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Inflation targeting and the cyclicity of monetary policy

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ABSTRACT

We assess whether the adoption of inflation targeting (IT) frameworks has facilitated countercyclical monetary policies in a sample of 90 industrial and developing economies, 22 of which have adopted IT. Using propensity score matching methods, we show that the average treatment effect of IT has a statistically significant and quantitatively quite large effect in facilitating a more countercyclical monetary policy in IT adopting countries.

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1. Introduction

It is well documented that many—mainly developing—economies pursue procyclical macroeconomic policies that amplify the business cycle. Particular attention has been paid to the cyclical nature of fiscal policy in developing economies, with ample evidence that this typically has been procyclical (e.g., [Alesina et al., 2008](#)). There is also a large literature on the cyclicity of monetary policy, an early strand of which sees cycles as stemming from partisan considerations in the formulation of monetary policy (e.g. [Beck, 1987](#); [Chappell et al., 1993](#); [Minford and Peel, 1982](#); [Grier, 1991](#)). Another strand associates cycles with the so-called ‘Taylor rule’ ([Taylor, 1993](#)) in which desired real interest rates adjust in each period to eliminate a proportion of the gap between actual and desired values of inflation and output. More recently, the ‘opportunistic approach’ to monetary policy ([Orphanides and Wilcox, 2002](#); [Aksoy et al., 2005](#)) associates cycles with policymakers’ attempts to move inflation towards an intermediate inflation target that reflects both the desired inflation rate (or inflation target) and the inflation rate inherited from the previous period, with policy actions being particularly aggressive when inflation is some way from the desired level. Separate from the causes of monetary policy cyclicity, several recent studies have concluded that, as for fiscal policy, monetary policy in practice tends to be countercyclical in industrial economies and procyclical in developing economies, and that there is tentative evidence of a transition to countercyclical monetary policy in some of the latter countries ([Frankel, 2011](#); [McGettingham et al., 2013](#); [Vegh and Vuletin, 2013](#)).¹ In this paper, we expand the empirical literature on the determinants of monetary policy cyclicity by examining whether the adoption of an inflation targeting

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E-mail addresses: j.thornton@bangor.ac.uk (J. Thornton), c.vasilakis@bangor.ac.uk (C. Vasilakis).¹ Recent work suggests that greater counter cyclicity might be transmitted by the effects of monetary and macroeconomic policy announcements on liquidity flows (e.g., [Chordia et al., 2005](#); [Sensoy, 2016](#)) or a pass-through from treasury bills to private yields ([Kiley, 2016](#)).

(IT) regime has facilitated the procyclicality of monetary policy. We do this by evaluating the treatment effect of IT on monetary policy cyclicality using propensity score-matching methods, which have the advantage of avoiding the ‘self-selection problem’ of policy adoption that can give rise to biased results.

There are several reasons for believing that the adoption of an IT regime could facilitate procyclical monetary policy. The first and probably most important reason is the potential impact of IT on monetary policy credibility: adopting a single mandate such as IT can be an effective policy for a central bank that cannot commit to overcome the classic time-inconsistency problem. Policy credibility should be enhanced by the rules-based approach of IT and its emphasis on transparency and accountability relative to other monetary frameworks. Recent research suggests that IT adoption has positive credibility effects, for example, as measured by subsequent developments in government borrowing costs (Palomino, 2012; Thornton and Vasilakis, 2016). Second, the exchange rate flexibility inherent in IT should reduce the sensitivity of interest rates in so far as it provides a mechanism for the correction of external imbalances not available with an exchange rate peg (Jahjah et al., 2013). Third, the adoption of IT may signal a commitment to economic reforms and sounder macroeconomic policies (Roger, 2010). Finally, because of the constraint that an IT framework imposes on seigniorage revenues, IT adoption could result in better fiscal discipline and fiscal reforms that boost fiscal revenue and contain spending (Minea and Tapsoba, 2014).²

