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Article

Central Bank Credibility, Independence, and Monetary Policy

Journal of Central Banking Theory and Practice

Provided in Cooperation with:

Central Bank of Montenegro, Podgorica

Suggested Citation: Aguir, Abdelkader (2018) : Central Bank Credibility, Independence, and Monetary Policy, Journal of Central Banking Theory and Practice, ISSN 2336-9205, De Gruyter Open, Warsaw, Vol. 7, Iss. 3, pp. 91-110,
<https://doi.org/10.2478/jcbtp-2018-0025>

This Version is available at:

<https://hdl.handle.net/10419/217657>

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UDK: 336.748.12

DOI: 10.2478/jcbtp-2018-0025

Journal of Central Banking Theory and Practice, 2018, 3, pp. 91-110

Received: 13 August 2017; accepted: 27 December 2017

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Central Bank Credibility, Independence, and Monetary Policy

Abstract: The main motives behind the adoption of an inflation targeting regime largely relate to the notion of credibility, transparency of monetary policy and the autonomy of the central bank, which explicitly undertakes to achieve a certain inflation target. This paper examines the effects of inflation targeting in emerging economies in relation to the degree of independence of the central bank and the credibility of monetary policy. We find effects in emerging economies with little central bank independence, so our findings suggest that the central bank's credibility, transparency and independence is a prerequisite for emerging economies to experience a decline in inflation following the adoption of inflation targeting.

Keywords: Credibility, transparency, central bank independence, inflation targeting.

JEL Classification: E52; E63

1. Introduction

Since the 1990s, several theoretical studies (Bernanke and Mishkin (1997), Svensson (1997), Bernanke et al. (1999), stress that the application of inflation targeting policy by emerging central banks makes the pursuit of monetary policy more credible.

In addition, the results of empirical studies (Ball and Sheridan (2005), Batini and Laxton (2007), Gonçalves and Salles (2008), Lin and Ye (2012), Ayres & al (2014),

Aguir and Smida (2015)) demonstrate that inflation targeting acts optimally on macroeconomic performance in developing and emerging countries that target inflation in terms of reduced level and volatility of inflation and output growth. Even in the face of shocks generated by the latest economic and financial crisis, central banks that target inflation have responded better than other banks.

These results have prompted many other emerging countries to adopt this targeting strategy as a monetary policy management system¹, where the monetary authorities continue to make considerable progress in the conduct of the monetary policy of inflation. However, before adopting inflation targeting policy, it is important to fulfil the institutional and structural prerequisites for its implementation.

This paper aims to examine the extent to which institutional conditions may have played a role in the choice of the authorities of emerging economies to adopt inflation targeting.

Our results show the importance of taking into account institutional prerequisites in the adoption of inflation targeting. As a result, economies with low levels of dependency and/or low levels of transparency have little ability to predict inflation. All these characteristics mean that central bank loses monetary manoeuvrability necessary to reduce inflation. The article is organized as follows. Section 1, 2 and 3 discuss the literature on credibility and transparency of monetary policy and independence of central bank. Section 4 and 5 present the econometric methodology and results of the study, and Section 5 concludes the paper.

2. Credibility of the monetary authority

The implementation of an inflation targeting regime helps mitigate the lack of confidence that monetary authorities now inspire economic agents and in fact will strengthen the central bank's credibility in the conduct of monetary policy.

¹ A survey carried out by the IMF (2010) with a wide range of central banks, no fewer than thirty-three emerging countries would have expressed the wish to adopt a strategy of inflation targeting in the longer term, seeking for the most part technical assistance from this international institution. These countries were Costa Rica, Egypt and Ukraine, with a maturity of 1 to 2 years; Albania, Angola, Armenia, Azerbaijan, Botswana, Georgia, Morocco, Mauritius, Uganda, Pakistan, Paraguay, the Dominican Republic and the Republic of Guinea with a deadline of 3 at 5 ; Belarus, Bolivia, China, Honduras, Kenya, Kyrgyzstan, Moldova, Nigeria, Papua New Guinea, Serbia, Sudan, Sri Lanka, Tunisia, Uruguay, Venezuela, Vietnam and Zambia with a maturity of more than 5 years.

