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Does fear of floating shape monetary policy and does it matter?

Asif Ahmad
University of York

Richard Mcmanus
Canterbury Christ Church University

Gulcin Ozkan
King's College London

Abstract

Despite overwhelming evidence on the enduring preference for limiting exchange rate variability, our understanding of how such fear of floating (FoF) impacts policy and macroeconomic outcomes is far from complete. Using data from 166 countries over 1950-2019, we show that (i) FoF has been prevalent throughout our sample period; (ii) FoF is a major driver of monetary procyclicality; and (iii) both FoF and procyclical monetary policy result in adverse outcomes in the form of greater volatility in output and inflation and lower output growth. As such, our findings point to the importance of establishing frameworks to build up resilience against exchange rate variability as a key step in establishing countercyclicality and boosting short-term stability and long-term growth.

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Contact: Asif Ahmad - asif.ahmad@york.ac.uk, Richard Mcmanus - richard.mcmanus@canterbury.ac.uk, Gulcin Ozkan - gulcin.ozkan@kcl.ac.uk.
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1 Introduction

Cross-country analyses of currency arrangements have consistently revealed that policymakers actively seek to limit the variability in exchange rates - a phenomenon referred to as fear of floating following Calvo & Reinhart (2002). In spite of the major changes in monetary policy frameworks over the last three decades, most notably in the form of widespread adoption of inflation targeting regimes both in advanced and emerging economies, the preference for limiting exchange rate flexibility prevails (Ilzetzki et al. 2019).[1]

A key question arising from the prevalence of fear of floating is how such attempts to limit the exchange rate variability impact policymaking more broadly. Existing theoretical work in open economy macroeconomics points to a clear link between policymakers' concern for exchange rate variability and the timing of monetary policy actions. For example, in countries heavily reliant on external finance a 'sudden stop' of capital inflows forces policymakers to raise interest rates when output is already contracting (Yakhin et al. 2008, Bianchi & Coulibaly 2023). Similarly, when the share of external trade in total output is substantial, an unfavourable shock to the export sector putting pressure on the exchange rate results in higher policy rates (Demirel 2010). Alternatively, in countries where importing firms use trade credit in dollars for which they hold collateral in domestic currency when there is pressure on the exchange rate authorities tend to hike interest rates (Choudhary et al. 2010).

In all these three cases, the reluctance to let the currency depreciate forces authorities to raise interest rates during downturns, resulting in procyclical monetary policy. This is because, the adverse effects of an exchange rate depreciation - bankruptcy risk in the public and private sector widely referred to as balance sheet effects - prevent policymakers from following countercyclical monetary policy that requires reducing interest rates in bad times.

Motivated by both the enduring evidence on the reluctance of countries to allow exchange rates to float freely and the potential implications of monetary procyclicality, the purpose of this paper is twofold: to systematically examine (i) whether fear of floating impacts the cyclicality of monetary policy; and (ii) whether fear of floating impacts wider macroeconomic outcomes. Importantly, our empirical strategy accounts for both the direct and indirect impact of fear of floating on macroeconomic outcomes including those through its role in the cyclicality of monetary policy. In doing so, we also provide a comprehensive analysis of macroeconomic consequences of monetary procyclicality.

Using data from 166 countries over the period 1950-2019, we find clear evidence of the prevalence of both fear of floating and procyclical monetary policy throughout the sample period, especially in emerging and developing economies. Moreover, we identify the former as a key driver of the latter. Importantly, we show that both fear of floating and procyclical monetary policy induce adverse macroeconomic outcomes. As such, our findings suggest that efforts toward strengthening policy frameworks to boost resilience against exchange rate variation are likely to yield significant returns.

[1] The preference for limited exchange rate flexibility is shown to be related to (i) vulnerability to self-fulfilling crises (Bianchi & Coulibaly 2023); (ii) the size of debt obligations in foreign currency (Hausmann et al. 2001, Bleaney & Ozkan 2011); (iii) the degree of pass-through from exchange rates to inflation (Ghosh 2013); (iv) the scale of dollarization in the domestic economy (Calvo & Reinhart 2002); and (v) dollar invoicing of internationally traded goods (Ilzetzki et al. 2021).

2 Methodology

This section sets out how we measure both fear of floating (henceforth FoF) and the cyclicality of monetary policy; how we test for the linkages between the two; and how we quantify the macroeconomic consequences of both the former and the latter.