Formal empirical evidence on the impact of IT on the cyclicality of monetary policy appears to be limited to McGettingham et al. (2013). They apply panel regression techniques to 64 developing and high-income countries during the period 1985–2011 and report that countries that have adopted an IT framework tend to have more countercyclical monetary policy—that is, they find an improvement in the correlation coefficient between real interest rates and output in these countries. A drawback of this study is that it ignores the self-selection problem of policy adoption that arises when a country’s targeting choice is nonrandom and can lead to biased estimates. In particular, systematic correlation between the targeting choice and other covariates will cause the selection-on-observables problem, which can lead to biased estimates. We find evidence for the existence of this problem with an IT dummy in probit estimates being systematically correlated with variables such as macroeconomic performance, the level of public debt, the level of financial development, and the exchange rate regime. To address the self-selection problem, we evaluate the treatment effect of IT on monetary policy cyclicality making use of propensity score-matching methods. Our results indicate that IT has reduced procyclicality by about 11% of the correlation between the cyclical components of output and real interest rates.

2. Methodology

We test the impact of IT adoption on the cyclicality of monetary policy by examining developments in a 10-year rolling window correlation between the cyclical component of real GDP and the cyclical component of the real short-term interest rate, where the latter is our proxy for the stance of monetary policy.³ A positive correlation is indicative of countercyclical monetary policy, while a negative correlation indicates procyclical monetary policy. The treatment group comprises 22 advanced and developing economies that had adopted IT by the end of 2014. We draw on Hammond (2012) for a listing of countries that adopted IT and for the adoption dates. The control group comprises 68 non-IT countries for which we could access data on interest rates and the different control variables. 10-year rolling window correlations between the cyclical components of real interest rates and real GDP for the IT and non-IT countries are shown in Table 1.⁴ The table shows the average correlation for the pre- and post-IT periods for the inflation targeting countries, and for pre- and post-1999 for the non-IT countries, with 1999 chosen simply because this is the mean year of IT adoption by the inflation targeting countries. In both IT and non-IT countries, monetary policy became more countercyclical on average (i.e., the correlation coefficients increased). Annual developments in the average rolling correlation coefficients for IT and non-IT countries are shown in Fig. 1. Again, there appears to be little to choose between their experiences, with convergence in the average correlation coefficients after 2007 and suggestions of more procyclical policies during the 2007–2009 financial crisis and more countercyclical policies thereafter.

We make use of four propensity score-matching methods that have been applied recently to macroeconomic policy evaluations (e.g., Glick et al., 2006; Lin and Ye, 2007, 2009). The first is nearest-neighbour matching with replacement, which matches each treated country to the N control countries that have the closest propensity scores. We employ two nearest-neighbour matching estimators: $n = 1$ and $n = 3$. The second method is radius matching, which performs the matching based on estimated propensity scores falling within a certain radius R . We use a wide radius ($r = 0.05$), a medium radius ($r = 0.03$), and a tight radius ($r = 0.01$). The third method is the kernel matching method, which matches a treated group country to all

² Of course, not all the evidence is that IT adoption is beneficial. For example, Ball and Sheridan (2005) find no evidence that economic performance (measured by the behavior of inflation, output, and interest rates) improved in adopting countries relative to non-adopting countries in a sample of OECD countries; and Thornton (2016) reports that adoption of IT did not help reduce inflation and growth volatility in developing countries compared to the average experience with other monetary regimes, and was no more advantageous in these regards than the adoption of a hard or crawling peg exchange rate regime.

³ See McGettingham et al. (2013) and Vegh and Vuletin (2013) for similar approaches to measuring the cyclicality of monetary policy.

⁴ The real interest rate is measured as the average interest rate less the average rate of consumer price inflation; interest rates are mainly central bank discount rates (from the IMF’s International Financial Statistics database) because of their longer availability, though in some cases we have data for overnight interbank interest rates. The cyclical components of interest rates and GDP are derived from the average of the estimated trend in each series using a HP filter with $\lambda = 100$ and 6.25 .

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