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Does Central Bank Transparency Deter the Exchange Rate Volatility? New Evidence from Asian Emerging Markets

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Abstract: Exchange rate volatility has emerged as a significant challenge for Asian emerging markets since the adoption of the liberalization process. This study examines the influence of central bank transparency on exchange rate volatility using a sample of ten important Asian emerging markets. The study uses a fixed effect regression model covering the Asian financial crisis, global financial crisis, banking crisis, and taper tantrum episodes. Results show that an increase in central bank transparency has a stabilizing effect on exchange rate volatility, and this effect remains even after controlling for various internal and external factors. The uncertainty of US monetary policy increases exchange rate volatility, while US economic policy uncertainty contributes only during the global financial crisis. Interestingly, central bank transparency buffers the effects of the global financial crisis, indicating that it plays a facilitating role in maintaining financial stability. Studies that examine the role of central bank transparency in curbing exchange rate volatility, which is a crucial issue in these markets, are rare in emerging markets' context. This research offers interesting findings by using a variety of robustness checks.

Keywords: Central Bank Transparency, Exchange Rate Volatility, Monetary Policy, Emerging Markets.

JEL Classification: E58, F31.

1. Introduction

Central banking has witnessed a paradigm shift towards transparency from opacity in the last two decades (Geraats, 2006; Lehtimäki & Palmu, 2022). Central banks have gained more independence in monetary policymaking which also makes them accountable for their actions and call for transparency (Dincer & Eichengreen, 2014). Therefore, central banks regularly communicate objectives, macroeconomic forecasts, monetary policy decisions, and future policy inclinations. This transition has sparked a debate about the repercussions of increased transparency for economic fundamentals as central bank transparency (CBT) plays an instrumental role in anchoring expectations through strengthening a common view about monetary policy (Ehrmann, Eijffinger & Fratzscher, 2012; Papadamou, Sidiropoulos & Spyromitros, 2014; Trabelsi, 2016; van Der Cruijsen & Demertzis, 2007; Weber, 2018b).

Starting with the seminal work of Geraats (2002) that presented a theoretical framework based on five dimensions of transparency: Political, Economic, Procedural, Policy, and Operational transparency, there are new developments in the CBT literature. For instance, Eijffinger & Geraats (2006) developed a central bank transparency measure based on the informativeness of monetary policy. This measure rates the central bank as transparent if relevant information is communicated on time with an explanation for key decisions. Subsequently, Dincer & Eichengreen (2014) and Dincer, Eichenngreen & Geraats (2019) have extended the CBT dataset. Empirically, Some studies examine the economic impact of CBT like the link between CBT and Economic fundamentals: inflation volatility (Dincer & Eichengreen, 2014; Weber, 2018, 2019a), unemployment (Weber, 2019b), and output volatility (Papadamou, Sidiropoulos & Spyromitros, 2016). Similarly, some studies highlight the role of CBT in managing market expectations (Neuenkirch, 2012, 2013) and reducing forecast disagreements (Seelajaroen, Budsaratragoon & Jitmaneeroj, 2019; Trabelsi, 2016). Overall, CBT has implications for financial markets as it minimizes stock market volatility (Papadamou et al., 2014), credit spread (Pires Tiberto, Oliveira de Moraes & Pio Corrêa, 2020), and banks' idiosyncratic risks (Andrieş, Nistor & Sprincean, 2020). Moreover, CBT also plays a pivotal role in attracting foreign equity portfolios (Kwabi, Boateng & Du, 2020).

Though the exchange rate is more relevant to economic fundamentals and is simultaneously influenced by market forces (Weber, 2019a), the literature is

scant on the CBT effects on exchange rate volatility (ERV)[1]. Some exceptions are, Eichler & Littke (2018) who report that CBT has a stabilizing effect on ERV for developed economies. Kim (2018) demonstrates that CBT reduces the likelihood of a currency crisis. Contrary to this, Weber (2019a) finds that CBT leads to higher fluctuations in exchange rates in developed economies and insignificant effects in developing countries. These scarce but contradictory findings motivate the current research.

This research contributes to the extant literature in at least three ways. Firstly it extends the CBT and ERV literature by considering the important Asian emerging markets. Extant literature on CBT and ERV has focused more on the advanced markets, though CBT has improved in emerging Asian economies parallel to the advanced economies as notable in Figure 1. CBT can be relevant to financial markets (Égert & Kočenda, 2014; Neuenkirch, 2012; Su, Ahmad & Wood, 2020) and it can play a positive role in managing market expectations and reducing uncertainty in the short run (Jitmaneeroj, Lamla & Wood, 2019; Neuenkirch, 2013). As expectations play an important role in defining the exchange rate fluctuations (Beckmann and Czudaj, 2017; Olanipekun, Olasehinde-Williams & Güngör, 2019) and exchange rates of Asian emerging markets are more volatile than that of advanced markets and serious concern of the investors and policymakers (Aftab, Anifowose, Lau & Ismail, 2020) (refer to Figure 2), this study is a timely attempt to understand the CBT role in Asian emerging markets ERV. To the best of our knowledge, this study is the very first attempt to analyze the effect of CBT on ERV in the context of Asian emerging markets.

Secondly, this study extends the literature by examining the topic while considering the internal factors along with the role of external factors like US monetary and economic policy risks, and the Fed's tapering. This brings more rigor to the results as the US policies strongly influence the emerging markets (Aizenman, Chinn, & Ito, 2016; Liang, Troy & Rouyer, 2020).

Finally, the study brings updated evidence by covering the crisis episodes like the Asian financial crisis, the global financial crisis, the banking crisis, and taper tantrum episodes that affected the emerging markets immensely (Aizenman, Chinn, & Ito, 2016).

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[1] Echange rate fluctuations cause severe consequences for the economic agents particularly in emerging economies (Bahmani-Oskooee & Panthamit, 2006; Qureshi, Rehman & Qureshi, 2018).

Figure 1: Evolution of central bank transparency
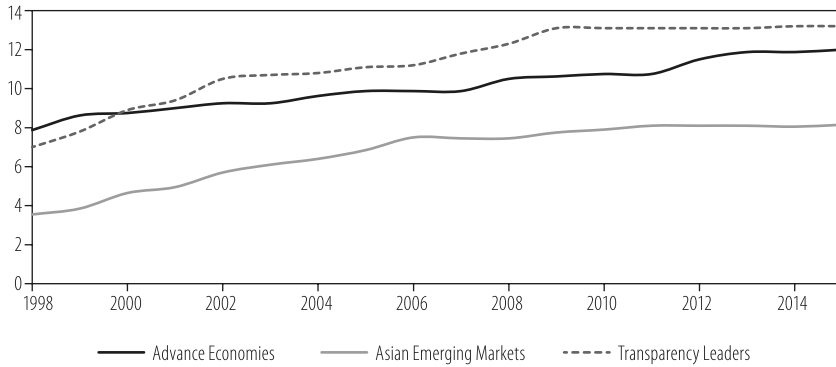
Source: Authors` computations

Figure 1 above depicts a comparison of the time evolution of CBT in emerging & advanced economies. Transparency leaders reflects the average CBT score for the top five transparent banks. Advance Economies include the USA, EU, Japan, Canada, and the UK. Emerging Markets include Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, South Korea, Thailand, and Turkey.

Figure 2: Asian emerging markets' exchange rate volatility
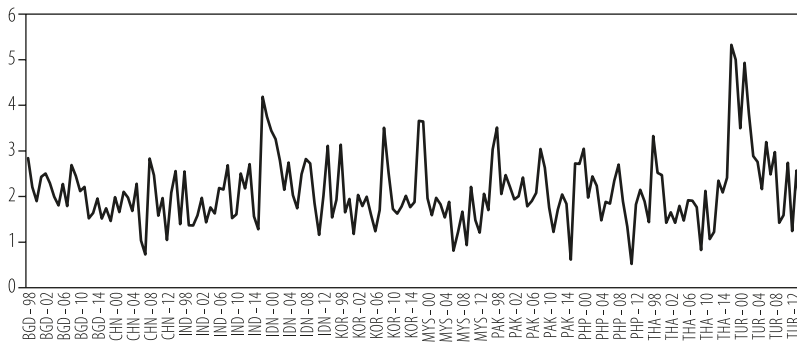
Source: Authors` computations

Figure 2 plots the annualized standard deviation of the nominal effective exchange rate of sample countries: Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, South Korea, Thailand, and Turkey.