Credibility, a concept that emerged in mid-1970s, has also received several definitions. According to F. Kydland and E. Prescott (1977), a central bank will be credible if its policy is temporally coherent. Thus conceived, credibility requires the abandonment of discretionary policies. This recommendation is central to the approach to credibility according to R.J. Barro and D.B. Gordon (1983). The central bank must abandon any temptation to provoke “inflation surprises” because, in the presence of well-informed agents, expected inflation is identical to actual inflation.

This temptation can be overcome by two different institutional arrangements, namely the use of a pre-commitment rule.

We find the approach of Kydland, Prescott and Barro, Gordon and the use of the theory of incentive contracts. This approach is that of Walsh (1995): incentives must be put in place to ensure that it is not in the interest of the monetary authorities to “cheat” by reversing the announced decisions.

According to these definitions and under the assumption of complete information, the transparency of the central bank appears as the necessary and sufficient condition of its credibility. Monetary policy, if it is to be effective, is based on the sequence of credibility-commitment-transparency-reactivity

However, the abandonment of the complete information hypothesis leads to a radically different analysis of the relationship between transparency and credibility. In the presence of information asymmetries between private economic agents and central bank, it is no longer certain that the transparency of the latter must be sought. A central bank can hardly become credible if it does not publish its forecasts, because private agents do not have the means to know its objectives, (Geraats, 2000).

In addition, transparency encourages the central bank to pursue its objectives when they are explicit. From the above, it is argued that inflation-control targets provide a framework for more sound political and economic decisions and a better long-term economy, and allow central banks with autonomy to adopt a more responsible and therefore more sustainable position (Aguir & Smida, 2015).

2.1. Credibility and channels of monetary transmission under inflation targeting: Monetary policy does not directly affect policy performance of macro-economic variables such as employment, output and inflation. Monetary policy is primarily concerned with the decisions of economic agents and the transmission of different channels. Credibility can be defined as the degree of confidence of the private sector in the ability and determination of the central bank to pursue

monetary policy and achieve its stated objectives, which may absorb the shocks to the economy despite temporary deviations (de Mendonça and Tiberto, 2017).

For Kydland and Prescott (1977), credibility plays a key role in the conduct of monetary policy. Therefore, a policy is credible when the public believes in the rule/strategy and through expectations about the results that monetary authority seeks to achieve. When expectations are seen as an important channel of monetary transmission, the lack of credibility can hinder the achievement of a certain goal because expectations are formed in a context of mistrust. Under inflation targeting, for example, expectations and credibility are fundamental to the success of monetary policy.

De Mendonça and Da Silva, (2009) found evidence that credibility is an important element of the disinflation process in Brazil following the adoption of inflation targeting. With slight fluctuations in interest rates, due to greater credibility, investment decisions are taken with more confidence, leading to a more robust job creation process.

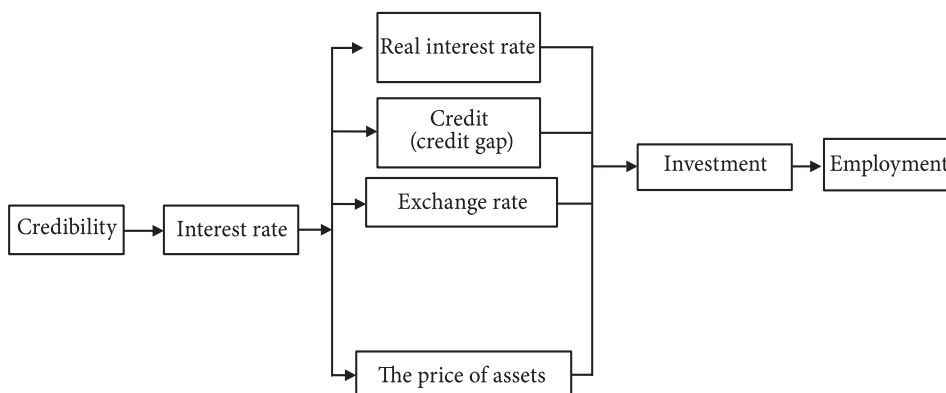
The work of de Mendonça and de Guimarães e Souza (2012) presents an empirical analysis using the generalized moments, method in order to find the macroeconomic determinants of investment under inflation targeting in Brazil. The period covered by the analysis From January 2000 to September 2009. The work tests the influence of real GDP on interest rates, credit, inflation, exchange rates, public debt and credibility on private investment. According to them, it is expected that there is a positive relationship between credibility and investment. In particular, the effect on private investment of a credible rise in targeting inflation is positive and has statistical significance. An increase in credibility increases planning capacity due to lower uncertainty in the economy and concomitant increase in investment. In short, the success of targeting inflation in the Brazilian economy is an important mechanism to promote private investment. Namely, the work has found that the success of inflation targeting creates a stable macroeconomic environment that favours private investment.

