in the US, indicating some degree monetary policy independence.

The results show high monetary policy smoothing in all the countries except Turkey. This implies that central banks in EMEs adjust the policy rate in a gradual way. The estimates show that reaction of policy rate to inflation is statistically significant and positive for all the countries except Malaysia where it is insignificant. This in line with the Taylor hypothesis. The reaction, however, has not been as aggressive as proposed by Taylor (1993) except for Turkey. This suggests a form of monetary laxity and accommodation of inflation in these economies. The estimates also show positive significant response of policy rate to output gap in 8 countries. This indicates a form of pro-cyclical monetary policy in these EMEs. The results show positive significant responses of policy rate to exchange rates in Hungary, Indonesia, Mexico, and Russia. This indicates that central banks in these 4 countries increase the policy rates when exchange rate depreciates. However, the estimates show significant negative responses in Korea and Turkey.

Table 5 Estimates of the Baseline Taylor Rule

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{rf} i_{t-1}^{US} + \mu_t$$

Parameter	*Brazil*	*Chile*	*Columbia*	*Czech*	*Hungary*	*India*	*Indonesia*	*Malaysia*	*Mexico*	*Poland*	*Russia*	*S. Africa*	*Korea*	*Turkiye*
ϕ_r	0.99**	0.95**	0.95**	0.99**	0.99**	0.98**	0.98**	0.97**	0.93**	0.97**	0.75**	0.97**	0.95**	0.28**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)
ϕ_π	0.49**	0.25**	0.13**	0.06**	0.16**	0.001	0.14**	0.01	0.26**	0.17**	0.28	0.20**	0.07**	2.30**
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.97)	(0.00)	(0.35)	(0.01)	(0.01)	(0.19)	(0.00)	(0.00)	(0.02)
ϕ_y	0.03**	0.007	0.04**	0.01**	0.01**	0.002	0.002	0.002	0.02*	0.03**	0.03	0.001**	0.007**	−0.23
	(0.00	(0.17)	(0.00)	(0.00)	(0.00)	(0.31)	(0.61)	(0.61)	(0.05)	(0.00)	(0.17)	(0.01)	(0.00)	(0.20)
ϕ_e	0.001	−0.005	0.001	−0.001	0.003**	−0.001	0.003**	−0.001	0.003*	−0.001	0.01**	0.001	−0.002*	−0.06**
	(0.11)	(0.00)	(0.48)	(0.31)	(0.03)	(0.16)	(0.03)	(0.11)	(0.08)	(0.93)	(0.02)	(0.35)	(0.00)	(0.00)
ϕ_f	−0.018	0.02*	0.03**	0.02	−0.01	−0.01	0.05**	0.005**	0.07**	0.03*	−0.03	0.05**	0.02**	3.80**
	(0.06)	(0.05)	(0.01)	(0.83)	(0.43)	(0.14)	(0.00)	(0.03)	(0.04)	(0.08)	(0.64)	(0.00)	(0.00)	(0.00)
R^2	0.99	0.96	0.99	0.99	0.99	0.97	0.99	0.96	0.97	0.99	0.66	0.99	0.99	0.31
DW	1.41	1.25	1.66	1.66	1.49	1.32	1.17	1.16	1.56	2.45	2.35	2.12	1.81	2.31

Notes: ** denotes significance at 5% and * denotes significance at 10%. Standard error are in parenthesis

Table 6A shows the results for the model with pure forward-looking expectations in the foreign exchange market. The estimates for the model with hybrid expectations show that there are statistically significant responses of policy rates to the US Fed funds rate in 8 countries – Chile, Columbia, Indonesia, Malaysia, Mexico, South Africa, South Korea and Turkiye. This implies that monetary policies in these countries reacts to changes in the US monetary policy stance. This indicates a low degree of monetary policy independence in these 8 economies. But for the remaining 6 countries, there are statistically insignificant responses to the US monetary policy innovations. However, the estimates for three of the countries- Hungary, India, and Russia show statistically significant responses to exchange rate expectations. The results show that countries that do not react to the US monetary policy shocks respond to exchange rate expectations. Since the US monetary policy shocks impact exchange rate through capital flows in EMEs, we can infer that the activities of the central banks in EMEs to adjust policy rate in response to the US Fed funds rate or to exchange rate expectations are to dampen exchange rate fluctuations. This may be due to high pass-through from exchange rate to prices in EMEs. Calvo and Reinhart (2001) show that there is high pass-through from exchange rate to prices in EMEs.

