Journal of Macroeconomics 39 (2014) 113–155

Contents lists available at ScienceDirect

Journal of Macroeconomics

journal homepage: www.elsevier.com/locate/jmacro

# Institutional quality, the cyclicality of monetary policy and macroeconomic volatility

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## ARTICLE INFO

*Article history:*
Received 2 July 2012
Accepted 27 November 2013
Available online 25 December 2013

*JEL classification:*
E4
E5
E6
F3
F4

*Keywords:*
Monetary policy
Institutional quality
Business cycles
Emerging market economies

## ABSTRACT

In contrast to industrialized countries, emerging market economies are characterized by pro- or acyclical monetary policies and high output volatility. This paper argues that those facts can be related to a long-run feature of the economy – namely, its institutional quality (IQL). The paper presents evidence that supports the link between an index of IQL (law and order, government stability, investment profile, etc.), and (i) the cyclicality of monetary policy, and (ii) the volatilities of output and the nominal interest rate. In a DSGE model, foreign investors that choose a portfolio of direct investment and lending to domestic agents, face a probability of partial confiscation which works as a proxy that captures IQL. The economy is hit by external shocks to demand for home goods and productivity shocks while its central bank seeks to stabilize inflation and output. In the long run, a lower IQL tends to discourage external liabilities. If there is a positive external demand shock, we observe an increase in output and real appreciation. The latter operates through two opposite channels. First, it directly increases the opportunity cost of leisure generating incentives to expand labor supply. Second, it reduces the real value of the debt denominated in foreign currency which stimulates consumption but contracts the labor supply. If the IQL is low, the economy attracts fewer loans for domestic consumers and shows a lower debt-to-consumption ratio in the steady state. This implies that the reduction of the real value of the debt caused by the real appreciation is smaller. Given this low wealth effect, the real appreciation leads to an expansion of the labor supply. Wages drop and inflation diminishes. The central bank reacts by cutting its policy rate to stabilize inflation and generates a negative comovement between output and the nominal interest rate (procyclical policy). As a corollary, negative correlations between policy rates and output are not necessarily an indicator of destabilizing polices even in the presence of demand shocks.

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## 1. Introduction

Monetary policies designed to stabilize business-cycle fluctuations are generally regarded as optimal (see, e.g., Woodford, 2001). In contrast to industrialized economies, emerging market economies (EMEs) are characterized by either procyclical or, at most, acyclical monetary policies and higher output volatility. In fact, several studies (see Lane (2003), also Section 2) have confirmed that central banks in the developing world tend to raise (cut) interest rates during recessions (expansions). On the

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[1] This paper is a revised version of the first chapter of my Ph.D thesis. I would like to thank Charles Engel, Ken West, Lukasz Drozd, Menzie Chinn, Patricia Toledo, Roy Boyd, Santiago Acosta, Steven Durlauf, Vladimir Sokolov, an anonymous referee, as well as participants at seminars and conferences at the University of Wisconsin–Madison, Ohio University, Universidad de Piura, and City University London, for useful suggestions and comments. All errors are mine.

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http://dx.doi.org/10.1016/j.jmacro.2013.11.004

other hand, it is well known that macroeconomic volatility is higher in EMEs (Mendoza (1991); also Section 2). Some works have linked these facts by suggesting that procyclical monetary policies might have contributed to the larger economic fluctuations observed in EMEs (Kaminsky et al., 2004; Lane, 2003).

This paper highlights the role of institutional quality as a factor behind such empirical regularities. It presents evidence that supports the link between the cyclicality of monetary policy and the quality of institutions. In a sample of 56 developed and developing economies, the correlation between output and the central bank's (nominal) interest rate – a usual measure of the cyclicality of monetary policy – is directly related to an index of institutional quality (e.g., law and order, government stability, investment profile, etc.) widely used in the economic literature. That is, countries with strong institutions tend to show positive output-interest rate correlations (i.e., signals of countercyclical monetary policy), while countries with weak institutionality have negative correlations and follow policies usually characterized as procyclical. This result is robust with respect to a number of sensitivity exercises. On the other hand, there is a statistically significant and negative relationship between measures of the volatility of both output and interest rates and the proxy of institutional quality.