The findings indicate that CBT has a stabilizing impact on ERV. This effect sustains despite controlling for various internal and external important factors. The effects of crises (Asian financial crisis, Global financial crisis) increased ERV.

However, CBT buffers the crisis effect. Similarly, the effects of the US monetary and economic policy uncertainty are devastating for Asian currencies' volatility. Particularly the effect of Tapering contributes much to the ERV.

The rest of the paper is structured as follows: section two deals with a brief review of the literature, section three explains the research model and sample, section four presents results and section five concludes the paper.

2. Literature review

The central bank employs open-mouth operations (central bank communication) and open market operations (monetary policy tools) to steer the expectations of the financial market and ensure financial stability (Blinder, Ehrmann, Fratzscher, De Haan & Jansen, 2008; Ullah, Hussain, Nabi & Mubashir, 2022). CBT is concerned only with open-mouth operations. Eijffinger & Geraats (2006) define CBT as the extent to which central banks communicate information that is related to the policymaking process. Blinder et al. (2008) view central bank communication as "… the provision of information by the central bank to the public regarding such matters as the objectives of monetary policy, the monetary policy strategy, the economic outlook, and the outlook for future policy decisions" . Geraats (2002; 2014) indicates that CBT is aimed at the removal of asymmetric information between the central bank and economic agents.

Financial markets are responsive to central bank communication (Blinder et al., 2008). For instance, Ranaldo & Rossi (2010) study the response of financial markets to Swiss National Bank policy announcements, interviews, and speeches. They find that market participants are highly responsive to central bank communication. The evidence suggests that central bank communication engenders a significant price reaction. Central banks also provide some additional information, like voting records and minutes etc., that compliments monetary policy statements that are an important aspect of procedural transparency that helps in predicting future central bank actions. The publication of voting details of the meeting exposes the inclination of the committee about future action. For example, Gerlach-Kristen (2004) shows that if minority votes for lowering repo rates increase in a certain meeting that might signal future lower interest rates. Thus, voting records contain valuable information that can influence the decisions of economic agents. Several other studies confirm their findings (El-Shagi & Jung, 2015; Horváth, Šmídková & Zápal, 2011; Horváth & Jonášová, 2015). Rosa (2013b) reveals that the release of Federal Open Market Committee (FOMC) minutes lead to variations in treasury bond yields, S&P 500 and euro-dollar volatility, and trading volume.

CBT also relates to exchange rate fluctuations. Rosa (2013a) notes that "a hypothetical positive news shock of 100 basis points is associated with an appreciation of euro against the dollar roughly by 3.6%"(Rosa, 2013a). Rosa (2011) concludes that the high-frequency five minutes exchange rate returns are substantially driven by monetary announcements. FOMC policy decision announcements and balance risk statements account for a 15-22% explainable variance in exchange rate returns. Similarly, central bank announcements of long-term asset purchase programs also cause a depreciation in the US dollar and reduce long-term interest rates globally (Glick & Leduc, 2012). European Central Bank (ECB) statements on money growth and inflation stimulate volatility in the euro against the dollar. ECB Monetary policy statements have a significant impact on the volatility of exchange rates (Jansen & De Haan, 2005).

The literature that suggests the linkages between central bank communication and the exchange rate broadly covers advanced economies. Literature addressing emerging markets is scant (though burgeoning). However, the interest is growing in investigating the impact of central bank communication in emerging markets. For instance, Su, Ahmad & Wood (2020) & Bennani (2019) find a significant influence of People Bank of China communications on the money market and stock market respectively. Demiralp, Kara & Özlü (2012) demonstrate that monetary policy statements of the Central Bank of Turkey augment the predictability of future interest rates. Goyal & Arora (2012) unveiled the calming effect of Reserves Bank of India communication (monetary policy announcements, reviews, and speeches) on daily exchange rate mean and variance. Similarly, Brzeszczyński, Gajdka & Kutan (2017) conclude that the Central Bank of Poland's communication has a stabilizing effect on exchange rate volatility. Égert & Kočenda (2014) highlight the beneficial role of oral central bank communication when market uncertainty is high in European emerging markets.

The above studies have overlooked the overall impact of CBT on ERV. However, some exceptions are Eichler & Littke (2018) who conclude that communication about monetary policy objectives decreases the ERV. However, they do not address the implication of CBT for emerging markets. In contrast, Weber (2019a) reveals that CBT led to more fluctuations in developed economies and has an insignificant effect on developing economies. These contradictory findings motivate the research to combine the context of emerging markets to refine the findings.[2]

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[2] This implies that previous lietreature has broadly addressed the impact of Central Bank Communication on ERV. But the concern regarding increase in transparency of information provision by central banks based on CBT index has received little attention.

3. Research model and sample

Following Eichler & Littke (2018) and Weber (2019a), we specify our research model as.

$$ERV_{i,t} = \alpha_{i,t} + \tau_t + \beta_1 CBT_{i,t} + \sum_1^k \beta_k H_{k,i,t} + \varepsilon_{i,t} \qquad (1)$$

Where ERV is the exchange rate volatility of country i at time t, CBT is the central bank transparency of country i at time t, H_k refers to control variables, and $\alpha_{i,t}$ and τ_t represent country and time-fixed effects, respectively. For relevance, we discuss ERV and CBT here while all the study variables' definitions and sources are provided in Table A in Appendix.

ERV is an exchange rate volatility that is a statistical measure of fluctuations or movements in exchange rates. There are two standard approaches to measure volatility, Standard deviation, and the ARCH-type model. The latter performs better for high-frequency data. As our data are of yearly frequency, ERV is computed using an annualized standard deviation of the monthly nominal effective exchange rate (NEER). This approach is employed by various studies (Eichler & Littke, 2018; Weber, 2019a). NEER is sourced from Darvas (2012).

CBT is a measure of transparency in the monetary policy-making process based on information disclosure made by a central bank. The most commonly used CBT index is the Eijffinger - Geraats index (Eijffinger & Geraats2006). This index has five dimensions (i.e. political, economic, procedural, policy, and operational) and each dimension has three subcategories. Each dimension can reach a maximum score of three and the maximum score for subcategory is one. Therefore, CBT values range from 0 to 15. The CBT dataset is sourced from Dincer et al. (2019).

This study is focused on ten Asian emerging markets: Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, South Korea, Thailand, and Turkey over the period 1998 to 2015.

4. Empirical findings

4.1. Baseline estimation

The results of the estimation following Section 3 are presented here. The baseline results are presented in Table-1A where the panels BE-1 to BE-9 report the results for bivariate to multivariate regressions while controlling for the fixed effects.

The Panel BE-1 of Table 1A reports the results of bivariate regression, where NEER volatility (ERV) is regressed on CBT. CBT has a significant negative impact on ERV. Following the existing literature, various macroeconomic determinants of ERV are included. We begin with inflation volatility (BE-2), CBT is statistically significant with a negative coefficient even after including inflation volatility. Its effect is in line with the literature, i.e. higher inflation volatility leads to higher ERV. Broad money growth (BE-3) is taken as an additional explanatory variable with inflation volatility to account for money supply. However, this does not alter the CBT-dampening effect on ERV. Exchange rate fluctuations are also derived by appreciation or depreciation in a given year. So, the absolute change in the exchange rate is introduced in specification BE-4. The positive coefficient confirms the conjecture that relatively higher variation in the exchange rate causes more fluctuations. However, CBT has a significant reducing effect consistently. Exchange rates are sensitive to the economic growth of a country (Aftab, Ahmad, & Ismail, 2018) as a country with stable and higher economic growth is likely to have a stable and strong currency. GDP growth of respective countries is added to the baseline specification BE-5. Economic growth has a significant decreasing effect on ERV. CBT is also significant at 1% with a relative reduction in the coefficient. The trade-related aspects of a country also affect the ERV, so trade openness is included in specification BE-6. Moreover, to control for Financial openness, i.e. which is a measure of capital flow restrictions is also regressed on ERV in BE-7. The predicted sign of controls is in line with the theory. Financial openness only covers the period with the least restrictions on cross-border movement of funds. Therefore, another measure of capital flow restriction is added along with other regressors in specification BE-8. The results show that capital flow restrictions reduce the ERV. CBT effect is not confounded with capital controls. Furthermore, in BE-9, Forex reserves are included, as the literature suggests that higher reserves reduce the ERV (Nowak, Hviding & Ricci, 2004). The results of BE-09 validate the existing findings. Thus, our initial baseline estimation results suggest that an increase in CBT reduces ERV across a variety of related control factors including specifications.

