

Central Bank Transparency and the Interest Rate Channel: Evidence from Emerging Economies

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Abstract

This paper highlights the essential role of central bank transparency in the transmission mechanism of monetary policy through the interest rate channel for emerging economies. It has been shown that the transmission mechanism of monetary policy is more effective when the central bank's monetary policy is more transparent. By anchoring the inflation expectations, highly transparent central banks do not need to be aggressive in their policy rate actions in order to affect more effectively output and price dynamics implied by monetary policy shocks.

Keywords: Central bank transparency, transmission mechanism, panel VAR.

JEL classification numbers: E52, E58.

1. Introduction

The transmission mechanism of monetary policy has attracted much attention in the last two decades both from policymakers and those in the public sector, especially because everyone realizes that important relationship exists between monetary policy actions and the public's expectations. Besides the fact that every monetary policy impulse has a lagged impact on the economy, it is uncertain how exactly monetary policy impulses are transmitted to the price level or how real variables such as output develop in the short and medium terms. In this context, the understanding of how monetary policy affects the real economy is of great relevance, thus activating an important strand of literature that explores possible channels of monetary policy actions (*inter alia*: Brayton and Mauskopf, 1985; Bernanke, 1993; Gertler and Gilchrist, 1993; Kashyap and Stein, 1995; Reifschneider et al., 1999). More recent studies have been mainly focused on the bank lending channel and the housing market channel (Lown and Morgan, 2002; Case and Shiller, 2003; Hatzius, 2005; Benito et al. 2006; Iacoviello and Minetti, 2008; Curdia and Woodford, 2009, Papadamou and Siringopoulos, 2012)¹. Apart from the studies described above, more attention has been given about how the level of bank competition may affect the transmission mechanism of monetary policy transmission. In this context, Jeon et al. (2011) show that increased competition in the banking sector weakens the transmission of monetary policy. Gunji et al. (2009) examines the effect of the level of competition in the banking industry on monetary policy and, using disaggregated data, finds that a positive monetary policy shock is inversely related to bank loans.

However, besides the exploration of the monetary policy transmission and its impact on inflation, and on output and the financial system, there are important policy implications for the policymakers that have not yet been examined in the existing literature. In this paper, we attempt to highlight the essential role of central bank characteristics in the transmission mechanism of monetary policy. The discussion of how monetary policy transparency may affect the economic efficiency through the possible transmission channels underlines an important issue that should be taken into account by policymakers when deciding on how to set policy instruments in order to have an accurate assessment of the timing and effect of their policies on the economy.

¹ For a comprehensive survey, see Boivin et al. (2010).

The investigation of such a characteristic becomes more appealing in emerging economies environment since such economies have shifted from less transparent monetary policy actions to more transparent ones and consequently gained in credibility aspects².

Liu et al. (2008) first studied an aspect of monetary policy transparency, namely policy transparency, and specifically examined how the pass through of official rates to retail rates is affected by transparency. They found evidence that increased transparency can reduce the volatility of official policy rates and lead to more competition in the banking industry. As a result, future short-term rates become less uncertain, thereby enhancing the degree of pass-through of official rates to retail rates. In this line, Papadamou (2013) argues for the beneficial role of central bank transparency in the pass through from policy rate to Treasury bond rates in USA.

Our study makes a step forward by using a broader index of transparency based on Eijffinger and Geraats (2006), which is available for a large number of central banks, and attempts to shed light on the transmission mechanism of a transparent monetary policy on the real economy. More precisely, our analysis will be based on the transmission channel of the interest rate. This channel can be explained through the effect of monetary policy on the real interest rate, assuming sticky prices over the short run period. In fact, a decrease in central bank's policy rate translates into lower short-term real interest rates. As a result, the decline in real interest rates lowers the opportunity cost in terms of consumption and investment, causing private domestic demand and therefore GDP to expand. Even if we do not assume sticky prices, the interest rate channel may still be active since a decrease in central bank's policy rate leads to higher price level and inflation expectations and lower real interest rates, resulting to more spending and output. To sum up, central bank transparency could provide the central bank with greater flexibility to stabilize economic shocks without risking higher short nominal rates. In this context, it is obvious that central bank transparency improves the effectiveness of monetary policy transmission mechanism through the interest rate channel.