This work extends a standard dynamic stochastic general equilibrium model with price rigidities by introducing foreign investors which choose a portfolio of foreign direct investment (FDI) and lending to domestic agents, and produce an export good. The economy is hit by external demand and productivity shocks and the central bank's objective is to stabilize domestic inflation, output, and variations in the nominal exchange rate. The latter captures the case of managed float regimes frequently found in EMEs. Foreign investors face a probability of incurring an output loss (partial confiscation) which works as a proxy of institutional quality and affects the long-run level and composition of external liabilities and output. In particular, in the steady state, lower institutional quality discourages both FDI and lending in foreign currency to domestic agents, a prediction consistent with recent empirical evidence (Alfaro et al., 2005a,b; Bussea and Hefeker, 2007;Faria and Mauro, 2009; Papaioannou, 2009; Wei, 2000, 2006).

From a quantitative viewpoint, the model does a satisfactory job of matching the sample variance–covariance matrix of output and the interest rate for both Indonesia and Switzerland, the economies with the lowest and highest levels of institutional quality in our sample.

The model predicts a positive comovement between total output and the nominal interest rate at relatively high levels of institutional quality. The reaction of the central bank is to increase the interest rate when there is a positive external demand shock of home goods because inflation and output increase. In contrast, the central bank reacts by cutting the interest rate when there is a positive productivity shock in the domestically-owned sector. This occurs basically because inflation falls. If demand shocks mainly drive business cycles, a positive output-interest rate comovement arises.

At relatively low levels of institutional quality, the model predicts a negative comovement between total output and the nominal interest rate. The impulse-response analysis shows that the key difference between high and low institutional quality relies on how the central bank reacts to external demand shocks. If there is a positive external demand shock, we observe an increase in output and a real appreciation (i.e., an increase in the relative price of home goods). The real appreciation operates through two opposite channels. On the one hand, under price stickiness, the necessary nominal appreciation lowers the consumer price level, generating a higher opportunity cost of leisure and, therefore, an incentive to expand labor supply. On the other, it reduces the real value of the debt denominated in foreign currency and thus stimulates both consumption and leisure causing a contraction of labor supply. If institutions are weaker, however, the economy attracts fewer loans for domestic consumers and shows a lower debt-to-consumption ratio in the steady state. This implies that the reduction of the real value of debt in foreign currency caused by the real appreciation is smaller. Given this low wealth effect, the real appreciation leads to an expansion of labor supply. As a result, wages drop and inflation diminishes. The central bank reacts, in this case, by cutting its interest rate to stabilize inflation and generates a procyclical monetary policy. Since the foreign-owned sector has a relatively small size under weak institutionality, productivity shocks from this sector do not play a crucial role. Besides, productivity shocks in the domestically-owned sector contribute by reinforcing the sign of the output-interest comovement. The net result is a negative link between the interest rate and output or, more generally, a lower correlation between those variables compared to the case of high institutional quality.

Some explanations have been proposed to understand negative output-interest rate correlations in developing economies without either solid theoretical backgrounds or systematic empirical support (see also Section 2). The Asian crisis and other financial crises across EMEs triggered a strand of the literature on the optimal response of monetary policy to large external shocks.[2] According to Calvo and Reinhart (2002), developing countries do not adopt countercyclical stabilization policies because when the domestic economy contracts, it experiences capital outflows, and central banks prefer to raise interest rates to compensate for the effect on the exchange rate, instead of leaving the currency value to float freely (*fear of floating*). In a static model with collateral constraints and currency mismatch, Devereux and Poon (2004) argue that a contraction of the monetary supply can be optimal if the economy is hit by a large external demand shock and the collateral constraint is binding, otherwise a countercyclical monetary policy would be recommendable. Yakhin (2008) contends that the degree of financial integration of

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[2] In the closed economy literature, traditional Keynesian rational expectations models, such as Fischer (1977) and Phelps and Taylor (1977), recommended the use of monetary policy to stabilize output. Ireland (1996) concludes that money velocity shocks (interpreted as demand shocks) do not justify an activist role for the monetary authority, while productivity shocks involve a procyclical monetary policy. Carlstrom and Fuerst (1998) show that these results were not robust to other type of equilibria considered. Nevertheless, external factors are key to understand business cycle fluctuations and the role of monetary policy in EMEs (see also Aghion et al., 2000; Caballero and Krishnamurthy, 2005; Christiano et al., 2004; Cook, 2004).

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