The extant literature highlights various determinants of ERV. So, besides the baseline estimation, some additional determinants of ERV are specified to check the reliability and consistency of baseline estimation. These estimations are reported in Table-1B. Despite controlling for capital flow restrictions in panel BE-08 of Table-1A, ERV is also driven by net foreign assets (NFA) as it induces fluctuations in the exchange rate. NFA is regressed along with other explanatory variables (BE-10, Table-1B). The inclusion of NFA does not have a great impact on results, the CBT is significant at a 1% level. The indebtedness of the government is also related to higher variation in the exchange rate. Column BE-11 of Table-1B shows the inclusion of debt to GDP ratio of respective countries along with another measure of inflation volatility that captures month-over-month changes in inflation level. The overall estimates are consistent despite whichever measure of inflation is used. The exchange rate is also prone to interest rate movements but its effect on ERV can be attributed to inflation rates. Nonetheless, we included interest rate volatility instead of inflation volatility for robustness purposes. Interest rate volatility has a significant positive effect on ERV (BE-13). As far as CBT is concerned, it tends to have a dampening effect on ERV. Finally, we also control for current account fluctuations that account for an abrupt absolute change in the current account. These additional determinants do not affect the results but rather endorse baseline estimations.

The volatility dynamics of exchange rates differ across exchange rate regimes so would be the transparency of central banks (Weber, 2019a). Countries with floating exchange rate regimes can have more transparent central banks. We include three dummy variables that capture the specific exchange rate regimes in a particular year. When we include the exchange rate regimes along with other regressors, the exchange rate regimes are insignificant (BE-12). Nonetheless, CBT still has a reducing effect on ERV. The results are similar even if we only consider exchange rate regimes (BE-14) or include other control variables. (BE-12, BE-15). All these specifications reiterate the conjecture that CBT decreases the fluctuation in exchange rates.

4.2. Endogeneity concern

CBT may be correlated with error term creating an endogeneity issue (Eichler & Littke, 2018; Weber, 2019a). We use an instrumental approach to address this issue. In this approach, we use an instrumental variable (IV) that is correlated with CBT but uncorrelated with the ERV error term. Therefore, in instrumental regression new variable is estimated using IV (first lag of CBT in the study as

current year ERV cannot influence previous year CBT) firstly, and later on, this newly computed variable is used in place of CBT to predict ERV.

Hence, all the baseline estimations (Table 1A & Table 1B) are replicated with the same model specifications using instrumental variable regression. All results are virtually the same and validate the baseline estimations for Central Bank Transparency.

We gather the baseline estimations again using instrumental regression. This serves as a robustness check for earlier baseline estimates. Again, these estimations show that CBT has a consistently negative effect on ERV in all specifications (BE-1 to BE-16) in line with the baseline estimation (refer to Table 2A & Table 2B). The control variables are also significantly associated with ERV.

4.3. Inflation targeting

Apart from economic fundamentals, the exchange rate is also related to monetary policy regimes like inflation targeting (Cabral, Carneiro & Mollick, 2020) and central bank characteristics (Eichler & Littke, 2018). CBT plays a complementary role in the effective implementation of inflation targeting through anchoring inflation expectations as CBT reduces information asymmetries (Geraats, 2014; Montes & Gea, 2018). This study sample contains five inflation-targeting economies (i.e. Indonesia, South Korea, Turkey, the Philippines, and Thailand). So it becomes indispensable to examine the effect of IT on ERV and to unravel the influence of CBT for inflation-targeting countries. Accordingly, we begin with (IT-1) solely inflation targeting dummy while excluding controls. Then, other determinants are added (IT-2). IT has a significant reducing effect in both cases (refer to Table 3). However, the IT significance disappears as CBT is added to specification IT-3. Meanwhile, CBT has a significant dampening impact on ERV despite controlling for inflation targeting (refer to Table 3). This is owing to inflation targeting being an important component of CBT. The inclusion of CBT renders IT insignificant because central banks anchor the inflation expectation with the help of CBT. They also provide implicit policy signals through policy transparency. Therefore, CBT absorbs the effect of inflation targeting to some extent (Eichler & Littke, 2018). Surprisingly, the results remain unchanged even after the inclusion of central bank independence that measures the political and legislative autonomy of a central bank. These findings reveal that the beneficial role of CBT to reduce ERV is not merely restricted to inflation-targeting banks.

4.4. Institutional and central bank characteristics

In addition to monetary policy regimes, the country-specific institutional characteristics might affect the ERV along with the central bank independence (CBI) (Eichler & Littke, 2018; Weber, 2019a). It is imperative to consider such factors. The concerning results are presented in Table 4. Accordingly, in specification EST-1, CBI is solely included with CBT, which has a negative though insignificant effect. In addition to CBI, another institutional factor that could affect the exchange rate is credit market regulations. The FSI (Fraser Institute) measure of credit market regulations is included in specification EST-2, but its effect is insignificant. However, CBT has a decreasing effect on exchange rate volatility. Weber (2019a) argued it is necessary to control for an increase in government transparency as it might be confounded with central bank transparency. EST- 3 shows that government transparency has a negative but not significant impact on ERV and CBT is significant at a 5% level with a negative effect on ERV. Furthermore, Weber (2019 a) found that large changes in central bank transparency induce higher fluctuations in the exchange rate. EST-4 presents the result of including the first lag of large change in central bank transparency[3], and its effect comes insignificant. The insignificance could be attributed to a few observations for the large change in CBT. These empirical findings provide more robust evidence that CBT diminishes the Exchange rate volatility even after controlling for various institutional and central bank factors.

4.5. Role of CBT during crisis episodes

Table 5 reports the interaction model results of financial crises with CBT. The contingent effect of CBT with the Asian Financial Crisis (AFC) is not significant but positive. This implies central bank information provision during AFC amplified the exchange rate fluctuations. Almost all of the sample countries witnessed contagious detrimental shocks of AFC (Qureshi & Aftab, 2020). So possibly the weak economic fundamentals shattered the market participants' confidence which led to more volatility. Similarly, the Systematic Banking Crisis[4] interaction effect with CBT is highly significant with an increasing effect on ERV. This implies that the central bank information provision during the Banking Crisis

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[3] A Dummy Variable that takes values of 1 if change in transparency index is greater than or equal to one for respective country in sample.

[4] Laeven & Valencia (2018) defined the systematic banking crisis as an event that meets two conditions: 1) Significant signs of financial distress in the banking system and 2) Significant banking policy intervention measures in response to significant losses in the banking system.

raised the exchange rate fluctuations. On the other hand, the interacting effect of the Global Financial Crisis (GFC) with CBT reveals a significantly reduced effect on ERV during the GFC timeline. In sharp contrast to the AFC and Systematic Banking Crisis, this mitigating role of CBT could be attributed to lower interest rates and weak fundamentals of advanced economies (Santacreu, 2015). Thus, emerging markets witnessed historical capital flows (Cho, Choi, Kim, & Kim, 2016). Moreover, Emerging markets have learned a lesson from AFC and were better prepared this time to deal with any external shock with a considerably improved economic outlook (Park, Shin & Tian, 2019).

