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"Central Bank Independence: An Examination of Monetary and Economic Stability through Ordinary and Extraordinary Times"

Abstract

The idea of central bank independence (CBI) has been widely accepted over the last several decades by many countries around the world, both developed and developing. As such, many countries around the world granted autonomy to their central banks during the 1980s and 1990s. Although the majority of past studies have primarily examined the impact of central bank independence on inflation, there is only now sufficient date to empirically determine whether many of these claims are true. This study examines central bank independence over the long-term (1960 to 2015) to determine to what extent central bank independence has helped to ameliorate not only inflation, but interest rates and unemployment in Latin America, Asia, and selected developed countries.

1. Introduction

The term "central bank independence" (or abbreviated, CBI) can be broadly defined as the degree of freedom of the central bank to pursue monetary policy without interference from political considerations (Sirivedhin and Hataiseree, 2000). In other words, independence implies that a nation's central bank can follow a trajectory outside the political realm and does not have to abide by the government's request to follow a certain monetary policy, such as printing money to pay for federal deficits (Gruben and Welch, 1993). Since being first written about academically in the late 1980s, many countries have come to adopt this policy and many governments have come to recognize this as standard procedure. From the late 1980s to the mid-1990s, countries as diverse as Malaysia, New Zealand, Chile, Mexico, Argentina, Spain, France and Brazil granted their respective central banks more autonomy from the government (Cukierman, 1994). However, despite this proliferation, highly independent central banks in many countries of the developing world are a relatively new phenomenon (Boylan, 2001).

The focus of this study will be to examine a select group of countries in three defined regions (Asia, Latin America, and the Developed West) and identify whether the macroeconomic variables of Inflation, Unemployment and Interest Rates have responded in a positive manner since the granting of central bank autonomy. One of the primary contributions of this study is that it will directly examine the effects of central bank independence on these principal macroeconomic variables over a longer term period (since 1960 in most cases), analyzing both the pre- and post-

central bank independence periods. Although there has been much study done on the theoretical rationale behind it, few empirical studies, other than those examining the effects of inflation, have been conducted to assess accurately whether central bank independence actually leads to desirable macroeconomic outcomes.

2. Literature Review

The idea of granting a nation's central bank autonomy from the government, although a relatively simple one at first glance, is powerful in the sense that if a central bank is independent in its decision making abilities, the government in power at a given time will be unable to turn back monetary decisions that have been made or, in a similar vein, force actions to be undertaken. Thus, in theory, an independent and autonomous central bank should lead to a more stable economic environment in the respective country (Maxfield, 1997). It represents a prominent transformation, because it not only removes a key aspect of economic decision making from political control but has kept many governmental powers from overturning growth-oriented central bank policies (Boylan, 2001).

The primary motive behind the granting of such autonomy was the belief that an independent and sovereign central bank would have more power to diminish inflation and price volatility and thusly, economic growth would be stimulated. According to Cukierman (1994), there is widespread consensus now that central banks should be independent because it helps to achieve price stability. The traditional argument for central bank autonomy is that the power to spend money (the government) should be separate from the power to print money (the central bank). In a study by Dincer and Eichengreen (2014), the variability of inflation was shown to be affected by both CBI and central banks' transparency, although disentangling the two effects remained difficult.

Among both developed and developing countries, there has been significant controversy regarding central bank independence. However, despite this debate, between 1990 and 1995 over 30 countries worldwide (including five from Latin America) granted independence to their respective central banks. This is due to most countries' central banks and finance ministries understanding and accepting that high inflation is detrimental to growth and that price stability is one of the central banks' primary functions (Maxfield, 1997).

3. Hypotheses

Given the related theory and evidence provided in the Literature Review, the following hypotheses are put forth.

H1- Central Bank Independence is negatively related to Inflation.

H2- Central Bank Independence is negatively correlated to Interest Rates.

H3- Central Bank Independence and Unemployment are negatively correlated.