2.1 Monetary procyclicality

We use three measures of monetary policy procyclicality in our analysis. The first considers the correlation between the cyclical components of the short-term nominal interest rate $i^{cyc}_{j,t}$ where j and t denote country and time period respectively and real output ($Y^{cyc}_{j,t}$); see for example Kaminsky et al. (2004), Yakhin et al. (2008), Végh & Vuletin (2012), McGettigan et al. (2013) and Duncan (2014).[2] A positive (negative) correlation ($Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t}) > 0$) indicates monetary counter(pro)cyclicality.[3]

Our second measure of monetary policy cyclicality is based on estimates of central banks' reaction function in the form of Taylor rules (Taylor 1993). This is done by regressing the cyclical component of short-term nominal interest rates against cyclical deviations in inflation, $\pi^{cyc}_{j,t}$ and in real output as in equation (1).

$$i^{cyc}_{j,t} = \alpha_i + \gamma_\pi \pi^{cyc}_{j,t} + \gamma_Y Y^{cyc}_{j,t} + \epsilon_{j,t} \tag{1}$$

where $i^{cyc}_{j,t}$, $\pi^{cyc}_{j,t}$ and $Y^{cyc}_{j,t}$ denote cyclical components of, respectively, nominal short term-policy rate, CPI inflation and the real output, representing deviations from their respective trends. The trend and cyclical components of these variables are measured by using an HP filter with a frequency $\lambda = 100$ for annual data and $\lambda = 1{,}600$ for quarterly data. $\epsilon_{j,t}$ is the unobserved error term.

We estimate specification (1) by using ordinary least square method (OLS). We correct for the first-order autocorrelation in the residuals by using a standard two steps Prais-Winsten procedure based on country specific estimation (as in McManus & Ozkan 2015, amongst others).[4] The following transformation takes place during autocorrelation correction procedure for individual country j, where

$$\epsilon_{j,t} = \rho_j \epsilon_{j,t-1} + \nu_{j,t} \tag{2}$$

$$i^{cyc}_{j,t} = \alpha_i(1-\rho_j) + \rho_j i^{cyc}_{j,t-1} + \gamma_\pi(\pi^{cyc}_{j,t} - \rho_j \pi^{cyc}_{j,t-1}) + \gamma_Y(Y^{cyc}_{j,t} - \rho_j Y^{cyc}_{j,t-1}) + \nu_{j,t} \tag{3}$$

Equation (2) represents an autoregressive process of order 1 (AR(1)) where $\epsilon_{j,t}$ is the current value, ρ_j is the autoregressive coefficient, and $\nu_{j,t}$ is the white noise term.

[2] Similar to the existing literature, we use the Hodrick-Prescott filter to identify cyclical components of these two variables.

[3] It has been noted that while this correlation coefficient is easy to compute and interpret, it may not necessarily be sufficiently informative if countries exhibit different levels of volatility in $i^{cyc}_{j,t}$ and $Y^{cyc}_{j,t}$ (Forbes & Rigobon 2002).

[4] To identify the correct order of autocorrelation among the error term, we first estimate the specification (1), and investigate correlogram Ljung-Box Q-statistics of the partial autocorrelation function (PAC) to detect the correct order z.

Our third method of estimating monetary procyclicality is by adapting the Taylor rule in specification (1) to include $\varepsilon_{j,t}^{cyc}$, the cyclical component of the rate of change of the nominal exchange rates, defined as deviation from its respective Hodrick-Prescott (HP) trend as follows;

$$i_{j,t}^{cyc} = \alpha_i' + \gamma_\pi' \pi_{j,t}^{cyc} + \gamma_Y' Y_{j,t}^{cyc} + \gamma_\varepsilon' \varepsilon_{j,t}^{cyc} + \epsilon_{j,t}' \tag{4}$$

We estimate specification (4) by using OLS. Similar to the above, we correct for the first-order autocorrelation in the residuals by using a standard two-step Prais-Winsten procedure.[5] In (1) and (4) monetary procylicality is represented through the coefficients γ_Y and γ_Y' respectively, with positive (negative) values representing counter(pro)cyclical policy. Both (1) and (4) utilize ordinary least squares (OLS) method.[6] Differences in the estimates of γ_Y and γ_Y' would represent policy being at least partially motivated by exchange rate movements.