Under inflation targeting, the effectiveness of monetary policy is a function of the transmission channels of monetary policy.

According to Mukherjee and Singer (2008), the literature so far highlights four main channels of transmission (the mechanisms through which monetary policy choices affect economic activity): the traditional interest rate, Credit or lending, the exchange rate channel, and the asset price channel (Fig. 1). However, in most of the economic crisis, decisions are made in uncertainty and, as a result, are guided by expectations. For example, investment decisions that entrepreneurs

have to take are often based on several expectations regarding different aspects such as the influence of economic policies and the state of the economy on their business.

Figure 1: Credibility and transmission channels of monetary policy



Source: Gabriel Caldas Montes (2013)

De Mendonça and de Guimarães e Souza (2012) used MCO estimates to test the impact of credibility on interest rate volatility. They concluded that a credible monetary policy implies less effort by the Central Bank of Brazil to achieve inflation targeting due to the increased ability to influence public expectations. In this sense, they suggest that high credibility is associated with lower interest rate volatility for achieving the inflation target. Under inflation targeting, changes in the short-term interest rate depend on the credibility of the regime and affect investment decisions (and, as a result, employment) across a large set of variables, including the real cost of capital, credits, exchange rates, wealth and entrepreneurs expectations.

The traditional interest rate channel derives from the standard of Keynesian theory. Effect on aggregate demand (investment and consumption: Keynesian effect) and effect on global supply.

- For investment, the change in policy rates affects the price (cost) of capital. A cut in key interest rates reduces the cost of capital => Investment increases.
- For consumption: a change in interest rates affects the household consumption plan in inter-temporal arbitrage (this depends on the inter-temporal elasticity of substitution). An increase in the interest rate favours future consumption at the expense of current consumption. If households are lending, the rise in the interest rate induces a positive income effect. The increase in the inter-

est rate may also reduce the wealth (wealth effect) of households if they have financial assets (the relationship between prices and interest rates for equities, see above). The impact on consumption will therefore depend on the income effect and the wealth effect (which effect outweighs the other).

The effect on supply concerns production and, more particularly, business activity.

- An increase in key interest rates affects the lending rates of the banks => financial expenses of companies increase => decrease of the profits of the companies => decrease of the activity.
- The change in policy rates may have no impact on activity if credit is rationed. Indeed, since banks do not pass on interest rate changes to lending rates, they retain the interest rate that maximizes their expected profit on loans granted. This rate can lead to a low credit supply relative to the demand for credit.

There may be a contradictory effect of increased aggregate demand on aggregate supply. Let us suppose a fall in the interest rate which increases the wealth effect of households, then the positive wealth effect can increase the level of the interest rate via inflation => decline in output due to lower investments.

The credit channel is important because, in emerging market countries, stock markets are generally not well developed (low market capitalization and financing per share almost exclusively for large companies). The bond market (corporate bond) is poorly developed and not very liquid. However, in the case of the Brazilian economy, for example, the participation of consumers in the stock market is negligible, which makes this transmission mechanism of little importance in Brazil, Tomazzia and Meurer (2009), Montes (2013), Montes and Bastos (2014), Montes and Curi (2016). The empirical work shows that bank financing is predominant (bank credit ratio% high GDP in some countries but low in others), (Auel & Mendonça, 2001, Catão and Terrones 2005, De Mello 2008). Monetary policy action justifies this channel in a way, given the analysis of the effect of asset prices and the balance sheet. If these effects play, borrowers are pushed to bank credit. In particular, if firms are not indifferent to financing their indebtedness by issuing bonds or by bank loans (the hypothesis of indifference between the two sources of finance being the basis of the Modigliani and Miller theorem, then although the supply of credit will increase due to a fall in interest rates, companies will favour the channel of bank credit. Knowing that the action on short-term interest rates conditions the supply of credit to banks, the key question is whether this relationship plays automatically or not. In other words, due to imperfect information on the projects to be financed (yield, risk, etc.), a downward shift in short-term interest rates does not necessarily lead to a supply of credit by banks. Asymmetry of information generates a problem of adverse selection and moral hazard.

