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## Time-inconsistency and expansionary business cycle theories: What does matter for the central bank independence–inflation relationship?

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## ABSTRACT

Since the seminal paper of Kydland and Prescott (1977), a central bank's independence (CBI) has been considered an important institutional condition for achieving lower inflation. Recently, however, this long-held belief has been challenged. This paper investigates the relationship between CBI and inflation for a large sample (91 countries) covering the period from 1990 to 2014. We follow the previous literature by considering differences across national monetary regimes in explaining this relationship. Our approach also traces the sources of the inflationary phenomenon. Using panel data and the turnover indicator as a proxy for CBI, we offer two main findings. First, we identify the role of exchange rate regimes in the dynamic between inflation and CBI. Second, our results show that only intermediate and flexible exchange rate regimes are appropriate in this relationship. This finding is explained by the level of CBI, which is very low for countries with a fixed exchange rate policy and low income levels. For policymakers, our results highlight the importance of the choice of monetary regime in controlling inflation in the presence of CBI. For public agents, our results provide guidelines for formulating expectations.

### 1. Introduction

Until the 1980s, in most countries, the central bank was linked to the Ministry of Finance. During this period, these central banks had several objectives, such as sustainable economic growth, high levels of employment, price stability, the stabilization of the currency exchange market, financing the public deficit, and providing funds to the government in order to ensure public expenditures. The economic theory was at an elementary stage of development regarding central bank independence (CBI) and the concept of the credibility of monetary policy, until the Keynesian revolution, which supported the idea that an objective of positive inflation is conducive to economic growth. Let us recall first the main theories leading to discussions about CBI in general and its relationship with inflation in particular.

Many theories on CBI have been proposed since the beginning of the 20<sup>th</sup> century. In a 1913 speech for the Reserve Bank of India inauguration, Keynes criticized the Central Bank objective based on the need to finance the public deficit. During this period, the global monetary policy system was based on the Gold Exchange Standard. The main mechanism of this kind of monetary policy consists of currency devaluation intended to improve exportation competitiveness

and consequently to reduce the deficit of the trade balance. However, this monetary policy system generated high inflation and contributed to the global financial crisis of 1929. After the Second World War and the Bretton Woods agreement, during the 1950s and 1960s, state intervention played the greatest role in economic regulation through fiscal policies. However, these policies collapsed during the 1970s, especially after the first oil price shocks and due to high inflation. These failures in output stabilization and price stability increased debates about alternative strategies. During this decade, several authors (Friedman, 1968; Phelps, 1968; Lucas, 1972 1976) sought to revive the role of monetary policy in economic regulation by inducing the effect of rational expectations, wages, and price rigidities. The seminal paper of Kydland and Prescott (1977) is considered the starting point of reflections on the CBI, followed by Barro and Gordon (1983) and Rogoff (1985). The inflation bias discussed by Kydland and Prescott (1977) is argued to occur because the government has a political incentive to create unanticipated inflation to lower unemployment. Under rational expectations, however, the public is aware of these incentives and takes them into account in forming their expectations. Consequently, inflation increases, and unemployment remains stationary. To avoid the problems of inflation bias and time-inconsistency,

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Barro and Gordon (1983) suggest that it is more optimal for policy-makers to follow a rule-based policy, by which inflation bias will be reduced. Barro and Gordon (1983) argue that a rule-based policy strengthens the credibility of an anti-inflation policy. In line with this research, Rogoff (1985) has proposed a way to reduce inflation bias consisting of an independent, or “conservative,”<sup>1</sup> Central Bank (CB).

The development of the economic theory has led to the principle of the independence of central banks, since the beginning of the 1990s. During this period of great moderation, characterized by low levels of inflation, low economic growth volatility and weak exogenous shocks, it was widely believed that the regulation of inflation, keep it low and within a tight range, resulting from CBI, was important in ensuring price and macroeconomic stability. The evidence drawn on during the 1990s was the negative relationship between CBI and inflation in the case of industrial countries, and this led to conclusions concerning developing economies (Bade and Parkin, 1988; Cukierman, 1992; Posen, 1993; Campilo and Miron, 1997; Hayo and Hefeker, 2002; Carlstrom and Fuerst, 2006).

The issue of CBI in general, and its relationship with inflation, has been challenged in the last decade after the occurrence of various crises (such as the subprime crisis and sovereign crises). Many certainties have disappeared, as price stability is no longer an assurance against major financial and macroeconomic stability. During monetary crisis periods, central bankers are obliged to adjust their policy frameworks while preserving their reputation and independence, in a context in which that independence is likely to come under increasing threat, (Borio, 2011). Therefore, the issue of the relationship between CBI and inflation has been revived recently in a hostile economic environment, as mitigating factors in this relationship have been identified (Ahsan et al., 2006; Posso and Tawadros, 2013; Alpanda and Honig, 2014). This issue has constituted an important concern in economic, policy, and financial arenas. Thus, this issue holds the attention of both academics and policymakers, as it has important implications for monetary policy decisions that are undertaken to ensure price stability, macroeconomic regulation, and financial stability. Further, the issue of CBI and inflation is currently a topical issue for both advanced and emerging economies. On the one hand, most advanced economies have followed unconventional monetary policy in the aftermath of the global financial crisis of 2007–2008, and therefore central bankers and academics have paid more attention to the question of CBI, as unconventional monetary policy can threaten CBI (Dudley, 2013; Bernanke, 2015)<sup>2</sup>. On the other hand, the relationship between CBI and inflation is a topical issue for emerging economies, as the focus on the independence of the central banks in these economies started in the 2000s and they are still attempting to achieve price stability.