4. Methodology

The methodology utilized in will be ARCH and GARCH regression performed through SPSS. Regression analysis, according to Gujarati (2003), is one of the most useful econometric techniques in practice. The basic individual regression in this study will take the following form:

$$y = \alpha - \beta_1 CBI_1 - \beta_2 CBI_2 - \beta_3 CBI_3 + \ldots + \varepsilon$$

Macroeconomic data from Q1:1960 to Q4:2015 will be taken entirely from the International Monetary Fund (considered a highly regarded, neutral, global financial institution) in order to maintain consistency of measurements, data collection processes and to avoid biases of individual country central banks or national data collection agencies. The following 21 countries from Asia, Latin America, and the Developed West will be examined:

Figure 1- Set of Sample Countries

Asia	Latin America	Developed West
China	Argentina	England
India	Brazil	New Zealand
Indonesia	Chile	Portugal
Japan	Mexico	Spain
South Korea	Paraguay	US
Malaysia	Peru	
Philippines	Uruguay	
Thailand	Venezuela	

The following independent variables will be used to examine the impact of the nuances (political and economic) of central bank independence and related phenomena on the previously mentioned dependent variables. Dummy variables are used frequently to classify data into mutually exclusive categories (Gujarati, 2003) and will be used in the following equations to represent, among other things, the effects of country development, foreign exchange rate regimes, the occurrence of financial crises, the degree of international inflation, and the presence of legal CBI.

1. **Central Bank Independence (Legal Date)**. This is a dummy variable designed to distinguish between years in which no central bank independence was in place and years in which legal central bank independence was in existence. Although for most countries it takes the value of either 0 (representing no legal independence) or 1 (representing full legal independence), it also takes the value of .5 for countries (such as Brazil) that after a certain date were operating under a semi-independent/informal accord type arrangement Source: Individual country central bank websites.

2. **Modified Cukierman Index**. This is a composite CBI index measuring various facets of independence. It was originally developed by Cukierman et al and has been recently updated. It is comprised of 18 criteria of political and economic independence with a total score ranging from zero to one. Regarding political independence, it focuses on the appointment and dismissal of the central bank's governor.

3. **Grilli Masciandaro Tabellini (GMT) Index**. This is a composite index measuring political and economic independence in various areas. It was originally developed by Grilli, Masciandaro and Tabellini in the early 1990s and has been updated since by several authors. According to the original creators of this index, credibility is the primary asset of having an independent central bank (Hicks, 2004). It is based on 15 criteria, each with a binary score of zero to one. The criteria are then simply added together.

4. **CB Governor Turnover.** This has traditionally been used in the CBI literature as a proxy for independence, with the idea being that if there is a high ratio of turnover (as measured on a yearly basis), this is an indicator that the central bank is actually under the firm control of the executive branch and that the central bank governor will be dismissed if he or she does not comply with the government's demands. This proxy was further used and validated by Pearlman and Serantis (2009); they believed it was an especially good proxy for developing countries. Higher turnover is usually seen as a sign of a lesser degree of independence. See Carstens and Jácome, 2005, among others. Source: central bank websites and author's own calculations.

5. **Development Dummy Variable (from 0 to 1 in .1 increments).** This measures the economic development of the respective sample country in terms of Gross Domestic Product, with each .1 increment representing $3,000 of GDP in constant dollars Source: The World Economy: Historical Statistics, OECD Development Center, 2003.

6. **Foreign Exchange Rate Regime Dummy Variable**. This is designed to capture the effects of a particular type of exchange rate system on a country's economy. It takes a value of 0 for pure fixed and 1 for pure floating in .1 increments. Sources: Crowe and Meade (2008), Musa et al (2000), Baig (2002), Bubula and Otker-Robe (2003), and IMF (2003).

7. **Financial Crisis Dummy Variable**. This is designed to capture the effects of financial crises on a country. It takes a value of 0 for years in which no crisis was experienced and 1 otherwise. Sources: Carstens and Jácome (2005) and author's own calculations.

8. **International Inflation Dummy Variable**. This is designed to control for the effects of international inflation on a country, with the idea being that many countries (including developed ones) are susceptible to outside economic forces. It takes a value from 0 to 1 in .1 increments. Sources: Jácome and Vázquez (2005) and IMF Database.

5. Results

The following three tables present the results obtained through the methodology above. Only central bank variables that are negatively correlated and statistically significant at the 1% level are listed. Control (dummy) variables are not listed.

In Table 1, results for Inflation may be seen:

Table 1- Inflation

Area	*Significant Variables*	*Total R^2*
Asia	MCI	0.751
Developed West	GMT	0.8139
Latin America	---	0.3756
Total	MCI	0.2249

As can be seen, regarding Inflation, the Central Bank composite indices (MCI and GMT) are highly correlated for all areas except Latin America. Over the last 40 or so years, Latin America has suffered through bouts of hyperinflation that the Central Bank has been unable to curb except in a few rare instances (for example, the introduction of the Real Plan in Brazil in 1994). In both

Europe and Asia, central banks have tended to have more power. Thus, there is support for H1 in all cases except that of Latin America.