The consequence of the anti-selection problem is the exclusion of some of the credit applicants, who may otherwise be solvent. In practice, it is usually small and medium-sized enterprises that suffer the most from credit rationing. This is for the simple reason that large companies can either rely on their own funds or rely on the possibility of financing themselves on the stock market or on their status as large companies, which facilitates their access to credit.

With regard to the exchange rate channel, in the case of an emerging market economy with a flexible exchange rate regime, the precise impact of monetary policy on exchange rates is uncertain and will depend on expectations domestic and foreign interest rates, inflation and government debt. Economists generally assume as true that high domestic interest rates lead to currency appreciation (Mishkin, 1997).

However, under certain conditions, higher interest rates cannot make the national currency more attractive. Sargent & Wallace (1981) show how rising interest rates could lead to an increase in expected inflation if households anticipate the debt will eventually have to be monetized. Blackburn and Pelloni (2005), examined the case of Brazil and argued that for high debt levels and risk premia, higher interest rates can trigger monetary depreciations. Aizenman and Pinto, model (2005), the effect of tightening monetary policy causes a depreciation of the currency when interest rates and debt levels are quite high.

- Effect on the price level: assume an increase in the interest rate \Rightarrow appreciation of the currency. A direct effect of the exchange rate on prices concerns the prices of imported finished goods (in the case of small open economies). The appreciation of the currency makes imports cheaper (and exports more expensive) \Rightarrow Decline in the import price index. Lower import prices mean lower consumer prices, which also reduces the growth of nominal wages. Another indirect effect on prices can come from the change in aggregate demand: The fall in the price of imported goods (= tradable goods) \Rightarrow an increase in the demand for these goods to the detriment of non-tradable goods: Non-tradable prices decline due to a substitution effect.
- Effect on demand: the same assumption (rise in the interest rate and appreciation of the currency). Households borrowing in foreign currency benefit from a positive income effect because repayment of the loan costs less.
- Effect on supply: same assumption (interest rate increase and currency appreciation). The effects on supply may be positive or negative: positive from the point of view of investment through the fall in the price of imported capital goods. Negative effect from the point of view of the production of tradable goods because the appreciation of the currency leads to a reduction of the

competitiveness price of the exports. Possible negative effect on the production of non-tradable goods, because lower prices (due to the substitution effect) may lead to a low incentive to invest in this sector. However, these two negative effects can be offset by a positive effect of lower prices for non-tradable goods that serve as inputs for both sectors.

The effect of monetary policy on the price of assets is explained by the relationship between asset prices and interest rates.

Moreover, inflation targeting credibility positively affects the expectations of entrepreneurs because it reflects monetary stability, which is decisive for creating a favourable business environment.

3. Transparency of monetary policy

Miniaoui and Smida (2008) conclude that the primary objective of transparency is to “prevent the uncertainty arising from the state of the economy or its structure from acting retroactively on strategic uncertainty. It should facilitate the task of the Bank in its quest to tie public expectations to its own objectives. By setting as a new rule the use of communication, central banks seek to make the public and markets understand the object of monetary policy as well as the means used to achieve it.

Effective transparency must ensure three functions, namely clarity in external communication, visibility of the public, honesty, and the effectiveness of internal information. Economic agents can only act in the right way if they have perfect information about their environment. Transparency increases the predictability and hence the effectiveness - in terms of speed and accuracy - of monetary policy and encourages the evaluation of monetary policy, engages the responsibility of the central bank and hence the credibility of monetary policy. In line with J. Faust and L.E.O. Svensson (2000), transparency is linked to the ease with which the public can deduce the objectives and intentions of the central bank from observable elements.