Table 6A Estimates with Exchange Rate Expectation

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e \Delta e_t + \phi_{r^f} i_{t-1}^{US} + \mu_t$$

Parameter	*Brazil*	*Chile*	*Columbia*	*Czech*	*Hungary*	*India*	*Indonesia*	*Malaysia*	*Mexico*	*Poland*	*Russia*	*S.Africa*	*Korea*	*Turkiye*
ϕ_r	0.99**	0.97**	0.96**	0.99**	0.99**	0.98**	0.98**	0.94**	0.94**	0.99**	0.78**	0.97**	0.98**	0.18**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)
ϕ_π	0.57**	0.26**	0.14**	0.06**	0.18**	0.14**	0.14**	0.01	0.29**	0.14**	0.11	0.20**	0.06**	1.76**
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.2)	(0.00)	(0.00)	(0.61)	(0.00)	(0.02)	(0.04)
ϕ_y	0.003	0.002	0.004**	0.003**	0.004**	0.001	0.002	0.001**	0.01	0.002*	0.007	0.005**	0.001	−0.24**
	(0.36)	(0.29)	(0.02)	(0.00)	(0.02)	(0.45)	(0.61)	(0.00)	(0.17)	(0.05)	(0.29)	(0.01)	(0.11)	(0.00)
ϕ_e	−0.001	−0.004	0.005	−0.005	0.003**	0.02**	0.009	−0.001	0.02	−0.004	0.10**	0.002	−0.001	1.34**
	(0.85)	(0.55)	(0.3)	(0.18)	(0.02)	(0.02)	(0.13)	(0.80)	(0.12)	(0.40)	(0.00)	(0.67)	(0.70)	(0.00)
ϕ_f	0.001	0.03**	0.06**	0.007	−0.003	−0.005	0.05**	0.01**	0.06*	0.02	−0.02	0.05**	0.02**	3.10**
	(0.95)	(0.04)	(0.00)	(0.42)	(0.84)	(0.59)	(0.00)	(0.00)	(0.08)	(0.16)	(0.77)	(0.00)	(0.00)	(0.00)
R^2	0.99	0.96	0.99	0.99	0.99	0.97	0.99	0.96	0.97	0.99	0.67	0.99	0.99	0.40
DW	1.35	1.20	1.46	1.66	1.43	1.31	1.16	1.13	1.54	1.52	2.43	2.13	1.56	2.15

Notes: **denotes significance at 5% and *denotes significance at 10%. Standard error are in parenthesis

Table 6B presents the estimates for the model without pure forward-looking expectations. The results show that there are statistically positive responses of the short-term rates to the US Fed funds rate in 8 countries - Chile, Columbia, Indonesia, Malaysia, Mexico, South Africa, South Korea and Turkiye. This shows that central banks in these economies increase the policy rates as the US hike the Fed fund rate, indicating low degree of monetary independence. This positive response of policy rates might be attributed to efforts by the central banks to stem the tide of capital outflows. Further, the responses of EMEs central banks to the US monetary policy shocks indicate some degree of policy contagion.