The apparent move towards more transparency in monetary policymaking practices has been supported by the fact that more transparency in policy actions is consistent

²See Mohanty and Turner (2008) for recent developments concerning the monetary policy transmission mechanism in emerging market economies.

with a better anchoring of inflation expectations (van der Cruysen and Demertzis, 2007), with the exception of the achieving accountability by delimiting the democratic deficit of having unelected officials in the contact of monetary policy. In this context, a large strand of the related empirical literature emphasizes the beneficial role of transparency for macroeconomic performance (Kuttner and Posen, 1999; Cecchetti and Krause, 2002; Chortareas et al. 2002; Fatás et al., 2006; Demertzis and Hughes Hallett, 2007; Dincer and Eichengreen, 2007, Spyromitros and Tuysuz, 2012), and asset prices variability (Papadamou et al. 2014) but ignores its effect on the timing of the transmission mechanism which is usually characterised by long, variable and uncertain time lags³.

In this paper, using a vector autoregressive approach for panel data (PVAR) and by decomposing our sample of 23 emerging economies under low and high levels of transparency of central banks, we can emphasize the changes in the effects of monetary policy shocks on macroeconomic variables. By utilizing the recent development of quantitative measures for transparency, we can show that the transmission mechanism of monetary policy through the interest rate channel is more effective when central bank's monetary policy is more transparent. The effectiveness can be achieved through inflation expectations formation.

The rest of the paper is organized as follows. Section 2 describes the methodology and data. Section 3 demonstrates how the transparency of the central banks affects the transmission mechanism of monetary policy through the interest rate channel. Section 4 concludes.

2. Methodology and Data

In order to investigate the traditional interest rate channel under periods of high versus low transparency by central banks, panel-data vector autoregression (PVAR) methodology is used. Our sample consists of annual data for 23 countries⁴ over the period 1998-2010, a period with significant changes in the level of central banks transparency.

³ For a more detailed survey of the existing empirical literature on central bank transparency, see van der Cruysen and Eijffinger (2007).

⁴ The countries studied are: Argentina, Brazil, Bulgaria, Chile, China, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Philippines, Poland, Russia, Slovak Republic, Slovenia, South Africa, Thailand, Ukraine.

Firstly, we estimate the PVAR model without decomposing periods under high and low transparency. Impulse response analysis and variance decomposition is applied. Secondly, the same analysis is applied on a PVAR model that treats differently interest rate shock in periods of low versus high transparency. Therefore, our general first order PVAR model is defined as follows:

$$Z_{i,t} = \Gamma_0 + \Gamma_1 Z_{i,t-1} + f_i + p_t + e_{i,t}, \quad (1)$$

where in the first version of the model $Z_{i,t}$ is a four variable vector {GDP, GDP DEFLATOR, SR, LR}. GDP is the logarithm of the Gross Domestic Product in constant prices; GDP DEFLATOR the logarithm of the GDP deflator; LR is the bank lending rate that usually meets the short- and medium-term financing needs of the private sector; SR, the money market overnight rate, is our proxy for the monetary policy rate.

In our model the VAR procedure is applied to panel data allowing for “individual heterogeneity” in the levels of the variables by introducing fixed effects, denoted by f_i in equation (1). The well-known ‘Helmert procedure’ (see Arellano and Bover, 1995) is applied to remove only the forward mean, i.e. the mean of all the future observations available for each country-year.⁵ Moreover, our model allows for country-specific time dummies p_t , which are added to equation (1) to capture aggregate, global shocks (e.g. an oil shock) that may affect all countries in the same way. Subtracting the means of each variable calculated for each country-year eliminates these dummies.

On the one hand, impulse response analysis may reveal useful information about the transmission mechanism in our sample. More specifically, the impulse-response functions describe the reaction of one variable to the innovations in another variable in the system, while holding all other shocks equal to zero. The standard errors of the impulse response functions are calculated and confidence intervals are generated using Monte Carlo simulations. Our attention is focused on all the variables’ reactions to an interest rate shock. Therefore, it is assumed that the Central Banks have full control over the money market rate in that they can give an isolated, random shock to this variable, along with the shock identified by the Choleski decomposition. This is

⁵This procedure is followed in order to avoid the mean-differencing procedure commonly used to eliminate fixed effects that would create biased coefficients. A Helmert procedure preserves the orthogonality between transformed variables and lagged regressors, and the latter can be used as instruments and the coefficients are estimated by system GMM.

equivalent to transforming the system in a ‘recursive’ VAR for identification purposes. A major advantage of the Choleski decomposition is that it does not impose theoretical priors on the model.