CBI is important for emerging and developing economies because price stability has not yet been achieved there. Further, most of these countries employ some kind of exchange rate regime (fixed, intermediate, or flexible) and no studies have analyzed the issue of the CBI–inflation relationship under this kind of monetary policy. From a theoretical point of view, in line with this strand of time-inconsistency and inflation bias theory, a related literature has been developing since the beginning of the 1980s on opportunistic political business cycles voter (Lindbeck, 1976; Lewis-Beck, 1988; Alesina et al., 1997; Clark and Nair Reichert, 1998; Clark and Hallerberg, 2000). This literature argues that governments employ expansionary economic policies before elections. Clark and Hallerberg (2000) suggest that this kind of strategy depends on the level of CBI and the nature of the exchange

rate regime. Specifically, under a fixed exchange rate regime, an expansionary policy is undertaken by decreasing taxes and/or increasing public expenditure before an election. Under a flexible exchange rate regime, however, an expansionary policy can be applied by decreasing interest rates and/or increasing the money supply. Therefore, it is important to fill the gap in the literature about the relationship between CBI and inflation under exchange rate regimes, and it is more powerful to distinguish between the different types of exchange rate regimes, in line with Clark and Hallerberg (2000).

Starting from the theories of time-inconsistency and opportunistic political business cycles, many studies have examined the relationship between inflation and CBI. However, most of the empirical research has focused on the time-inconsistency and inflation bias theories in order to analyze the relationship between CBI and inflation. The primary strand of the literature (e.g., Bade and Parkin, 1988; Posen, 1993) focuses on this relationship by proposing a CB legislation measure (de jure). Some authors have criticized the legal CBI measure, arguing that the institutions of developing countries are usually weak. They highlight a gap between the formal statutes of CBs and their practices, and that the theory of opportunistic political business cycles—positing that monetary regimes have a role in explaining the relationship between CBI and inflation—must be taken into account. Cukierman (1992) and others have proposed a new measure of CBI based on the turnover rate of central bank governors (de facto). This measure is defined as the average number of changes in CB governor per year over 10 years. This index was introduced by Cukierman et al. (1992) and later used by many authors (e.g., Martin, 2015; Alpanda and Honig, 2014; Arnone and Romelli, 2013). However, this measure does not take into account the fact that the nature<sup>3</sup> of the exchange rate regime plays a role in the CBI–inflation relationship, as explained by Clark and Hallerberg (2000).<sup>4</sup>

Two important points emerge about these theoretical points of view. The first is that most authors implicitly consider opportunistic political business cycles when using the turnover measure to study the relationship between CBI and inflation. Failure to consider the exchange rate’s effect on the relationship between CBI and inflation explains the mixed and confused results of the empirical literature. An abundant literature has tested the relationship between CBI and inflation, with mixed and confused results. Some analyses (Cukierman, 1992; Posen, 1993; Campilo and Miron, 1997; Hayo and Hefeker, 2002; Carlstrom and Fuerst, 2006; Jácome and Vázquez, 2008; Arnone and Romelli, 2013; Martin, 2015) find a negative relationship between inflation and CBI, while others find no relationship (Walsh, 1997; Cukierman et al., 2002; Ahsan et al., 2006; Posso and Tawadros, 2013; Alpanda and Honig, 2014). These mixed results flow from several factors. First, the studies have used different indices of CBI as the legal measure and the turnover rate. Second, different inflation specifications have been used, leading to different estimation methods. Third, some authors have explained the mixed results as being caused by the different samples used in studies that consider different monetary regimes, a problem this study attempts to address.

The aim of this paper is to reconcile the time-inconsistency theory with the theory of expansionary business cycles to explain the relationship between CBI and inflation. Specifically, we aim to fill the gap in the literature regarding the relationship between CBI and inflation for the case of emerging and developing economies, as most of them employ an exchange rate monetary policy. In our analysis, in line with Clark and Hallerberg (2000), we distinguish between different kinds of exchange rate monetary regimes in measuring the relationship between CBI and inflation, as this has been a source of confused results in previous studies.

<sup>1</sup> The word “conservative” refers to the degree of inflation aversion of the central banker relative to that of the government.

<sup>2</sup> Bernanke (2015). The problem with quantitative easing is that it works in practice, but not in theory. Commentary on Money Banking and Financial Markets, by Stephen G. Cecchetti, Brandeis Kermit L. Schoenholtz. Fourth edition by McGraw-Hill Education. Dudley (2013). Unconventional Monetary Policies and Central Bank Independence. Speech in Fedrela Reserve Bank, 15 October, 2015.

<sup>3</sup> Levy-Yeyati and Sturzenegger (2005) classify de facto exchange rate regimes based on three indicators: changes in the nominal exchange rate, the volatility of nominal exchange rates, and the volatility of international reserves.

<sup>4</sup> For more detailed historical perspectives on CBI, please see Blancheton (2016).

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