



What can Taylor rules say about monetary policy in Latin America?

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ABSTRACT

This paper examines the way monetary policy has been conducted recently in the seven largest Latin American economies. We run 16 alternative specifications for the Taylor rule and select the most appropriate functional form through out-of-sample measures of forecasting performance. We find strong empirical support for endogenous monetary policy reacting to macroeconomic variables. We find empirical evidence that Mexico and Brazil pursues a 'tough' monetary policy, whereas Chile and Peru appear to pursue 'mild' monetary policy against inflation. Apparently, Argentina, Colombia and Venezuela do not change nominal interest rates to tackle inflation fluctuations and adopt 'lax' monetary policies. Exchange rate change seems to be a relevant variable for interest rate decisions only for Mexico, whereas the output gap only appears to matter to Chile, Colombia and Venezuela.

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1. Introduction

In this paper we examine the way monetary policy has evolved recently in a sample of Latin American emerging economies by using Taylor Rule specifications. This methodology is intended to characterise central bank application of monetary policy and evaluate the toughness of its stance against inflation. Our primary goal is not identification, but to provide enough alternative models to select the best one in terms of monetary policy predictability. We focus on analysing monetary policy responsiveness with respect to inflation deviations of target and output deviations from potential output. Proceeding in this way, once we ascertain that the selected Taylor rule describes interest rates movements, we can discriminate countries with different degrees of monetary policy strictness.

The expression 'Taylor Rule' comes from the seminal work of Taylor (1993). The author showed that a simple monetary policy rule, where the US Federal Reserve Bank (Fed) raises the interest rate if inflation rate exceeds a 2% implicit target or if real GDP is higher than potential GDP, describes quite well the actual path of the federal funds rate between 1987 and 1992. This result led to a plethora of papers on interest rule models and central bank behaviour. Studies were generally applied to industrial countries, and many evaluate monetary policy using the Taylor principle: central banks facing higher expected inflation should raise nominal interest rates by more than the rise in expected inflation, in order to stabilise inflation.

Clarida et al. (2000), for instance, estimated a forward-looking monetary policy rule for United States pre- and post-October 1979, the beginning of Paul Volcker's tenure as Fed chairman. They found that the Taylor rule interest rate coefficients followed the Taylor principle during the Volcker–Greenspan term but not before 1979. According to them, this result may explain the inflation stability in the United States in the early 1980s.

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Recently, some authors have paid more attention to Taylor rule specifications. After all, which Taylor rule specification best describes central bank behaviour? Trying to answer this question, [Qin and Enders \(2008\)](#) compare the in-sample and out-of-sample properties of five Taylor rule variants and two simple univariate models of federal fund rates. Unlike [Clarida et al. \(2000\)](#), they used real-time US quarterly data, those available to the Fed at the moment the interest rate is set.¹ Their results hint that a simple forward-looking rule and a nonlinear rule – one that allows a stronger interest rate response when the interest rate is high than when it is low – are not only the best fit in-sample specifications according to Akaike and Bayesian information criteria, but also the best models in out-of-sample forecasting performance. Furthermore, they find that the Fed followed the Taylor principle before 1979 and during the Volcker–Greenspan era.

[Cukierman and Muscatelli \(2008\)](#) draw attention to nonlinearities in the US interest rate reaction functions because of asymmetric central bank preferences. Their more remarkable finding shows that the Fed was more reactive to positive than negative inflation gaps under William Martin's chairmanship (1951–1970), and more reactive to negative than positive output gaps during Greenspan's term (1987–2006).

In empirical terms, the majority of monetary policy analysis is devoted to evaluating specific arrangements like the inflation-targeting regime. [Kuttner and Posen \(1999\)](#), for example, tried to confirm the alleged benefits of the inflation-targeting regime by looking at the behaviour of central banks. They estimated an interest rate rule and impulse response functions for short- and long-term interest rates in pre-targeting and post-targeting periods for the United Kingdom, Canada and New Zealand. Surprisingly, they found that for the United Kingdom and Canada the estimated Taylor rule's inflation coefficient decreased in the post-targeting period.

Could it be the case that the conquered credibility of inflation target regimes allows for the adoption of 'lax' monetary policies? Perhaps so, and possibly it is an interesting question to investigate. Many authors are actually more interested to know if inflation targeting works.² Attention has also been drawn to the behavior of the central bank in emerging economies.³ The greater difficulties faced by these countries compared with industrial ones in achieving price stability are well known. In spite of conservative monetary policy, expectations of government debt monetisation arising from fiscal dominance regimes and higher vulnerability to external shocks afford low credibility to central banks. As a result, it is difficult to coordinate inflation expectations and hence keep inflation low and stable.

As far as we are aware, the methodology of using forecasting performance to select Taylor rules has not hitherto been used to evaluate monetary policy rules in emerging economies. Our paper tries to fill this gap and shed more light on monetary policy in emerging economies. We apply this methodology to a set of emerging economies with similar characteristics. Specifically, we investigate monetary policy application in the seven largest economies in Latin America, the so-called LAC-7 group: Brazil, Argentina, Mexico, Chile, Colombia, Venezuela and Peru. Of those, only Argentina and Venezuela were not inflation-targeters and had a flexible exchange rate regime during the 1999–2008 period. This allows us to have a unique sample of emerging economies with close stages of development and the same official monetary policy framework and exchange rate regime.

For each selected country in our sample, we run 16 alternative Taylor rule specifications and select the one that best predicts the interest rate setting. Since the best model is not clear-cut, we also look at specifications with very close out-of-sample performance compared with the best one. We test central bank determination of interest rates by looking at backward and forward rules, reaction and no-reaction to exchange rate movements, asymmetrical behaviour depending on inflation being above or below the target and, finally, asymmetrical behaviour concerning output gap.

Importantly, our results suggest the model with higher predictive power varies widely across countries, from a simple backward-looking rule for Colombia to an asymmetric forward-looking rule regarding inflation and output gap for Brazil. Most importantly, out-of-sample results indicate empirical support for endogenous monetary policy in all countries for at least two or more Taylor rule specifications. Short-term interest rates in fact do respond to macroeconomic fluctuations and this relationship indicates valuable information for an understanding of the way monetary policy is conducted in the seven largest economies in Latin America.

This paper is structured as follows. Section 2 describes the 16 models of reaction functions to be estimated. Section 3 presents the data and the forecasting methodology. Section 4 shows the estimated coefficients for all models and compares the out-of-sample forecast performance for each country. The last section sets out our conclusions, limitations and the motivational next steps.

¹ According to [Orphanides \(2001\)](#), central banks use real-time data instead of ex post data at the point of decision. Because output and inflation series are frequently revised, policy rule estimations based on revised data may result in misleading descriptions of monetary policy.

² [Ball and Sheridan \(2005\)](#), for instance, evaluate inflation-targeting effects on average inflation, inflation variability, inflation persistence, average output growth, output variability and long-term interest rates in OECD economies and, after controlling mean reversion, do not find evidence that inflation-targeting makes a difference, for better or worse. [Batini et al. \(2005\)](#) and [Gonçalves and Salles \(2008\)](#) apply the same methodology to emerging economies. The former report lower inflation and inflation variability in targeters compared with non-targeters, while the latter argue that inflation-targeters experience greater declines in inflation and output volatility.

³ See, for example, [Corbo \(2002\)](#); [Fraga et al. \(2003\)](#); [Minella et al. \(2003\)](#); [Mohanty and Klau \(2004\)](#).

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