Following previous literature concerning monetary policy transmission mechanism, we assume that money market rate affects economic activity and prices with a lag and is simultaneously affected by these two variables. Output measured by the GDP is likely to be the most exogenous country-level variable, while prices are likely to become flexible with some delay. The lending rate is assumed to be the most endogenous variable in the system, thus capturing all available information (i.e. all the contemporaneous shocks to other variables)⁶.

On the other hand, variance decompositions may additionally present useful information about our model. More specifically, this methodology shows the percent of the variation in one variable that is explained by the shocks received by another variable, as accumulated over time. The variance decompositions show the magnitude of the total effect. We report the total effect accumulated over the 10 years, but longer time horizons produce equivalent results.

The main objective of the paper is to compare the response of all variables to the money market rate in periods of low versus high levels of central bank transparency. To achieve this, we consider high transparency periods when the level of transparency, measured by the index proposed by Eijffinger and Geraats (2006)⁷ and updated by Dincer and Eijffinger (2013), is higher than the average of the transparency index for our sample⁸. Moreover as can be seen in Table 1, this value of transparency splits our sample data in two almost equally subparts. According to Table 1 the minimum level of transparency is 6 while the maximum is 13 over the high transparency period. In case of low transparency periods the level of transparency varies between 1 and 5.5. The mean values for the two sub-periods are 8 and 3.74 respectively.

An alternative way to investigate the effect of transparency on the transmission mechanism is to divide countries into two sub-samples based on their average level of transparency in the period being examined. However, the above approach does not

⁶The order of LR and SR variables in our PVAR model does not affect our results.

⁷According to Eijffinger and Geraats (2006), the transparency index varies between the values of 1 to 15. Fifteen indicates a central bank with the highest level of transparency when conducting monetary policy operations.

⁸In our sample of 23 emerging countries, the average level is 5.89.

take into account that one central bank may change its transparency level between the 1998-2010 period⁹. In such a context, useful dynamics concerning transparency may be hidden.

Therefore two different variables, one corresponding to low and one to high transparency levels will replace the money market variable in our VAR. In our new second VAR model, Z_{it} is a five variable vector [GDP, GDP DEFLATOR, HT_SR, LT_SR, LR], where all variables are defined as before except that HT_SR is calculated as $SR \cdot D$, and LT_SR is calculated as $SR \cdot (1 - D)$. The dummy denoted D , is constructed taking the value of one over periods where the level of transparency index is above the sample average of 5.89 and zero elsewhere¹⁰.

The impulse responses across our two periods (i.e. 'high' and 'low' periods of central bank transparency) are compared to investigate any differences in the transmission mechanism of monetary policy to real economy. Moreover, the results from variance decomposition may also indicate differences attributed to different levels of transparency.

3. Empirical Results

By analyzing our empirical findings, Figure 1a presents the impulse response function of all variables in the first model to an interest rate shock¹¹ without distinguishing between high and low transparency periods. As expected from economic theory, a positive interest rate shock has a significant negative effect on output and prices with a time lag. In this respect, short and medium term lending rates are affected positively and significantly. Figure 1b presents the results from the second PVAR model. For reasons of comparison, the left column presents the impulse responses to an interest rate shock in periods of high central bank transparency while the right column reports the results over periods of low central bank transparency.

In a high transparency period, economic agents have more accurate information about the monetary policy actions directly affecting their decisions¹². The response of LR to

⁹ During the selected period, we observe significant changes in central bank transparency levels for the countries used in our investigation.

¹⁰ As a robustness check, values closed to the mean value 5.89 are considered and the results are similar concerning the steepness of the responses between high and low transparency periods.

¹¹ By saying interest rate shock, a one standard deviation shock is meant.