2.2 Fear of free floating

We use two statistics to measure a country's potential fear of free floating over a given time horizon: (1) the correlation between the cyclical components of the rate of change in the nominal exchange rate and the short-term nominal interest rate (see for example Végh & Vuletin 2012)[7]; (2) the estimates of γ_ε' in (4). In both cases a positive value - a positive correlation and a positive value of γ_ε' - is an indication of FoF.

2.3 The link between monetary procyclicality and a fear of free floating

The simplest measure of the link between FoF and the cyclicality of monetary policy is the correlation between the former and the latter. Alternatively, an examination of the differences between γ_Y and γ_Y' from (1) and (4)) also provides information on the

[5]The following transformation takes place during the autocorrelation correction procedure for individual country j, where

$$\epsilon_{j,t} = \rho_j' \epsilon_{j,t-1}' + \nu_{j,t}' \tag{5}$$

Equation (5) represents an autoregressive process of order 1 (AR(1)) where $\epsilon_{j,t}'$ is the current value, ρ_j' is the autoregressive coefficient, and $\nu_{j,t}'$ is the white noise term.

$$i_{j,t}^{cyc} = \alpha_i'(1-\rho_j') + \rho_j' i_{j,t-1}^{cyc} + \gamma_\pi'(\pi_{j,t}^{cyc} - \rho_j' \pi_{j,t-1}^{cyc}) + \gamma_Y'(Y_{j,t}^{cyc} - \rho_j' Y_{j,t-1}^{cyc}) + \nu_{j,t}' \tag{6}$$

[6]Both (1) and (4) have the advantage that other variables that are likely to comove with the business cycle are being controlled for in the specification. Moreover, specifications (1) and (4) provide both an estimate of the strength and consistency of the relationship between the nominal interest rates and output through the point estimate and standard deviation of γ_Y and γ_Y' respectively.

[7]As is noted by Végh & Vuletin (2012) if the uncovered interest parity held, the correlation between interest rates and the exchange rate would always be positive, rendering this measure meaningless. However, there is substantial evidence on the failure of UIP, establishing it as a stylized fact in international finance (see for example Engel 2014, Lothian 2016, among many others). Furthermore, we utilize a variety of interest rate measures and not just short-term market rates.

relationship between FoF and monetary cyclicality. Following Calderón et al. (2004), Morón & Winkelried (2005) and Ahmad et al. (2021), a third and more formal approach involves estimating a panel specification of the following form:

$$i_{j,t}^{cyc} = \gamma_{\pi}''\pi_{j,t}^{cyc} + \gamma_{Y}''Y_{j,t}^{cyc} + \gamma_{FoF}''FoF_{j,t} + \gamma_{YFoF}''\left[Y_{j,t}^{cyc} \times FoF_{j,t}\right] + \gamma_{X}''X_{j,t} + \gamma_{YX}''\left[Y_{j,t}^{cyc} \times X_{j,t}\right] + \delta_0 + \eta_t + \zeta_{j,t} \quad (7)$$

where $X_{j,t}$ is a set of control variables, and δ_0, η_t, $\zeta_{j,t}$ are the unobserved error terms, and all else is as specified earlier. Empirical specification (7) explicitly accounts for both direct and indirect effects on interest rates (through monetary cyclicality), of both FoF, and the set of control variables, as estimated by γ_{FoF}'' and γ_{X}''; and γ_{YFoF}'' and γ_{YX}'', respectively.

In equation (7), the cyclicality of monetary policy is measured by $\partial i^{cyc}/\partial Y^{cyc} = \gamma_{Y}'' + \gamma_{YFoF}'' \times FoF + \gamma_{YX}'' \times X$ - the degree to which the cyclicality of monetary policy is driven by FoF - our key coefficient of interest. For FoF to be a source of monetary procyclicality, we would expect γ_{YFoF}'' to be estimated with a negative coefficient and to be statistically significant.