Moreover, a monetary policy under an inflation targeting regime allows for accurate and real objectives in terms of Inflation (Mishkin 2004a).

As for the principle of accountability, the conduct of monetary policy under an inflation targeting framework obliges the central bank to justify its decisions / achievements to citizens and their electoral representatives (Parliament).

This counterpart of independence is a necessary condition for democratic legitimacy: independence in the short term, but political control in the long run.

Table 1 presents the basic elements of the transparency of monetary policy Roger & Stone (2005): Publication of minutes of meetings; Regular reports on monetary policy; Publication of specific reports in the event of failure of the inflation target; Use of certain escape clauses in order to limit the central bank's accountability in certain circumstances and indicate in advance the reaction of monetary authorities in cases of force majeure and/or major exogenous shocks.

Table 1: Transparency of monetary policy

countries	Publication of minutes of meetings	Publication of report to Parliament	Monetary policy report	Specific Report in Case of Inflation Target Failure	Use of Escape clauses
South Africa	No	No	Semiannual	No	Change dictated by cases of force majeure
Brazil	yes	yes	Quarterly	yes	No
Chile	yes	yes	Quarterly	No	No
Colombia	No	yes	Quarterly	No	No
South Korea	No	yes	Quarterly	No	Change dictated by cases of force majeure
Hungary	yes	yes	Semiannual + update	No	No
Israel	yes	yes	Quarterly	yes	Change dictated by cases of force majeure
Indonesia	No	yes	Quarterly	yes	No
Mexico	No	yes	Quarterly	No	No
Philippines	yes	yes	Quarterly	yes	Yes, in the event of oil price shocks, supply shocks for food products
Peru	No	No	3 per year	No	No
Poland	No	yes	Quarterly	No	Change dictated by cases of force majeure
Czech republic	yes	yes	Quarterly	No	No
Romania	No	No	Quarterly	No	Change dictated by cases of force majeure
Slovakia	No	No	Quarterly	No	Change dictated by cases of force majeure
Thailand	No	No	Quarterly	yes	No
Turkey	yes	No	Quarterly	yes	No

Source: Roger & Stone (2005), National Central Banks, December 2013

4. Independence of central bank

Granting independence to central banks means that no established bodies, government, parliament or any of their respective members, has the power to interfere in the decisions taken by the central bank in the performance of its mission, overthrow the course of decisions taken. The central bank should have legal autonomy free from political pressures and/or conflicts of other objectives with inflation. First, we begin our analysis with the definition of an autonomous central bank. “A central bank shall be considered autonomous or independent when it is free to implement the instrument of monetary policy conduct. In other words, it does not take account of external pressures” Chokri and Frikha (2011).

In the majority of emerging countries targeting inflation, the central bank is not free in its choice and definition of the upper limit on inflation (Batini and Laxton, 2007), otherwise the Government will always be tempted to fix this limit at a level higher than that corresponding to the optimum equilibrium. Implementation of monetary targets is achieved by minimizing government’s deficit financing by the central bank (Ftiti & al. (2017)).

Table 2: Central bank autonomy (emerging inflation-targeting countries)

Countries	Goal Autonomy Legal objective	Target autonomy Specification of target	Instrument autonomy	
			Credit for Government	Participation of Government
South Africa	Monetary stability	G + CB	yes	no
Brazil	Price stability	G	no	no
Chile	Price + financial stability	CB	yes	Member to vote
Colombia	Price stability	CB	non	Member to vote
South Korea	Price stability	G+CB	yes	Member to vote
Hungary	Price stability	G+CB	no	no
Israel	Price stability	G	no	no
Indonesia	Price stability	G+BC	no	no
Mexico	Price stability	CB	yes	no
Philippines	Price stability	G+CB	limited	Member to vote
Peru	Monetary stability	CB	no	Member to vote
Poland	Price stability	CB	no	no
Czech republic	Price stability	G+CB	no	Member to vote
Romania	Price stability	G+CB	no	no
Slovakia	Price stability	CB	no	no
Thailand	Monetary stability	CB	yes	no
Turkey	Price stability	G+CB	no	no
Government; CB: Central Bank				

Sources: National Central Banks, IMF, December 2013.