Table 6B Estimates without Exchange Rate Expectation

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{rf} i_t^{US} + \mu_t$$

Parameter	*Brazil*	*Chile*	*Columbia*	*Czech*	*Hungary*	*India*	*Indonesia*	*Malaysia*	*Mexico*	*Poland*	*Russia*	*S. Africa*	*Korea*	*Turkiye*
ϕ_r	0.99^{**}	0.97^{**}	0.96^{**}	0.99^{**}	0.99^{**}	0.99^{**}	0.98^{**}	0.94^{**}	0.94^{**}	0.98^{**}	0.79^{**}	0.97^{**}	0.98^{**}	0.21^{**}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
ϕ_π	0.57^{**}	0.26^{**}	0.14^{**}	0.05^{**}	0.18^{**}	0.001	0.14^{**}	0.01	0.28^{**}	0.14^{**}	0.23	0.20^{**}	0.07^{**}	2.22^{**}
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.96)	(0.00)	(0.21)	(0.00)	(0.01)	(0.30)	(0.00)	(0.00)	(0.01)
ϕ_y	0.003	0.002	0.004^{**}	0.003^{**}	0.004^{**}	0.002	0.001	0.001^{**}	0.009	0.01^{*}	0.009	0.005^{**}	0.0007	-0.22^{**}
	(0.36)	(0.30)	(0.02)	(0.00)	(0.01)	(0.73)	(0.47)	(0.00)	(0.14)	(0.05)	(0.18)	(0.01)	(0.12)	(0.01)
ϕ_f	0.001	0.03^{*}	0.05^{**}	0.01	−0.004	−0.005	0.05^{**}	0.01^{**}	0.06^{*}	0.02	−0.037	0.05^{**}	0.02^{**}	3.19^{**}
	(0.95)	(0.04)	(0.00)	(0.38)	(0.82)	(0.56)	(0.00)	(0.00)	(0.08)	(0.12)	(0.62)	(0.00)	(0.00)	(0.00)
R^2	0.99	0.96	0.99	0.99	0.99	0.97	0.99	0.96	0.97	0.99	0.65	0.99	0.99	0.34
DW	1.35	1.21	1.45	1.65	1.45	1.32	1.15	1.13	1.54	1.52	2.38	2.12	1.55	2.22

Notes: **denotes significance at 5% and *denotes significance at 10%. Standard error are in parenthesis

Table 7A present the estimates for the model (with exchange rate) where the EMEs' central banks incorporate the US Taylor rule in their monetary policy reaction functions. This allows us to evaluate whether central banks in EMEs reacts to the US economic conditions and take pre-emptive measures in anticipation of the US monetary policy. EMEs might take pre-emptive measures to mitigate the effects of the US monetary policy shocks on their economies. The estimates for the model with hybrid forward-looking exchange rate expectations reveal that there are statistically significant responses of policy rates in 6 EMEs Chile, Czech, Poland, Russia, South Africa and South Korea- to the US inflation.

Further, the estimates reveal that there are statistically significant responses of monetary policy rates in 8 EMEs to the US output dynamics. The results show that policy rates in – Chile, Columbia, Czech, Hungary, Indonesia, Malaysia, and South Korea react to the US output dynamics. This implies that the central banks in these economies closely follow the US economic conditions. This is line with the findings by Gray (2013) on monetary policy interdependence between the US and the developed economies. Few of these countries also react to exchange rate deviations.

Table 7A Estimates Incorporating the US Taylor Rule (with Exchange Rate)

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_e e_t + \phi_{r^f} i_{t-1}^{US} + \phi_{\pi^f} \pi_{t-1}^{US} + \phi_{y^f} y_{t-1}^{US} + \mu_t$$