4.6. Dimensions of central bank transparency

Central Bank Transparency's role in reducing exchange rate volatility is obvious from previous sections. However, the CBT index is theoretically based on five dimensions (Geraats, 2002). Each dimension contains distinguishable and peculiar information that might have a heterogeneous effect on ERV. Therefore, these estimations are reported in Table 6. Starting with political transparency (DIM-1) at the contemporaneous level which is insignificant. Contrary to this, the first lag of political transparency (DIM-1L) has a significant decreasing effect on ERV. This shows that information relating to political objectives and the quantification of a target is more beneficial in the long run. For instance, the announcement of an inflation target can minimize volatility in the medium-term until market expectations are aligned with central banks (Cabral et al., 2020). As far as other dimensions are concerned, all have a significant reducing impact on exchange rate volatility, as expected. Interestingly, the economic transparency (DIM-2) parameter is considerably greater, which indicates the importance of economic transparency (regular information relating to economic fundamentals) in decreasing ERV. Furthermore, the release of minutes and voting records (DIM-3) also has a negative influence. The use of forward guidance and policy inclination (DIM-4), economic assessment, and transmission disturbance-related information (DIM-05) also plays its part in decreasing volatility.

4.7. Contingent effect of central bank transparency

All the above estimations have considered the only direct linear impact of CBT on ERV. However, literature shows that various macroeconomic factors moderate the relationship. For instance, Eichler and Littke (2018) show that CBT decreasing effect is conditional on inflation volatility. Hence, it becomes imperative to account for such non-linearities and conditional impact. Accordingly, the

estimations for CBT interaction terms with different macroeconomic factors are presented in Table 7.

The interactions model estimation findings are not conclusive for inflation volatility, government debt, net foreign assets, external debt, and economic growth. There is no such evidence regarding the conditional effect of CBT in these cases. However, there is conclusive evidence for the increasing effect of CBT conditional upon trade openness (INT-10) and interest rate volatility. CBT increases ERV if a country is more dependent on trade. Similarly, in high-interest rate (INT-1) times, CBT amplifies fluctuations as information may contain noisy signals. In contrast, the specification INT-6 provides significant evidence that CBT's decreasing effect on ERV is contingent on broad money. This also holds for the current account balance (INT-6) and net domestic credit. INT-7 suggests that CBT's negative influence is more pronounced if the share of credit to the domestic sector is large.

4.8. Robustness check for external shocks

US monetary and economic policies uncertainty effects

Since the turn of the twenty-first century, emerging markets have witnessed a great transition to liberalized and integrated economies (Aftab et al., 2018; Qureshi, Kutan, Ismail, & Ghee, 2017; Nain and Kamaiah, 2020). This transition has been achieved at the cost of vulnerability spillovers from advanced economies, particularly from the United States (Aftab, Ahmad, Ismail, & Phylaktis, 2021). Fed monetary policy actions and words induce volatility in emerging markets (Dedola, Rivolta & Stracca, 2017; Maćkowiak, 2007). It is often titled the central bank of the world owing to U.S. economic influence on the globalized world. The Fed's monetary policymaking process is considerably transparent and open. But the uncertainty regarding U.S. Monetary policy is intensified since GFC (Husted, Rogers & Sun et al., 2017). The uncertainty was at its full bloom during the GFC and later in quantitative easing episodes. The literature shows that Asian emerging markets are vulnerable to US monetary policy uncertainty (MPU). MPU tends to increase the volatility in Asian exchange rates (Park, Qureshi, Tian & Villaruel, 2020). Furthermore, the U.S. economic policy uncertainty also has a significant impact on Asian financial markets (Kido, 2016, 2018; Zhang, Lei, Ji & Kutan, 2019). Hence, it is imperative to control for these factors in addition to internal factors for CBT and ERV linkage.

The US monetary and economic policies effects are shown in Table 8. We have used the annualized standard deviation of monthly Baker, Bloom & Davis (2016)

economic policy index (EPU) index and Husted et al.'s (2017) monetary policy uncertainty (MPU) index to capture US Policy uncertainty. MPU has a significant amplifying influence on ERV as PU-1 estimations show. While there is no such evidence found for EPU (PU-2). Contrarily, on interacting uncertainty indices with the GFC dummy, a different picture emerges. Like, PU-3 indicates that MPU has a significantly increasing influence during the GFC on ERV. The same is true for EPU (PU-4). Predominantly, CBT remains statistically significant across all specifications with a negative influence on ERV.

Tapering tantrum effect

The launch of the Fed's quantitative easing (QE) program led to capital flows from advanced markets to emerging markets and resulted in later's exchange rate appreciation (Cho et al., 2016). No sooner the U.S. economy started showing signs of recovery, the Fed's announcement of gradual discontinuity of assets purchase sent a shock wave to emerging financial markets and emerging markets witnessed capital outflows, which led to a depreciation of their currencies against the US dollar (Aizenman et al., 2016; Eichengreen & Gupta, 2015; Rai & Suchanek, 2014). We also take into account the tapering effect[5] while examining the CBT role in curbing ERV. The estimates reported in Table 9 show that Tapering Tantrum has a significant positive effect on ERV. Column T-1 of Table 9 indicates that the exchange rate fluctuation was relatively higher during the Tapering episode.

The total effect of CBT on ERV is negative even after including the CBT and Tapering interaction term in T-2. However, the buffering effect is reduced which may be owing to information asymmetry during the Tapering episode. Besides, CBT has certain limits because some central banks have achieved an intermediate optimal degree of transparency (van Der Cruijsen, Eijffinger & Hoogduin, 2010). Finally, T-3 indicates that the effect of MPU is more pronounced during the tapering episode. Nonetheless, CBT has an overall stabilizing effect on ERV despite considering various external factors.

4.9. Robustness test for alternate measures of ERV

We have also employed other measures of exchange rate like real effective rate and bilateral rate (local currency per unit USD) and estimated ERV based on

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[5]   Tapering Tantrum is dummy variable that takes value of 1 for the Year 2013. As our primary concern is to disentangle the pure impact of Tapering Announcements on ERV. Therefore, we only consider year 2013 following the timeline of Rai & Suchanek (2014).

these rates[6]. We have reexamined the CBT effect on ERV following above all specifications. These results are in line with our earlier results such that CBT deters ERV irrespective of which measure of ERV is used.

5. Conclusion

Central banks were known for their secrecy during the 1990s. However, they have gone through a remarkable transition during the last two decades and a multitude of literature shed light on a steady increase in central bank transparency. The information provision by central banks has a great impact on financial markets, which is obvious from recent literature. On the other hand, emerging markets are in transition from developing to advanced economies and are inherently more volatile and exhibit distinct behavior compared to advanced economies (Aftab et al. 2020). We wonder whether CBT can help to manage the exchange rate volatility in Asian emerging markets. Existing literature addressing the impact of central bank transparency on ERV in the case of the emerging market's context is scant and inconclusive.

Empirical findings show that CBT alleviates ERV. The relationship remains stable despite controlling for various other determinants of exchange rate volatility. Instrumental variable estimation also corroborates the results of baseline estimations. Furthermore, the inclusion of various institutional and central bank characteristics (Inflation Targeting and Central Bank Independence) did not alter the results. However, interaction effects estimations reveal that the central bank transparency-reducing effect diminishes at a higher level of interest rates. Finally, we also control for U.S. policy uncertainty to account for external factors and note that the CBT stabilizing effect on exchange rate fluctuations remains unchanged.

This research highlights the dividends of increasing transparency in stabilizing the exchange rate. Central bank transparency can play a strengthening role in maintaining financial stability in emerging markets. The central bank's information provisions augment the shared understanding regarding monetary policy. The shared understanding reduces the disagreement in forecasts. Thus, CBT serves as an instrument for managing market expectations effectively. Given the benefits of CBT, policymakers should still act cautiously as there are certain limits to central bank transparency.

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[6] These results are not presented here for brevity concerns but are available upon request.