The experience of countries that have adopted inflation targeting suggests that the key building blocks for an inflation targeting policy are: A mandate is given to the central bank to achieve an inflation rate of a numerical target or in the form of a fork, Schaechter et al. (2000), Mishkin (2004b) ; a floating exchange rate, Aizenman & al. (2008); Ostry & al. (2012), A developed and stable financial system, a high degree of macroeconomic stability; A good model for forecasting inflation, Amato and Gerlach (2002), Carareand al. (2002), Siklos and Abel (2002), Khan (2003), Truman (2003). In these emerging countries, the adoption of inflation targeting led to a monetary policy characterized by: maintaining price stability, monetary stability (Orphanides (2001), Mishkin (2004 a), Alpanda and Honig (2010, 2014), Hefeker and Zimmer (2011), Gabriel Caldas Montes (2013), Charléty et al (2017)) and financial stability (Ghosh, 2017).

5. Effects of IT and the role of CBI

Before starting our empirical analysis in order to evaluate the performance of the central bank's autonomy in this monetary regime, based on the inflation targeting literature, four macroeconomic variables have effects on inflation Mishkin (2011), Mishkin and Schmidt-Hebbel (2007), Levieuge (2002), Ftiti (2010), and the environment of monetary policy: inflation rate, interest rate, GDP and the money supply (Lucotte (2012), Aguir and Simda (2015), Ftiti & al (2017).

Our estimation model is as follows:

$$\pi_{i,t}^* = \omega_1 Tor_{i,t} + \omega_2 M2_{i,t} + \omega_3 GDP_{i,t} + \omega_4 i_{i,t} + e_{i,t}$$

$$\pi_{i,t} = 100 * [Ln(CPI_{i,t}) - Ln(CPI_{i,t-1})]$$

where $CPI_{i,t}$ is the consumer price index for country i at time t .

We also use other variables:

Tor_{it} : measure of central bank independence is the rate of governor rotation for country i at time t . It is set at 0 when the governor has not changed and 1 otherwise.

$M2_{i,t}$: the monetary supply

$GDP_{i,t}$: gross domestic products

$i_{i,t}$: the short-term interest rate

All these variables are extracted from the World Development indicators database and cover the period from 1990 to 2016.

We follow the methodology by applying their method to the two groups of emerging countries pursuing inflation targeting to those of a group of emerging countries having economic and social indicators comparable. Our study focuses on 17 emerging countries practicing inflation targeting, 12 emerging countries practicing other monetary policy (appendix 1).

The first step is to analyze the stationarity of our variables. We have selected three panel data unit root tests (Maddala and Wu, 1999; Levin, Lin, and Chu, 2002; Im, Pesaran, and Shin, 2003).

Table 3: Results of panel data unit root tests through different samples group

		Levin, Lin, and Chu (2002)	Im, Pesaran, and Shin (2003)	Maddala and Wu (1999)
Group 1	π^*	-2,625*** (0,000)	-2,458*** (0,000)	1.325** (0,018)
	Tor	-7.325*** (0,000)	-8.547*** (0,000)	-1.752*** (0,000)
	M2	-5.215*** (0,000)	-1.547* (0,014)	3.212* (0,009)
	GDP	12,254** (0,020)	3,214 (0,125)	14.215*** (0,002)
	(i)	-7,124*** (0,000)	-3,543*** (0,000)	1.998*** (0,000)
Group 2	π^*	-7,658*** (0,000)	-3,147*** (0,000)	5,547** (0,020)
	Tor	-8,874*** (0,000)	-5,542*** (0,000)	-1,147*** (0,000)
	M2	-3,548*** (0,001)	-4,547*** (0,002)	-1,115** (0,021)
	GDP	-6,214*** (0,000)	-6,542*** (0,000)	-3,587*** (0,000)
	(i)	-16,245*** (0,000)	-10,125*** (0,000)	-0,145*** (0,000)

The results show that the control variables are stationary for all groups.