Parameter	*Brazil*	*Chile*	*Columbia*	*Czech*	*Hungary*	*India*	*Indonesia*	*Malaysia*	*Mexico*	*Poland*	*Russia*	*S. Africa*	*Korea*	*Turkiye*
ϕ_r	0.99^{**}	0.93^{**}	0.95^{**}	0.99^{**}	0.99^{**}	0.98^{**}	0.98^{**}	0.94^{**}	0.93^{**}	0.97^{**}	0.74^{**}	0.97^{**}	0.95^{**}	0.28^{**}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)
ϕ_π	0.49^{**}	0.27^{**}	0.14^{**}	0.06^{**}	0.16^{**}	−0.001	0.13^{**}	0.01	0.26^{**}	0.08^{**}	0.23	0.05^{**}	0.07^{**}	2.27^{**}
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.79)	(0.00)	(0.43)	(0.02)	(0.02)	(0.30)	(0.02)	(0.00)	(0.02)
ϕ_y	0.02^{**}	0.006	0.03^{**}	0.002	0.005	0.001	0.0004	0.002^{*}	0.01	0.03^{**}	0.02	0.005^{*}	0.007^{**}	−0.20
	(0.03)	(0.24)	(0.00)	(0.17)	(0.23)	(0.65)	(0.92)	(0.06)	(0.32)	(0.00)	(0.40)	(0.00)	(0.00)	(0.29)
ϕ_e	0.001	-0.006^{**}	0.001	−0.0002	0.003^{**}	−0.001	0.003^{**}	−0.004	0.003^{*}	−0.001	0.01^{**}	−0.001	-0.002^{*}	-0.06^{**}
	(0.12)	(0.00)	(0.21)	(0.73)	(0.02)	(0.14)	(0.02)	(0.41)	(0.08)	(0.87)	(0.02)	(0.11)	(0.00)	(0.00)
ϕ_f	−0.03	0.03^{**}	0.03^{*}	0.002	−0.027	-0.02^{*}	0.04^{**}	0.004	0.06^{*}	0.02	−0.04	0.02^{**}	0.02^{**}	3.95^{**}
	(0.15)	(0.04)	(0.06)	(0.81)	(0.13)	(0.05)	(0.00)	(0.11)	(0.07)	(0.26)	(0.63)	(0.00)	(0.00)	(0.00)
ϕ_{π^f}	0.06	-0.19^{**}	−0.02	0.15^{**}	0.11	0.02	0.07	−0.002	0.02	0.10^{**}	-0.57^{*}	0.09^{**}	-0.002^{*}	2.31
	(0.48)	(0.00)	(0.64)	(0.00)	(0.16)	(0.63)	(0.17)	(0.87)	(0.86)	(0.01)	(0.09)	(0.00)	(0.00)	(0.55)
ϕ_{y^f}	0.02	0.02^{*}	0.03^{**}	0.01^{**}	0.03^{**}	0.01	0.02^{*}	0.01^{**}	0.02	−0.01	0.04	0.002	0.02^{**}	−0.48
	(0.13)	(0.06)	(0.00)	(0.02)	(0.02)	(0.10)	(0.07)	(0.01)	(0.16)	(0.43)	(0.45)	(0.57)	(0.00)	(0.41)
R^2	0.99	0.97	0.99	0.99	0.99	0.97	0.99	0.96	0.97	0.99	0.66	0.99	0.99	0.31
DW	1.43	1.33	1.77	1.76	1.48	1.34	1.15	1.23	1.54	1.77	2.35	2.19	1.88	2.30

Notes: **denotes significance at 5% and *denotes significance at 10%. Standard error are in parenthesis

Table 7B presents the estimates for the model (without exchange rate) where the central banks in EMEs incorporate the US Taylor rule in their monetary policy reaction functions. The estimates show that, fewer countries react to the US monetary policy shocks. The results show that there are statistically significant responses of policy rates in 6 EMEs- Chile, Columbia, Indonesia, South Africa, South Korea, and Tükiye. The estimates also reveal that policy rates in Chile, Czech, Poland and South Korea react to the US inflation. This suggests that central banks in EMEs adjust their policy rates in line with the US monetary policy stance. Lastly, the results show that policy rates in Chile, Columbia, Czech, Hungary, Indonesia, Malaysia, and South Africa react to the US output dynamics

Table 7B Estimates Incorporating the US Taylor Rule (without Exchange Rate)

$$i_t = \alpha_0 + \phi_r i_{t-1} + \phi_\pi \pi_t + \phi_y y_t + \phi_{r^f} i_{t-1}^{US} + \phi_{\pi^f} \pi_{t-1}^{US} + \phi_{y^f} y_{t-1}^{US} + \mu_t$$