¹² A strand of the literature extracts inflation expectations from inflation-indexed financial market instruments, and investigates the relationship between inflation expectations and macroeconomic

a monetary policy shock is lower over a high transparency period versus low transparency period. Moreover, the initial positive effect dies quickly under high transparency periods. It seems that the public recognizes the temporary or permanent nature of the monetary policy shock. Our findings concerning LR reaction imply lower persistence in inflation expectations during the periods of high transparency. This result is in line with the findings by Chortareas et al. (2002).

Highly transparent policymakers do not need to be aggressive, as far as policy rate management concerns, in order to affect inflation expectations. This can be observed by comparing the SR reactions under high and low transparency regimes. Taking into account the above analysis, we can proceed to the investigation of the monetary policy effect on output and prices respectively. Even if the time reactions of GDP and GDP deflator to a monetary policy shock are identical, this shock has a more important impact (higher magnitude) on GDP and GDP deflators under high transparency versus low transparency periods. These findings are consistent with the view that inflation expectations are managed more effectively under high transparency levels. In this respect, inflation expectations formation affects output and price dynamics implied by monetary policy shocks.

Tables 2a, 2b report the results from the variance decomposition analysis for models one and two respectively. The total effect accumulated over the 10 years is reported. Table 2a indicates that the money market rate explains a significant amount of the GDP, GDP deflator and LR variability respectively. The results presented in Table 2b indicate that the high output and prices variability explained by SR is mainly attributed to the high transparency periods. This result confirms the effectiveness of monetary policy under periods of high transparency. This implies the beneficial effect of transparency on the formation of inflation expectations.

4. Conclusions

While most of recent studies highlight the different channels in the transmission process, little attention has been paid to the characteristics of the central bank's monetary policy. This paper addresses the issue of the effectiveness of the transmission mechanism of monetary policy through the interest rate channel under

variables at high frequency (Swanson, 2006; Galati et al., 2011). In effect, this type of measure allows examining changes in expectations over a relatively short horizon.

high or low periods of transparency for a sample of 23 countries over the period 1998-2010, a period with significant changes in transparency. Using a panel VAR analysis, we show that the transmission of a positive interest rate shock on GDP, GDP deflator and LR is more effective under high versus low periods of transparency. The argument for transparency is that private sector agents can learn and then anticipate what the authorities' reactions will be in any given set of macroeconomic conditions.

Therefore, under a credible and transparent central bank, fighting of inflation may be more effective. Agents will incorporate policy statements more quickly into their own plans and any necessary adjustment in market behavior will be carried out with lower cost and monetary authorities can have a clearer picture about the magnitude of their effects on the real economy.

The increased level of transparency by the central bank helps the public identify the temporary or permanent nature of a policy shock. The pursuit of more transparent policies increases the ability of monetary authorities to offset economic shocks through an efficient management of inflation expectations. Given the time lag between monetary policy actions and real economy responses, our findings indicate that the response of macroeconomic variables to monetary policy decisions becomes faster and monetary authorities can have a clearer picture about the duration of their actions, and their effects on the real economy. For further research it will be interesting to investigate central bank independence as another important characteristic of the central bank in the interest rate channel.

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Tables and Figures

Figure1a Impulse Response Analysis to a monetary policy shock
(Without distinction between low and high transparency)