References

1. Aftab, M., Ahmad, R. & Ismail, I. (2018). Examining the uncovered equity parity in the emerging financial markets. *Research in International Business and Finance*, 45, 233-242.
2. Aftab, M., Anifowose, A. D., Lau, E. & Ismail, I. (2020). What does currency order flow tell about spot exchange rates of Asian emerging markets?. *Borsa Istanbul Review*. 1-24.
3. Aftab, M., Ahmad, R., Ismail, I. & Phylaktis, K. (2021). Economic Integration and the Currency and Equity Markets Nexus. *International Journal of Finance & Economics*, 26(4), 5278-5301.
4. Aizenman, J., Chinn, M. D., & Ito, H. (2016). Monetary policy spillovers and the trilemma in the new normal: Periphery country sensitivity to core country conditions. *Journal of International Money and Finance*, 68, 298-330.
5. Andrieş, A. M., Nistor, S. & Sprincean, N. (2020). The impact of central bank transparency on systemic risk—Evidence from Central and Eastern Europe. *Research in International Business and Finance*, 51(April 2018), 1–14. https://doi.org/10.1016/j.ribaf.2018.06.002
6. Bahmani-Oskooee, M. & Panthamit, N. (2006). Exchange rate overshooting in East Asian countries. *Emerging Markets Finance and Trade*, 42(4), 5-18.
7. Baker, S. R., Bloom, N. & Davis, S. J. (2016). Measuring economic policy uncertainty. *Quarterly Journal of Economics*, 131(4), 1593–1636. https://doi.org/10.1093/qje/qjw024
8. Balli, H. O. & Sørensen, B. E. (2013). Interaction effects in econometrics. *Empirical Economics*, 45(1), 583–603. https://doi.org/10.1007/s00181-012-0604-2
9. Beckmann, J., & Czudaj, R. (2017). The impact of uncertainty on professional exchange rate forecasts. *Journal of International Money and Finance*, 73, 296-316.
10. Bennani, H. (2019). Does People's Bank of China communication matter? Evidence from stock market reaction. *Emerging Markets Review*, 40(May), 100617. https://doi.org/10.1016/j.ememar.2019.05.002
11. Blinder, A. S., Ehrmann, M., Fratzscher, M., De Haan, J. & Jansen, D. J. (2008). Central bank communication and monetary policy: A survey of theory and evidence. *Journal of Economic Literature*, 46(4), 910–945. https://doi.org/10.1257/jel.46.4.910

12. Brzeszczyński, J., Gajdka, J. & Kutan, A. M. (2017). Central bank communication and the impact of public announcements of new monetary policy data on the reaction of foreign exchange and stock markets: Evidence from Poland. *Argumenta Oeconomica*, 39(2), 21–60. https://doi.org/10.15611/aoe.2017.2.02

13. Chinn, M. D. & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1), 163–192.

14. Cho, J. W., Choi, J. H., Kim, T., & Kim, W. (2016). Flight-to-quality and correlation between currency and stock returns. *Journal of Banking & Finance*, 62, 191-212.

15. Cabral, R., Carneiro, F. G. & Mollick, A. V. (2020). Inflation targeting and exchange rate volatility in emerging markets. *Empirical Economics*, 58(2), 605–626. https://doi.org/10.1007/s00181-018-1478-8

16. Darvas, Z. (2012). Real effective exchange rates for 178 countries: a new database. Department of Mathematical Economics and Economic Analysis, Corvinus~….

17. Dedola, L., Rivolta, G. & Stracca, L. (2017). If the Fed sneezes, who catches a cold? Journal of International Economics, 108, S23–S41. https://doi.org/10.1016/j.jinteco.2017.01.002

18. Demiralp, S., Kara, H. & Özlü, P. (2012). Monetary policy communication in Turkey. *European Journal of Political Economy*, 28(4), 540–556. https://doi.org/10.1016/j.ejpoleco.2012.06.001

19. Dincer, N., Eichengreen, B. & Geraats, P. (2019). Transparency of Monetary Policy in the Postcrisis World. In D. Mayes, P. Siklos, & J.-E. Sturm (Eds.), *The Oxford Handbook of the Economics of Central Banking* (pp. 287–335). Oxford University Press.

20. Dincer, N. N., & Eichengreen, B. (2014). Central bank transparency and independence: Updates and new measures. *International Journal of Central Banking*, 10(1), 189–253.

21. Égert, B., & Kočenda, E. (2014). The impact of macro news and central bank communication on emerging European forex markets. *Economic Systems*, 38(1), 73–88. https://doi.org/10.1016/j.ecosys.2013.01.004

22. Ehrmann, M., Eijffinger, S. & Fratzscher, M. ??? (2012). The Role of Central Bank Transparency for Guiding Private Sector Forecasts. *The Scandinavian Journal of Economics* 114(3), 1018–1052.

23. Eichengreen, B. & Gupta, P. (2015). Tapering talk: The impact of expectations of reduced Federal Reserve security purchases on emerging markets. *Emerging Markets Review*, 25, 1–15. https://doi.org/10.1016/j.ememar.2015.07.002

24. Eichler, S. & Littke, H. C. N. (2018). Central bank transparency and the volatility of exchange rates. *Journal of International Money and Finance*, 89, 23–49. https://doi.org/10.1016/j.jimonfin.2018.07.006

25. Eijffinger, S. C. W., & Geraats, P. M. (2006). How transparent are central banks? *European Journal of Political Economy*, 22(1), 1–21. https://doi.org/10.1016/j.ejpoleco.2005.09.013

26. El-Shagi, M. & Jung, A. (2015). Have minutes helped markets to predict the MPC's monetary policy decisions? *European Journal of Political Economy*, 39(July 2013), 222–234. https://doi.org/10.1016/j.ejpoleco.2015.05.004

27. Fernández, A., Klein, M. W., Rebucci, A., Schindler, M. & Uribe, M. (2016). Capital control measures: A new dataset. *IMF Economic Review*, 64(3), 548–574.

28. Garriga, A. C. (2016). Central Bank Independence in the World: A New Data Set. *International Interactions*, 42(5), 849–868. https://doi.org/10.1080/03050629.2016.1188813

29. Geraats, P. (2014). Monetary Policy Transparency. In CESIFO WORKING PAPER. https://doi.org/10.1093/oxfordhb/9780199917693.013.0003

30. Geraats, P. M. (2002). Central bank transparency. *The Economic Journal*, 112(483), F532--F565.

31. Geraats, P. M. (2006). *Transparency of Monetary Policy: Theory and Practice* (Vol. 52). https://doi.org/10.1093/cesifo/ifj004

32. Gerlach-Kristen, P. (2004). Is the MPC's voting record informative about future UK monetary policy? *Scandinavian Journal of Economics*, 106(2), 299–313. https://doi.org/10.1111/j.0347-0520.2004.00359.x

33. Glick, R. & Leduc, S. (2012). Central bank announcements of asset purchases and the impact on global financial and commodity markets. *Journal of International Money and Finance*, 31(8), 2078–2101. https://doi.org/10.1016/j.jimonfin.2012.05.009

34. Goyal, A., & Arora, S. (2012). The Indian exchange rate and Central Bank action: An EGARCH analysis. *Journal of Asian Economics*, 23(1), 60–72. https://doi.org/10.1016/j.asieco.2011.09.001

35. Hollyer, J. R., Rosendorff, B. P., & Vreeland, J. R. (2017). Measuring Transparency. *Political Analysis*, 22(4), 413–434. https://doi.org/10.1093/pan/mpu001

36. Horváth, R. & Jonášová, J. (2015). Central banks' voting records, the financial crisis and future monetary policy. *European Journal of Political Economy*, 38, 229–243. https://doi.org/10.1016/j.ejpoleco.2015.03.003

37. Horváth, R., Šmídková, K., & Zápal, J. (2011). *Central banks' voting records and future policy* (No. 37/2011).

38. Husted, L., Rogers, J., & Sun, B. (2017). Monetary Policy Uncertainty. *In International Finance Discussion Paper* (Vol. 2017, Issue 1215). https://doi.org/10.17016/ifdp.2017.1215

39. Ilzetzki, E., Reinhart, C. M., & Rogoff, K. S. (2019). Exchange arrangements entering the twenty-first century: Which anchor will hold? *The Quarterly Journal of Economics*, 134(2), 599–646.