Parameter	*Brazil*	*Chile*	*Columbia*	*Czech*	*Hungary*	*India*	*Indonesia*	*Malaysia*	*Mexico*	*Poland*	*Russia*	*S. Africa*	*Korea*	*Turkiye*
ϕ_r	0.99** (0.00)	0.96** (0.00)	0.95** (0.00)	0.99** (0.00)	0.99** (0.00)	0.98** (0.00)	0.97** (0.00)	0.94** (0.00)	0.93** (0.00)	0.97** (0.00)	0.79** (0.00)	0.96** (0.00)	0.97** (0.00)	0.34** (0.00)
ϕ_π	0.51** (0.00)	0.26** (0.00)	0.15** (0.01)	0.06** (0.00)	0.19** (0.00)	−0.005 (0.98)	0.13** (0.00)	0.01 (0.42)	0.26** (0.02)	0.08** (0.02)	0.08 (0.69)	0.22** (0.00)	0.05** (0.02)	0.92 (0.30)
ϕ_y	0.02* (0.05)	0.007 (0.19)	0.03** (0.00)	0.002 (0.16)	0.004 (0.28)	0.001 (0.58)	0.00 (0.98)	0.02* (0.07)	0.01 (0.32)	0.03** (0.00)	0.02 (0.42)	0.004* (0.05)	0.001** (0.00)	−0.16 (0.41)
ϕ_f	−0.02 (0.18)	0.021* (0.09)	0.03* (0.05)	−0.002 (0.75)	−0.02 (0.32)	−0.01 (0.17)	0.05** (0.00)	0.004 (0.15)	0.05 (0.16)	0.01 (0.26)	−0.09 (0.21)	0.04** (0.00)	0.02** (0.00)	4.25** (0.00)
ϕ_{π^f}	0.07 (0.39)	−0.14** (0.03)	−0.03 (0.55)	0.15** (0.00)	0.10 (0.17)	0.013 (0.72)	0.05 (0.31)	−0.001 (0.91)	0.02 (0.87)	0.10** (0.02)	−0.55 (0.10)	−0.07 (0.17)	0.09** (0.00)	1.56 (0.69)
ϕ_{y^f}	0.02 (0.13)	0.02** (0.04)	0.03** (0.00)	0.01** (0.01)	0.03** (0.04)	0.01 (0.13)	0.02* (0.09)	0.008** (0.01)	0.02 (0.16)	−0.006 (0.43)	0.05 (0.36)	0.01* (0.06)	0.003 (0.35)	−0.48 (0.42)
R^2	0.99	0.96	0.99	0.99	0.99	0.97	0.99	0.96	0.97	0.99	0.66	0.99	0.99	0.29
DW	1.42	1.28	1.75	1.77	1.47	1.33	1.11	1.24	1.52	1.77	2.39	2.19	1.87	2.35

**denotes significance at 5% and *denotes significance at 10%. Standard error are in parenthesis

5. Conclusion

The increasing global financial integration has cast doubt on the ability of central banks in EMEs to conduct independent monetary policies. To investigate the degree of monetary independence in EMEs, we estimate three different specifications of the Taylor rule. First, we estimate a baseline model featuring lagged US policy rate. Second, we estimate a specification with hybrid and pure forward-looking expectations in the foreign exchange market. Third, we estimate a model incorporating the US Taylor rule in the Taylor rule for emerging economies. In this model the US inflation, US output and the US policy rate enter the emerging economies Taylor rule with a lag. With all these, we evaluate the sensitivity of short-term interest rate in EMEs to the US Fed monetary policy stance.

In general, the results reveal that EMEs' central banks react to the US monetary policy stance, indicating low degree of monetary independence in EMEs over the full sample period. However, the results show that the 2008 global financial crises have changed EMEs central reactions to the US monetary policy shocks. The EMEs central banks responses to the US monetary policy stance were higher in pre-2008 global crises but had declined post 2008 global financial crises, indicating greater monetary dependence for EMEs central banks post-2008 crises. The estimates further show that monetary authorities in EMEs do not react to the US inflation and output. Lastly, the findings show that the short-term rates in EMEs are more sensitive to the US Fed funds rate than to the exchange rate, suggesting that the EME central banks adopt pre-emptive stance to dampen exchange rate fluctuations.

The country-specific estimates reveal that monetary authorities in 9 out of 14 emerging economies react to the US monetary policy stance indicating low degree of monetary independence. Further, the country-specific estimates show that 7 EMEs react to the US inflation and the US output dynamics. The reactions by EMEs central banks indicate some degree of policy contagion and low degree of monetary independence.

To reduce monetary dependence in EMEs, fiscal and monetary authorities should strengthen domestic macroeconomic policies, deepen the domestic financial markets, formulate policies to reduce risk-sensitivity of their economies, and formulate appropriate policies to stem capital outflows.

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