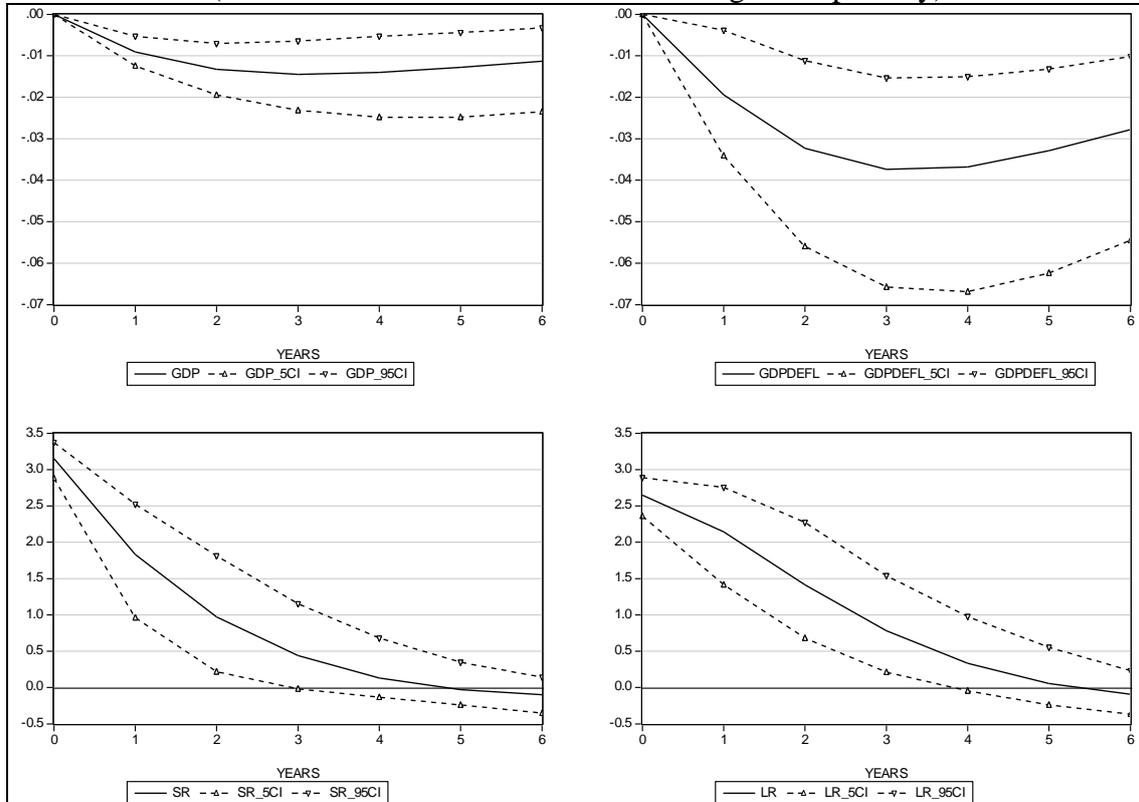
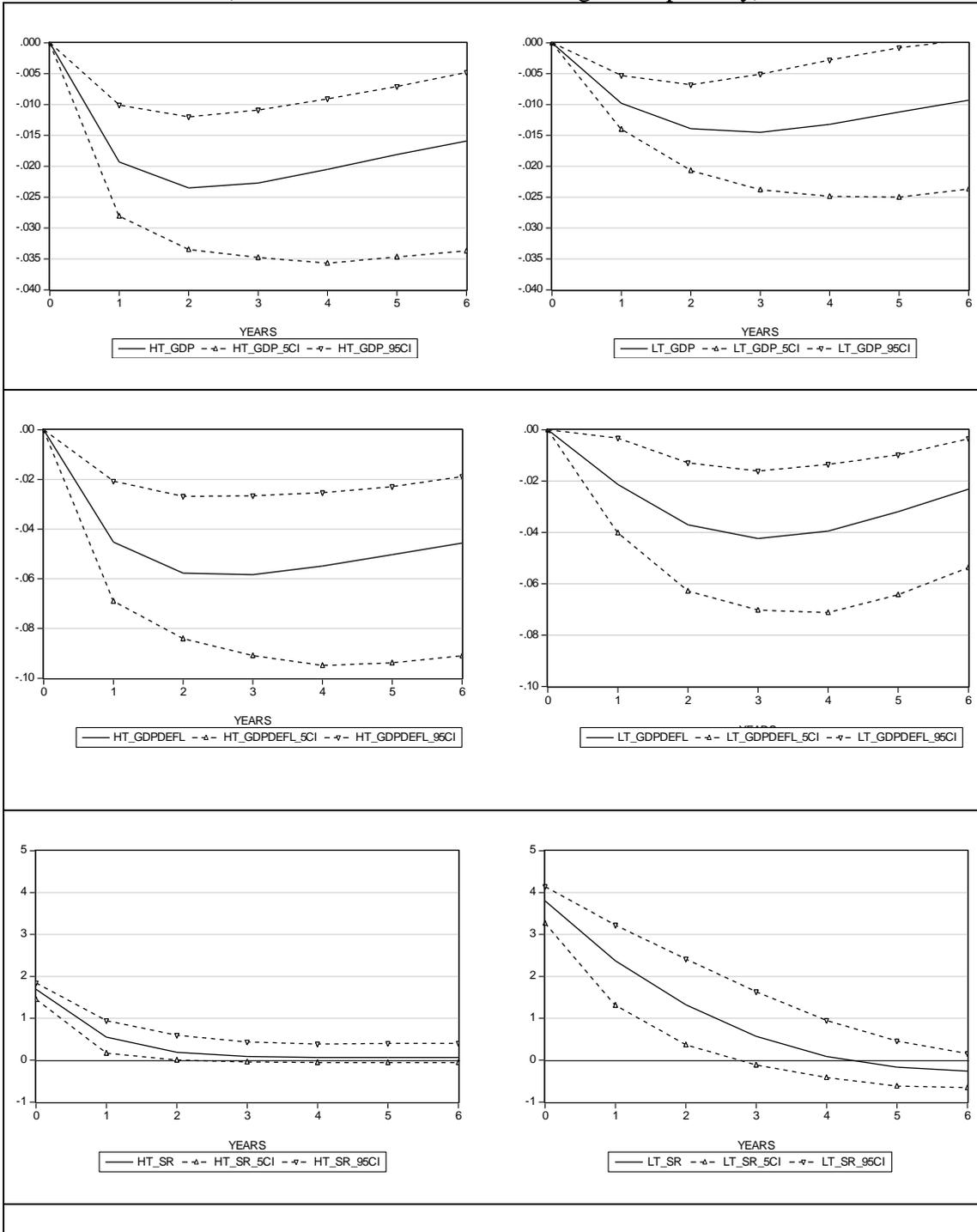