40. Jansen, D. J. & De Haan, J. (2005). Talking heads: The effects of ECB statements on the euro-dollar exchange rate. *Journal of International Money and Finance*, 24(2), 343–361. https://doi.org/10.1016/j.jimonfin.2004.12.009

41. Jitmaneeroj, B., Lamla, M. J., & Wood, A. (2019). The implications of central bank transparency for uncertainty and disagreement. *Journal of International Money and Finance*, 90, 222–240. https://doi.org/10.1016/j.jimonfin.2018.10.002

42. Kido, Y. (2016). On the link between the US economic policy uncertainty and exchange rates. *Economics Letters*, 144, 49–52. https://doi.org/10.1016/j.econlet.2016.04.022

43. Kido, Y. (2018). The transmission of US economic policy uncertainty shocks to Asian and global financial markets. *North American Journal of Economics and Finance*, 46, 222–231. https://doi.org/10.1016/j.najef.2018.04.008

44. Kim, N. K. (2018). Transparency and currency crises. *Economics and Politics*, 30(3), 394–422. https://doi.org/10.1111/ecpo.12117

45. Kwabi, F. O., Boateng, A. & Du, M. (2020). Impact of central bank independence and transparency on international equity portfolio allocation: A cross-country analysis. *International Review of Financial Analysis*, 69, 101464. https://doi.org/10.1016/j.irfa.2020.101464

46. Laeven, M. L., & Valencia, M. F. (2018). Systemic banking crises revisited. International Monetary Fund.

47. Lehtimäki, J. & Palmu, M. (2022). Who Should You Listen to in a Crisis? Differences in Communication of Central Bank Policymakers. *Journal of Central Banking Theory and Practice*, 11(3), 33-57.

48. Liang, C. C., Troy, C., & Rouyer, E. (2020). US uncertainty and Asian stock prices: Evidence from the asymmetric NARDL model. *The North American Journal of Economics and Finance*, 51, 101046.

49. Maćkowiak, B. (2007). External shocks, U.S. monetary policy and macroeconomic fluctuations in emerging markets. *Journal of Monetary Economics*, 54(8), 2512–2520. https://doi.org/10.1016/j.jmoneco.2007.06.021

50. Minea, A., & Tapsoba, R. (2014). Does inflation targeting improve fiscal discipline? *Journal of International Money and Finance*, 40, 185–203. https://doi.org/10.1016/j.jimonfin.2013.10.002

51. Montes, G. C. & Gea, C. (2018). Central bank transparency, inflation targeting and monetary policy: a panel data approach. *Journal of Economic Studies*, 45(6), 1159–1174. https://doi.org/10.1108/JES-07-2017-0211

52. Olanipekun, I. O., Olasehinde-Williams, G., & Güngör, H. (2019). Impact of economic policy uncertainty on exchange market pressure. *Sage Open*, 9(3), 2158244019876275.

53. Nain, Z. & Kamaiah, B. (2020). Uncertainty and Effectiveness of Monetary Policy: A Bayesian Markov Switching-VAR Analysis. *Journal of Central Banking Theory and Practice*, 9(s1), 237-265.

54. Neuenkirch, M. (2012). Managing financial market expectations: The role of central bank transparency and central bank communication. *European Journal of Political Economy*, 28(1), 1–13. https://doi.org/10.1016/j.ejpoleco.2011.07.003

55. Neuenkirch, M. (2013). Central bank transparency and financial market expectations: The case of emerging markets. *Economic Systems*, 37(4), 598–609. https://doi.org/10.1016/j.ecosys.2013.07.003

56. Nowak, M., Hviding, K., & Ricci, L. A. (2004). Can Higher Reserves Help Reduce Exchange Rate Volatility? *IMF Working Papers*, 04(189), 1. https://doi.org/10.5089/9781451859645.001

57. Papadamou, S., Sidiropoulos, M., & Spyromitros, E. (2014). Does central bank transparency affect stock market volatility? *Journal of International Financial Markets, Institutions and Money*, 31(1), 362–377. https://doi.org/10.1016/j.intfin.2014.05.002

58. Papadamou, S., Sidiropoulos, M., & Spyromitros, E. (2016). Central bank transparency and exchange rate volatility effects on inflation-output volatility. *Economics and Business Letters*, 5(4), 125. https://doi.org/10.17811/ebl.5.4.2016.125-133

59. Park, D., Qureshi, I., Tian, S., & Villaruel, M. L. (2020). Impact of US monetary policy uncertainty on Asian exchange rates. *Economic Change and Restructuring*, 1–10. https://doi.org/10.1007/s10644-020-09307-3

60. Park, D., Shin, K., & Tian, G. (2019). Debt and Depth of Recessions. *Asian Development Bank Economics Working Paper Series*, (579).

61. Pires Tiberto, B., Oliveira de Moraes, C., & Pio Corrêa, P. (2020). Does transparency of central banks communication affect credit market? Empirical evidence for advanced and emerging markets. *North American Journal of Economics and Finance*, 53, 101207. https://doi.org/10.1016/j.najef.2020.101207

62. Qureshi, S., & Aftab, M. (2020). Exchange rate interdependence in ASEAN markets: a wavelet analysis. *Global Business Review*, 0972150920919371.

63. Qureshi, F., Kutan, A. M., Ismail, I., & Gee, C. S. (2017). Mutual funds and stock market volatility: An empirical analysis of Asian emerging markets. *Emerging Markets Review*, 31, 176-192.

64. Qureshi, S., Rehman, I.U. and Qureshi, F. (2018), Does gold act as a safe haven against exchange rate fluctuations? The case of Pakistan rupee, *Journal of Policy Modeling*, (40)4, 685-708.

65. Rai, V. & Suchanek, L. (2014). The Effect of the Federal Reserve ' s Tapering Announcements on Emerging Markets. *Bank of Canada Working Paper*, 1–42.

66. Ranaldo, A. & Rossi, E. (2010). The reaction of asset markets to Swiss National Bank communication. *Journal of International Money and Finance*, 29(3), 486–503. https://doi.org/10.1016/j.jimonfin.2009.07.004

67. Rosa, C. (2011). The high-frequency response of exchange rates to monetary policy actions and statements. *Journal of Banking and Finance*, 35(2), 478–489. https://doi.org/10.1016/j.jbankfin.2010.09.008

68. Rosa, C. (2013a). Market efficiency broadcasted live: ECB code words and euro exchange rates. *Journal of Macroeconomics*, 38(PB), 167–178. https://doi.org/10.1016/j.jmacro.2013.07.008

69. Rosa, C. (2013b). The Financial Market Effect of FOMC Minutes. *FRB New York Economic Policy Review,* December, 67–81.

70. Santacreu, A. M. (2015). Innovation, diffusion, and trade: Theory and measurement. *Journal of Monetary Economics*, 75, 1-20.

71. Seelajaroen, R., Budsaratragoon, P. & Jitmaneeroj, B. (2019). Do monetary policy transparency and central bank communication reduce interest rate disagreement? *Journal of Forecasting*, January 2019, 368–393. https://doi.org/10.1002/for.2631

72. Su, S., Ahmad, A. H. & Wood, J. (2020). How effective is central bank communication in emerging economies? An empirical analysis of the chinese money markets responses to the people's bank of China's policy communications. *Review of Quantitative Finance and Accounting*, 54(4), 1195–1219. https://doi.org/10.1007/s11156-019-00822-7

73. Trabelsi, E. (2016). Central bank transparency and the consensus forecast: What does The Economist poll of forecasters tell us? *Research in International Business and Finance*, 38, 338–359. https://doi.org/10.1016/j.ribaf.2016.04.004

74. Ullah, S., Hussain, S. I., Nabi, A. A., & Mubashir, K. A. (2022). Role of Regulatory Governance in Financial Stability: A Comparison of High and Low Income Countries. *Journal of Central Banking Theory and Practice*, 11(1), 207-226.