2.4 Macroeconomic consequences

To consider the macroeconomic consequences of both monetary procyclicality and FoF, we estimate the following panel specification incorporating measures of both monetary procyclicality and FoF:

$$Y_{j,t} = \theta MP_{j,t} + \gamma FoF_{j,t} + \beta Z_{j,t} + \alpha_0 + \theta_t + e_{j,t} \quad (8)$$

where $Y_{j,t}$ represents a macroeconomic outcome for country j over period t, $Z_{j,t}$ are control variables specific to that macroeconomic outcome and α_0, θ_t, $e_{j,t}$ are the unobserved error terms, similar to the approach taken by Lane (2003), Woo (2009), and McManus & Ozkan (2015). In equation (8), $MP_{j,t}$ represents a measure of monetary procyclicality (proxied by either of $Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$, γ_Y or γ_Y') and $FoF_{j,t}$ a measure of fear of free floating ($Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$ or γ_{ε}').[8] We estimate specification (8) by using panel data, including country fixed effects and cross-sectional weighting matrix to take account of potential cross-sectional heteroscedasticity.

2.5 Data

A detailed description of our data set and the definitions of variables are provided in Appendix A.

[8]For the purposes of estimation we use a ten-year rolling correlation for annual data, and for quarterly data we use 20-quarter rolling correlation for estimations of $MP_{j,t}$ and $FoF_{j,t}$, as also adopted by Morón & Winkelried (2005), Calderón et al. (2004), Duncan (2014), Végh & Vuletin (2012).

3 Fear of floating, cyclicality of monetary policy and macroeconomic outcomes

In this section we first examine the presence and the evolution of FoF and the cyclicality of monetary policy over our sample period, as presented in sub-section 3.1. We then turn to exploring the link between the two, focussing on the extent to which monetary procyclicality is brought upon by FoF in sub-section 3.2. Finally, we examine the macroeconomic consequences of both FoF and monetary procyclicality in sub-section 3.3, while robustness checks are provided in 3.4.

3.1 The prevalence of fear of free floating and monetary procyclicality

Table 1 presents descriptive statistics on both FoF ($Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$) and monetary cyclicality ($Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$) for the whole sample and for the three country groups, separately. The second line in each set of rows displays the number of countries that exhibit FoF (procyclical monetary policy) on the left (right). FoF is represented by $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t}) > 0$ which identifies a rise (fall) in the cyclical component of the interest rate when the exchange rate depreciates (appreciates). The first column in panel (a) in Table 1 presents descriptive statistics on $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ for the whole sample and those split by country classification. On average, the mean $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ across all countries is 0.038, with -0.045 for advanced nations and 0.061 for emerging economies and 0.074 for developing countries. Moreover, 59 percent of emerging economies and 64 percent of developing ones have a positive value for $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$. Using the annual data set, 76 percent of both emerging and developing nations are found to have positive ($Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$); with positive mean values of $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ for all three groups of countries (panel (b) of Table 1).

Monetary procyclicality is denoted by negative values $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$ indicating interest rate falls corresponding to rises in output. In total, 29 (34 percent) countries conduct procyclical monetary policy; however, 48 percent of developing countries are estimated to have conducted procyclical policy over the period, compared with 29 percent of advanced economies and 28 percent of emerging countries. Moreover, the average value of $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$ for advanced economies is 0.106, compared to 0.038 for emerging economies and 0.010 for developing countries.

Panels (c)-(d) of Table 1 illustrate further descriptive statistics for estimates of both $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ and $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$, now separating the sample between observations up to 2000 and those from 2000 onward; this analysis is presented only with the quarterly data set due to data availability. It is evident that the scale of potential FoF diminished over time, although 53 percent of emerging economies exhibited a positive $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ in the post-2000 period [9]. The scale of monetary procyclicality also lessened in the post-2000 sample; however, 28 percent of emerging economies and 36 percent of developing economies were still seen to conduct procyclical monetary policy.[10]

[9] In Appendix C we repeat our estimations using the coefficients estimated by the Taylor rules as measures of monetary cyclicality and fear of floating (γ'_Y and γ'_ε), establishing findings similar to those presented above.