Figure1b Impulse Response Analysis to a monetary policy shock
(Distinction between low and high transparency)



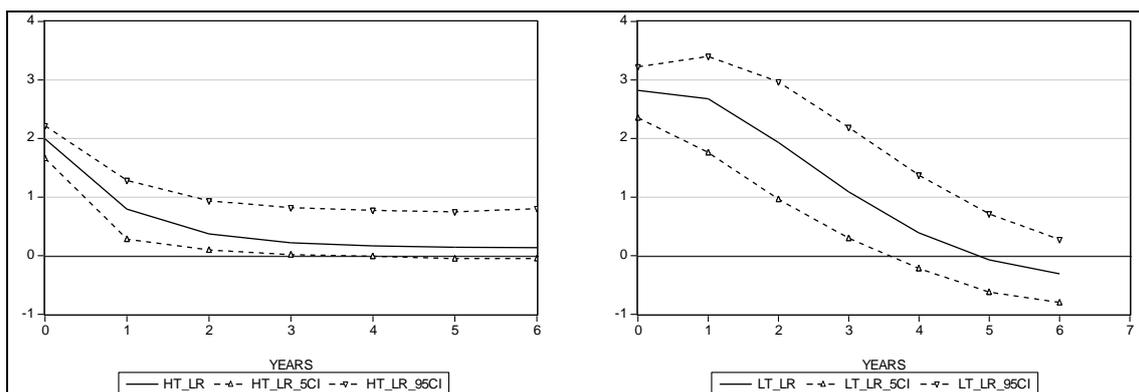


Table 1 Descriptive statistics about the level of central bank transparency

Criteria	Obs	Mean	Std. Dev.	Min	Max
All Sample	291	5.89	2.69	1	13.5
If transparency index ≥ 5.89	143	8.12	1.72	6	13.5
If transparency index < 5.89	148	3.74	1.40	1	5.5

Table 2a Variance Decomposition Results for high transparency periods

	PERIOD	GDP	GDPDEFL	SR	LR
GDP	10	56.38%	1.31%	32.89%	9.41%
GDPDEFL	10	23.81%	29.85%	31.39%	14.94%
SR	10	2.46%	14.31%	82.39%	0.84%
LR	10	1.00%	12.83%	63.94%	22.23%

Notes: Percent of variation in the row variable explained by column variable

Table 2b Variance Decomposition Results for low transparency periods

	PERIOD	GDP	GDPDEFL	SR	LR
GDP	10	86.82%	4.33%	6.34%	2.51%
GDPDEFL	10	41.70%	42.35%	14.16%	1.79%
SR	10	7.87%	16.76%	73.83%	1.54%
LR	10	5.48%	21.50%	60.16%	12.86%

Notes: Percent of variation in the row variable explained by column variable