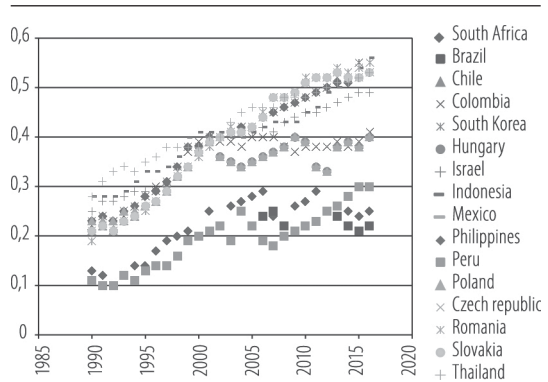
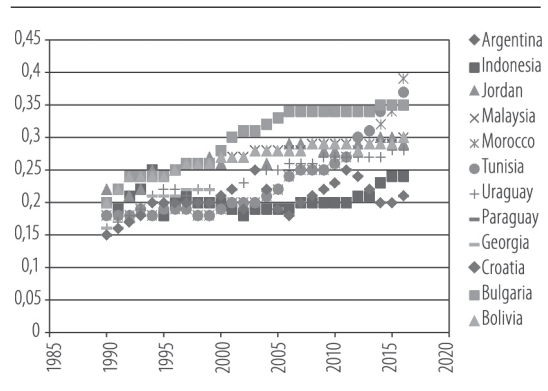
Table 4 presents the results of the estimation of Equation for G1, G2. The results differ across the groups. First, the turnover variable is negative and significant in all groups. The adoption of CBI reduces inflation by 6.2% in Group 1, 4.8% in Group 2. This indicates that CBI adoption reduces the inflation rate for the two groups. This suggests that turnover is most informative for the highest-income countries, as shown in figures 2 and 3. This finding confirms several previous research results, such as in Jacome and Vazques (2008), Posso and Tawadros (2013), Martin (2015), Ftiti & al (2017).

Table 4: Estimation results of inflation–CBI relationship

	Group 1	Group 2
Tor	-0.062**	-0.048**
M2	0.021**	0.048***
GDP	0.011*	0.054*
(t)	-0.005*	-0.010**
Observations	672	452
R ²	0.54	0.41
Autocorrelation Test	0.35	0.26

Note: *,** and*** is significance level of 10%, 5% and 1% respectively.
The Autocorrelation test is based on the Arellano and Bond (1991) test.

This result can be explained by the fact that turnover has the lowest value in G1, as indicated in Figures 2 and 3. Group 1 has an average central bank governor turnover under 40%, while Groups 2 and have averages of about 25% respectively.

Figure 2: Turnover of central bank governor for countries of IT countries**Figure 3: Turnover of central bank governor for non-IT countries**

6. Conclusion

The objective of this article is to broaden the analysis of benefits of targeting inflation. Recent studies tend to find conclusive results of inflation targeting on stability and economic growth in emerging economies and in advanced economies. In this work, we analyzed the role of central bank independence in the amplification of the effects of inflation targeting in emerging economies.

The implementation of such a regime requires that certain institutional prerequisites are met such as advanced technical infrastructure, soundness of the banking system, and the stability of economic structure. We can also add the importance of strategic choices such as price index, target level, target range, target horizon, and press release. According to our results, the main institutional prerequisite is central bank autonomy.

Therefore, our recommendation to emerging countries is to increase Governor turnover, in order to increase the credibility of their central banks' commitment to the objective of price stability. Which makes, it possible to judge the performance of the inflation targeting policy on the basis of the stability effect of the macroeconomic environment and, in particular, the monetary policy environment.

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Appendix

Table 1: Emerging Markets Sample

IT countries		Non-IT countries
	Start of Inflation Targeting Regime	
Brazil	1999Q1	Argentina
Chile	1999Q3	Indonesia
Colombia	1999Q1	Jordan
Czech Republic	1998Q1	Malaysia
Guatemala	2002Q1	Morocco
Hungary	2001Q1	Uruguay
Indonesia	2005Q1	Paraguay
Israel	1992Q1	Georgia
Korea	1998Q1	Croatia
Mexico	1999Q1	Bulgaria
Peru	1994Q1	Bolivia
Philippines	2001Q1	
Poland	1998Q1	
Thailand	2000Q1	
South Africa	2000Q1	
Turkey	2006Q1	