[10] These findings reconcile with Aguilar et al. (2020) and Coulibaly (2012) and Végh & Vuletin (2012) later of whom find 'graduation' of some emerging markets from procyclical to countercyclical policy,

Table 1: Decriptive statistics of $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$ and $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$

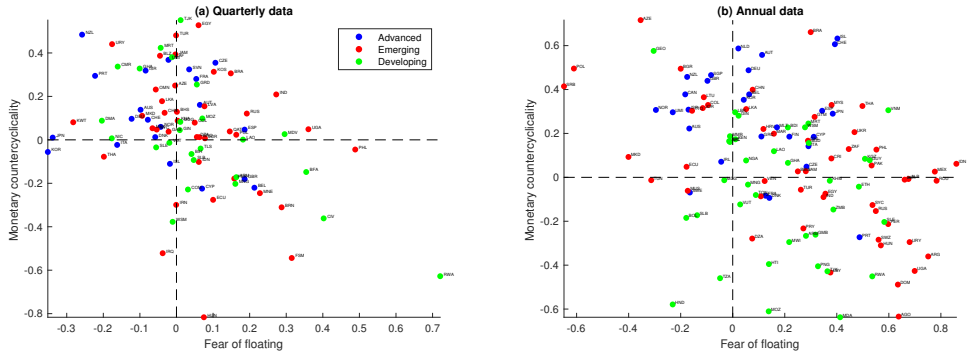
	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$				$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$			
	All	Advanced	Emerging	Developing	All	Advanced	Emerging	Developing
	(a) Whole sample, quarterly data							
Estimate	0.047	0.106	0.038	0.010	0.038	-0.045	0.061	0.074
Count [Total]	29 [85]	6 [21]	11 [39]	12 [25]	47 [85]	8 [21]	23 [39]	16 [25]
	(b) Before 2000, quarterly data							
Estimate	-0.007	0.061	0.004	-0.094	0.050	-0.026	0.079	0.078
Count [Total]	23 [47]	4 [13]	9 [21]	10 [13]	25 [47]	5 [13]	13 [21]	7 [13]
	(a) 2000 and onwards, quarterly data							
Estimate	0.168	0.201	0.141	0.178	-0.003	-0.046	0.008	0.015
Count [Total]	27 [82]	8 [21]	10 [36]	9 [25]	38 [82]	8 [21]	19 [36]	11 [25]
	(d) Whole sample, annual data							
Estimate	0.066	0.271	0.050	-0.063	0.196	0.084	0.267	0.183
Count [Total]	48 [117]	4 [28]	23 [51]	21 [38]	86 [117]	18 [28]	39 [51]	29 [38]

Descriptive statistics of $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$ (the left-hand-side of the table) and $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ (the right-hand-side of the table). The 'Estimate' is the mean average of the estimate and the 'Count [total]' rows represent the number of observations with either $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t}) < 0$ (on the left-hand-side) or $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t}) > 0$ (on the right-hand-side) and in square brackets the total number of observations. Each panel represents a different dataset or time horizon, as illustrated in the title of each panel. Countries are classified as in Nielsen (2011).

Further details on cross-country differences in the cyclicality of monetary policy are provided by Figure 1. As is observed in panel (a) of Figure 1, while the majority of countries has conducted counter-cyclical policy over the sample period, there is a significant minority where policy has been procyclical. Panel (b) of Figure 1 suggests that monetary procyclicality also extends to developing nations, 55 percent (21/38) of which are estimated to have conducted procyclical monetary policy over the sample period when using the annual data set, consistent with the results for emerging economies, as seen in panel (d) of Table 1.

consistent with McGettigan et al. (2013).

Figure 1: Distribution of $Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$ and $Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$



Scatter plots of $Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$ and $Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$ from the quarterly data set (panel (a)) and the annual data set (panel (b)). Countries are classified as in Nielsen (2011).

3.2 Fear of free floating as a source of monetary procyclicality

We now turn to examining the estimation results from specification (7), presented by Table 2. It is clear that monetary policy, on average, has been countercyclical: as the cyclical component of output increases, so too does the cyclical component of the interest rate. Importantly, there is clear evidence that the extent of monetary policy countercyclicality is eroded by FoF, evidenced by the consistently negative and significant estimate of γ_Y'' . Moreover, the impact of FoF on monetary cyclicality remains statistically significant even after controlling for the cyclical component of the exchange rate (columns (4)-(6) of Table 2). More specifically, a one standard deviation increase in our FoF measure reduces average monetary countercyclicality by between a third and a half of a standard deviation in the specifications in Table 2.

As is clear, results in Table 2 are not sensitive to whether we estimate specification (7) using estimated generalised least squares ('EGLS') or generalised method of moments ('GMM'). Moreover, all the results from Table 2 remain intact when using quarterly data (not reported). We finally subject these results to two further sensitivity checks. First, as indicated in specification (7) we include further control variables into the analysis. Greater central bank independence, adoption of inflation targeting and greater capital account openness lower the average interest rate, but does not influence monetary cyclicality. Importantly, the finding that FoF lowers monetary countercylicality is maintained in all but one of the ten specifications.