In Table 2, results for Interest Rates may be seen:

Table 2- Interest Rates

Area	Significant Variables	Total R^2
Asia	GMT, Legal CBI	0.6964
Developed West	GMT, Legal CBI	0.7373
Latin America	MCI, GMT, Legal CBI	0.1124
Total	GMT	NA

Regarding the Interest Rates variable, it can be seen that the composite indices are again highly significant across all examined areas. What is also noteworthy is that the variable "Legal CBI" is significant—that is, the feat of a respective country's central bank achieving legal independence tends to be significantly inversely correlated to a country's interest rates. Thus, there is widespread support for H2 in all examined regions of the study.

In Table 3, results for Unemployment may be seen:

Table 3- Unemployment

Area	Significant Variables	Total R^2
Asia	---	0.5053
Developed West	MCI, Legal CBI, CBGov	0.4925
Latin America	GMT, Legal CBI, CBGov	NA
Total	MCI, CBGov	0.0852

Regarding Unemployment, again, the composite indices are highly significant in all areas except for that of Asia. Another central bank independence proxy, CBGov (central bank governor turnover) is also significant in all areas of the study (with the exception of Asia). Thus, there is substantial support for H3 as well.

6. Conclusion

The phenomenon of Central Bank Independence has been at the forefront of the international banking literature for over a decade now. However, it is only now that we can begin to examine with some degree of statistical certainty what the effects have been. This study examined three regions (Asia, Latin America, and the Developed West) over a relatively long period (that of 55 years) to attempt to ascertain the effect that CBI has had on three key variables—Inflation, Interest Rates, and Unemployment. ARCH and GARCH-style regression analysis was run using the model outlined under the Methodology section. According to the analysis, with some exception, CBI is inversely correlated at a very significant level with all three variables under question. Although "with independence comes…responsibility" (Siklos, 2011), this may be interpreted as a success for the phenomenon of Central Bank Independence, and may serve as inspiration for other countries to adopt the same policy.

7. References

Baig, T. (2002). Characterizing exchange rate regimes in post-crisis East Asia. *IMF Working Paper*, WP/01/152.

Bubula, A., & Otker-Robe, I. (2003). The evolution of exchange rate regimes since 1990: Evidence from de facto policies. *IMF Working Paper*, WP/02/155.

Boylan, D. (2001). *Defusing democracy: Central bank autonomy and the transition from authoritarian rule*.

Carstens, A., & Jácome, L. (2005). Latin American central bank reform: Progress and challenges. *IMF Working Paper*. WP/05/114.

Crowe, C., & Meade, E. (2008). Central bank independence and transparency: Evolution and effectiveness. IMF Working Paper. WP/08/119.

Cukierman, A. (1994, November). Central bank independence and monetary control. *The Economic Journal*, 104, 1437-1448.

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

Diana, G., & Sidiropoulos, M. (2004). Central bank independence, speed of disinflation and the sacrifice ratio. *Open Economic Review*, 15, 385-402.

Gruben, W., & Welch, J. (1993). Interpreting central bank independence in Mexico. Federal Reserve Bank of Dallas.

Gujarati, D. (2003). *Basic econometrics*. (4th ed.), McGraw-Hill Publishers.

Gutiérrez, E. (2003). Inflation performance and constitutional central bank independence: Evidence from Latin America and the Caribbean. *IMF Working Paper*. WP/03/53.

Hicks, R. (2004). Globalization and central bank independence: A partisan explanation. Unpublished Manuscript. Department of Politics, Princeton University.

International Monetary Fund. www.imf.org.

Jácome, L. & Vázquez, F. (2005). Any link between legal central bank independence and inflation? Evidence from Latin America and the Caribbean. *IMF Working Paper*. WP/05/75.

Maxfield, S. (1997). *Gatekeepers of growth: The international political economy of central banking in developing countries*. Princeton, NJ: Princeton University Press.

Musa, M., Masson, P., Swoboda, A., Jadresic, E., Mauro, P., & Berg, A. (2000). Exchange rate regimes in an increasingly integrated world economy. International Monetary Fund, *Occasional Paper* 193, 45.

Pearlman, J., & Serantis, N. (2009). Central bank independence: An updated set of indices and the implications for inflation. *Centre for International Capital Markets. Discussion Papers. No. 2009-16.*

Siklos, P.L. (2011). Central bank transparency: Another look. *Applied Economic Letters*, 18(10), 929-933.

Sirivedhin, T., & Hataiseree, R. (2000, January). Central bank independence: A Thai perspective. SEANZA Advisors' Meeting.

The World economy: Historical statistics (2003). Paris, France: *OECD Development Center*.