75. van Der Cruijsen, C. A. B., Eijffinger, S. C. W., & Hoogduin, L. H. (2010). Optimal central bank transparency. *Journal of International Money and Finance*, 29(8), 1482–1507. https://doi.org/10.1016/j.jimonfin.2010.06.003

76. van der Cruijsen, C., & Demertzis, M. (2007). The impact of central bank transparency on inflation expectations. *European Journal of Political Economy*, 23(1), 51–66. https://doi.org/10.1016/j.ejpoleco.2006.09.009

77. Weber, C. S. (2018). Central bank transparency and inflation (volatility) – new evidence. *International Economics and Economic Policy*, 15(1), 21–67. https://doi.org/10.1007/s10368-016-0365-z

78. Weber, C. S. (2019a). The effect of central bank transparency on exchange rate volatility. *Journal of International Money and Finance*, 95(174), 165–181. https://doi.org/10.1016/j.jimonfin.2019.04.002

79. Weber, C. S. (2019b). The unemployment effect of central bank transparency. *Empirical Economics*, 4(May 2018). https://doi.org/10.1007/s00181-019-01741-1

80. Zhang, D., Lei, L., Ji, Q., & Kutan, A. M. (2019). Economic policy uncertainty in the US and China and their impact on the global markets. *Economic Modelling*, 79, 47–56. https://doi.org/10.1016/j.econmod.2018.09.028

Table 1A: Baseline Estimation – I

Dependent variable: NEER volatility										
Explanatory Variables	Exp. Sign	BE-1	BE-2	BE-3	BE-4	BE-5	BE-6	BE-7	BE-8	BE-9
Constant	..	3.386***	3.016***	2.741***	2.663***	2.737***	2.734***	2.688***	3.542***	3.508***
CBT	+/-	-0.190***	-0.151***	-0.132***	-0.126***	-0.109***	-0.109***	-0.111***	-0.110***	-0.118***
Inflation Volatility	+		0.020***	0.019***	0.014***	0.011***	0.011***	0.010**	0.009**	0.010**
Broad Money Growth	+			0.009	0.010*	0.009*	0.009*	0.010**	0.010**	0.010**
Exchange Rate Growth	+				0.0004***	0.0003**	0.0003**	0.0003**	0.0004**	0.0004***
Economic Growth	-					-0.040**	-0.039**	-0.035*	-0.034*	-0.034
Trade Openness	+						0.001			
Financial Openness	+							0.291*		
Capital Flow Controls	-								-1.135**	-0.940**
Forex Reserves	-									-0.359*
Observations		180	180	180	180	180	180	180	180	180
Adjusted R-squared		0.352	0.400	0.417	0.435	0.454	0.451	0.458	0.469	0.476

This Table shows Fixed effects estimations for the main baseline model with White robust standard errors. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level.

Table 1B: Baseline Estimation – II

Dependent variable: NEER volatility								
Explanatory Variables	Exp. sign	BE-10	BE-11	BE-12	BE-13	BE-14	BE-15	BE-16
Constant	..	2.688***	3.39***	3.417***	3.197***	2.925***	2.668***	3.398***
Central Bank Transparency	+/-	-0.112***	-0.125***	-0.105***	-0.148***	-0.133***	-0.125***	-0.112***
Inflation Volatility	+	0.010*		0.001				0.009***
Economic Growth	-	-0.035**		-0.033*	-0.037***			-0.015
Financial Openness	+	0.296***						
Exchange Rate Growth	+	0.0003***	0.0004***	0.0004***				0.0004***
Trade Openness	+	0.001						
Broad Money Growth	+	0.01	0.010**	0.008			0.006	0.010***
Net Foreign Assets	+	0.01						
InflationM Volatility	+		0.079**				0.065*	
Capital Flow Controls	-		-1.344***	-0.957**				-1.094**
Government Debt	+		0.341					
Crawling Peg	-			-0.174		-0.159	-0.152	
Managed Float	+			0.245		0.280	0.271	
Free Floating	+			0.845		1.524***	1.176***	
Interest Rate volatility	+				0.321***			
Forex Reserves	-				-0.537***			-0.457**
Current Account Shock	+				0.048**			0.057***
Observation		180	180	180	180	180	180	180
Adj. R- Squared		0.452	0.452	0.483	0.438	0.432	0.442	0.496

This Table shows robustness check for additional control variables with fixed effects estimations with White robust standard errors. The asterisk indicates that respective variable coefficient is statistically significant and different from zero as follow: Three asterisks *** indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level.

Table 2A: Instrumental Regression Estimates (Baseline - I)

Variables	Exp. Sign	BE-1	BE-2	BE-3	BE-4	BE-5	BE-6	BE-7	BE-8	BE-9
Constant	..	3.70***	3.313***	2.897***	2.857***	2.60***	2.922***	2.849***	3.466***	3.466***
Central Bank Transparency	+/-	-0.240***	-0.195***	-0.158***	-0.159**	-0.107***	-0.155**	-0.148**	-0.102***	-0.112***
Inflation Volatility	+		0.015***	0.014***	0.014**	0.017***	0.015***	0.013***	0.0146***	0.0145***
Broad Money Growth	+			0.011***	0.011***	0.008	0.010*	0.011**	0.009	0.009
Exchange Rate Growth	+				0.0004***	0.0006***	0.0004***	0.0004***	0.0006***	0.0005***
Economic Growth	-					-0.028	-0.021	-0.022	-0.017	-0.0131
Trade Openness	+						0.010**			
Financial Openness	+							0.173		
Capital Flow Controls	-								-1.267***	-1.123***
Forex Reserves	-									-0.375**
Observations		170	170	170	170	170	170	170	170	170
Adj- R-squared		0.297	0.341	0.377	0.392	0.379	0.407	0.398	0.402	0.409
Instrument		CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}

This table shows the results of instrumental variable estimations, replicates the main baseline model. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level

Table 2B: Instrumental Regression Estimates (Baseline – II)

Variables	Exp. Sign	BE-10	BE-11	BE-12	BE-13	BE-14	BE-15	BE-16
Constant	..	2.525***	2.825***	3.368***	3.164***	2.734***	2.52***	3.44***
Central Bank Transparency	+/-	-0.099***	-0.093***	-0.103***	-0.150***	-0.120***	-0.118***	-0.112***
Inflation Volatility	+	0.017***		0.006				0.013***
Economic Growth	-	-0.028		-0.016	-0.023			-0.013
Financial Openness	+	0.234*						
Exchange Rate Growth	+	0.0006***	0.0006***	0.0006***				0.001***
Trade Openness	+	0.008*						
Broad Money Growth	+	0.009	0.009*	0.006			0.004	0.008
Net Foreign Assets	+	0.001						
Inflation Volatilitym	+		0.120**				0.077	
Capital Flow Controls	-		-1.31***	-1.118**				-1.169**
Government Debt	+		0.786*					
Crawling Peg	-			-0.152		-0.109	-0.098	
Managed Float	+			0.351		0.418*	0.393*	
Free Floating	+			0.934		1.572***	1.294***	
Interest Rate volatility	+				0.373**			
Forex Reserves	-				-0.537***			-0.396**
Current Account Shock	+				0.034			0.035
Observations		170	170	170	170	170	170	170
Adj. R-squared		0.386	0.412	0.425	0.330	0.359	0.367	0.411
Instrument		CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}	CBT_{t-1}

This Table shows results of instrumental variable estimations that replicates the robustness test for additional control variables. The asterisk indicates that respective variable coefficient is statistically significant and different from zero as follow: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level.

Table 3: Inflation Targeting

Variables	Exp. sign	IT-1	IT-2	IT-3	IT-4
Constant	..	2.431***	2.582***	3.297***	3.937***
Inflation Targeting	+/-	-0.834***	-0.667***	-0.225	-0.254
Central Bank Transparency	-			-0.093**	-0.112***
Central Bank Independence	-/+				-0.982
Global Financial Crisis	+				0.342**
Control Variables	..	Not Included	Included	Included	Included
Observations	180	180	180	150	
Adj. R-squared	0.484	0.460	0.475	0.524	

This Table show Fixed effects estimations that account for effect of inflation targeting (IT) on ERV. The asterisk indicates that respective variable coefficient is statistically significant and different from zero as follow: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 4: Institutional Characteristics

Dependent variable: NEER volatility					
Explanatory Variables	Exp. Sign	IC-1	IC-2	IC-3	IC-4
Constant	..	4.062***	3.570***	4.249***	2.949***
Central Bank Transparency	-/+	-0.117***	-0.065**	-0.075***	-0.062**
Central Bank Independence	-/+	-0.661	-0.975	-1.446	
ΔCredit Market Regulations	-		-0.114		
ΔGovernment Transparency	-/+			-0.075	
Large $\Delta CBT_{t-1} \times CBT$	-				-0.020
Control Variables	..	Included	Included	Included	Included
Observations	150	120	120	160	
Adj. R-squared	0.511	0.395	0.485	0.351	

This Table shows fixed effects estimations for the effect of various institutional characteristics (IC) on ERV. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 5: Role of CBT during Financial Crisis

Variables	Exp. sign	Asian	GFC	Banking	Banking-2
Central Bank Transparency	-/+	-0.082***	-0.136***	-0.086***	-0.090***
Asian Crisis	+	0.228			
Asian Crisis × CBT	-/+	0.059			
Global Financial Crisis	+		1.034***		1.012***
GFC*CBT	-/+		-0.096**		-0.089**
Banking Crisis × CBT	-/+			0.181**	0.130***
Banking Crisis	+			-0.331	
Control Variables	..	Included	Included	Included	Included
Observations		180	180	180	180
Adj. R-squared		0.475	0.477	0.490	0.514

This Table show Fixed effects estimations considering crises. The asterisk indicates that respective variable coefficient is statistically significant and different from zero as follow: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 6: CBT Dimensions

Variables	Exp. sign	DIM-1 Political	DIM-1L	DIM-2 Economic	DIM-3 Procedural	DIM-4 Policy	DIM-5 Operational
Political Transparency	-	-0.065					
Political Transparency$_{t-1}$	-		-0.385*				
Economic Transparency	-			-0.549***			
Procedural Transparency	-				-0.287***		
Policy Transparency	-					-0.372***	
Operational Transparency	-						-0.253***
Control Variables	..	Included	Included	Included	Included	Included	Included
Observations		180	170	180	180	180	180
Adj. R-squared		0.417	0.487	0.487	0.441	0.487	0.442

This Table shows Fixed effects estimations for five dimensions (DIM) of CBT. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. DIM (Dimension #) refers to Model Specification Number that includes each of the five CBT dimensions, respectively.

Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 7: Interactions Models

Variables	INT-1	INT-2	INT-3	INT-4	INT-5	INT-6	INT-7	INT-8	INT-9	INT-10	INT-11
Central Bank Transparency	-0.101***	-0.120***	-0.117***	-0.127***	-0.119***	-0.113***	-0.127***	-0.120***	-0.102**	-0.110***	-0.115***
Interest Rate Volatility	0.017**										
CBT ×Interest Rate Volatility	0.005**										
Government Debt		0.208									
Government Debt × CBT		0.218									
Inflation Volatility			0.019**								
Inflaion Volatility × CBT			0.003								
Net Foreign Assets				0.055							
Net Foreign Assets × CBT				0.0007							
Forex Reserves					-0.379*						
Forex Reserves × CBT					-0.111						
Current Account						-0.018					
Current Account × CBT						-0.017**					
Net Domestic Credit							-1.60*				
Net Domestic Credit ×CBT							-0.396*				
Broad Money Growth								0.002			
Broad Money Growth × CBT								-0.004**			
External Debt									0.016***		
External Debt × CBT									0.001		
Trade Openness× CBT										0.003**	
Trade Openness										0.007	
Economic Growth											-0.026
Economic Growth × CBT											0.010
Control variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	180	180	180	180	180	180	180	180	144	180	180
Adj. R-squared	0.471	0.458	0.462	0.459	0.462	0.474	0.470	0.470	0.630	0.469	0.469

This Table show Fixed effects estimations for Interactions (INT) effect of CBT with various variables on ERV. The asterisk indicates that respective variable coefficient is statistically significant and different from zero as follow: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Following Balli & Sørensen (2013) and Weber (2019a) the interactions terms are included after Subtracting Country wise mean to avoid spurious regression. Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 8: US - Policy Uncertainty Shock

Variables	PU- 1	PU- 2	PU- 3	PU- 4
Central Bank Transparency	–0.125***	–0.129***	–0.139***	–0.139***
US-MPU	0.143*			
US-EPU		0.153		
US-EPU × GFC			0.330**	
US-MPU × GFC				0.234**
Control Variables	Included	Included	Included	Included
Observations	180	180	180	180
Adj. R-squared	0.476	0.475	0.493	0.494

This Table shows Fixed effects estimations of policy uncertainty (PU) effects. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Control variables estimates are not presented here for brevity concerns but are available with authors.

Table 9: FED - Unconventional Monetary Policy Spillover & Tapering Announcements Aftermath

Variables	T-1	T-2	T-3
Central Bank Transparency	–0.111***	–0.113***	–0.111***
Taper Tantrum	0.422***		
Taper Tantrum × CBT		0.056***	
Taper Tantrum × US-MPU			0.351***
Control Variables	Included	Included	Included
Observations	180	180	180
Adj. R-squared	0.516	0.520	0.516

This Table shows Fixed effects estimations. The asterisk indicates that the respective variable coefficient is statistically significant and different from zero as follows: Three asterisks ***indicate significant at 1 % level, two asterisks ** indicate significant at 5 % level, and one asterisk * indicates significant at 10 % level. Control variables estimates are not presented here for brevity concerns but are available with authors

Appendix

Table A: Variables Definitions and Sources

Variables	Description	Source
NEER Volatility	Natural Log of (Annualized standard deviation of Monthly Nominal Effective Exchange Rates)	(Darvas, 2012)
Central Bank Transparency	CBT is measure of transparency in monetary policy making process based on information disclosure made by central Banks. The most used CBT index is Eijffinger & Geraats. (2006). This index has Five dimension: Political, Economic, Procedural, Policy and Operational	(Dincer et al., 2019; Dincer & Eichengreen, 2014)
Inflation^Y Volatility	Annualized Standard deviation of yeraly percentage change in CPI (Monthly)	International Financial Statistics – IMF
Inflation^M Volatility	Annualized Standard deviation of Monthly percentage change in CPI ((Monthly)	International Financial Statistics – IMF
Economic Growth	GDP growth rate yearly	WDI-World Bank
Net Foreign Assets	Yearly Percentage change in Net Foreign Assets	WDI-World Bank
Trade Openness	Trade as % of GDP	WDI-World Bank
Broad Money Growth	Annual Growth Rate of Broad Money	WDI-World Bank
Credit Market Regulations	Regulation subcategory of Economic Freedom	FSI-Economic Freedom of world
Interest Rate Volatility	Annualized Standard deviation of Monthly interest rates	International Financial Statistics – IMF
Forex Reserves	Log difference of yearly Reserve level	WDI-World Bank
Government Debt	Debt as percentage of GDP	WDI-World Bank
Δ Exchange Rate	Absolute yearly change in Exchange rates (LCU per USD)	International Financial Statistics – IMF
External Debt % of GNI	External debt % of GNI	WDI-World Bank
Central Bank independence	Measure of political independence of Central bank	(Garriga, 2016)
Exchange Rate regimes	Exchange rate regimes classification based on statistical measure: Peg, Crawling Peg, Crawling Band (Managed Float) and Free Floating	(Ilzetzki et al., 2019)
Banking Crisis	Dummy variable for the presence of banking crisis (1=banking crisis, 0=none)	(Laeven & Valencia, 2018) Global Financial Development Database
Financial Openness	A binary dummy variable codifies the restrictions on cross border transaction.	(Chinn & Ito, 2006)
Capital Controls	Capital Control Index based on IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database.	(Fernández et al., 2016)
Current Account Shock	Absolute change in Current Account Balance as Percentage of GDP	WDI-World Bank
Government Transparency (HRV Index)	The HRV transparency index measures the availability of credible aggregate economic data that a country discloses to the public. It is published in the HRV Transparency Project.	(Hollyer et al., 2017)
Current Account	Current Account Balance as Percentage of GDP	WDI-World Bank
US-Monetary Policy Uncertainty	A News-based index of monetary policy uncertainty to capture the degree of uncertainty relating to Federal Reserve's Monetary Policy Annualized standard deviation of Monthly growth rates of MPU index	(Husted et al., 2017)
US-Economic Policy Uncertainty	A News-based index of overall economic policy uncertainty (EPU), including fiscal, monetary, trade, healthcare, national security, and regulatory policies, based on the occurrence of certain keywords in newspaper coverage Annualized standard deviation of Monthly growth rates of EPU index	(Baker et al., 2016)
Inflation Targeting	Inflation Targeting is a dummy variable that takes value of 1, from year of adopting Inflation targeting otherwise 0.	(Minea & Tapsoba, 2014)