3.3 The macroeconomic consequences of fear of free floating and monetary procyclicality

The evidence presented above on the role FoF plays in the cyclicality of monetary policy points to clear costs associated with FoF. The aim of this section is to quantify the aggregate costs of FoF, by explicitly incorporating its impact on the cyclicality of monetary policy. Doing so also serves another important purpose: to establish macroeconomic consequences of procyclical monetary policy. While the need for countercyclical policy for macroeconomic stability is widely acknowledged, little attention has been paid to

Table 2: The impact of fear of free floating on monetary cyclicality

	(1)	(2)	(3)	(4)	(5)	(6)
Method	EGLS	GMM	GMM	EGLS	GMM	GMM
Set		1	2		3	4
$\pi^{cyc}_{j,t}$	0.161***	0.159***	0.159***	0.147***	0.115***	0.115***
	(0.017)	(0.018)	(0.018)	(0.017)	(0.023)	(0.023)
$Y^{cyc}_{j,t}$	0.082***	0.095***	0.095***	0.082***	0.127***	0.127***
	(0.020)	(0.022)	(0.022)	(0.019)	(0.031)	(0.031)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	-0.001	-0.002**	-0.002**	-0.001	0	0
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$*$Y^{cyc}_{j,t}$	-0.086**	-0.092**	-0.092**	-0.080**	-0.010**	-0.010**
	(0.034)	(0.036)	(0.036)	(0.033)	(0.043)	(0.043)
$\varepsilon^{cyc}_{j,t}$				0.019***	0.087***	0.087***
				(0.004)	(0.031)	(0.031)
Adjusted R Square	0.1253	0.2287	0.2287	0.1316	0.0367	0.0364
Observations	2838	2713	2713	2838	2713	2713
Number of Countries	125	125	125	125	125	125
J-Statistics		1.403	1.403		2.086	2.086
Prob (J-Statistics)		0.236	0.236		0.149	0.149

Estimations from specification (7) with annual data and dependent Variable $i^{cyc}_{j,t}$. EGLS estimations are performed using cross-sectional country-fixed effects and a cross-sectional weighting matrix. Panel GMM EGLS estimations are performed using White period (cross-section cluster) instrument weighting matrix (2SLS);); for both GMM and EGLS estimation, White heteroscedasticity-consistent standard errors are presented in parentheses. GMM estimations Columns (2), (3), (5), and (6) were performed using instrumental variable Set 1, Set 2, Set 3, and Set 4 respectively. Instrumental variables are sets composed of lagged regressors and dependent variable. Instrument Set 1 composed of lags of $i^{cyc}_{j,t-2}$, $Y^{cyc}_{j,t-1}$, $Corr(i^{cyc}_{i,t-1}, \varepsilon^{cyc}_{i,t-1})$, $\pi^{cyc}_{j,t-1}$, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$*$Y^{cyc}_{j,t-1}$ and constant added to instrument list. Instrument Set 2 is composed of Set 1 and $\pi^{cyc}_{j,t-2}$. Instrument Set 3 composed of lags of $i^{cyc}_{j,t-2}$, $\pi^{cyc}_{j,t-1}$, $Corr(i^{cyc}_{i,t-1}, \varepsilon^{cyc}_{i,t-1})$, $Y^{cyc}_{j,t-1}$, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$*$Y^{cyc}_{j,t-1}$, $\varepsilon^{cyc}_{j,t-4}$ and constant added to instrument list. Instrument Set 4 is composed of Set 3 and $\pi^{cyc}_{j,t-2}$ and $\varepsilon^{cyc}_{j,t-4}$. "Probability J-statistic" presents p-value of a Sargan–Hansen test. Abbreviations: EGLS, Estimated Generalised Least Squares; GMM, Generalised Method of Moments. Level of Significance ***1%, **5%, *10%

the macroeconomic costs of pursuing procyclical monetary policy. The two exceptions are Aguiar & Gopinath (2007) and McGettigan et al. (2013) both of which point to the moderating role of countercyclical monetary policy in output volatility. Importantly, and as stated above, to the best of our knowledge, there exists no systematic assessment of how FoF influences macroeconomic outcomes.

3.3.1 Impact on output

Table 3 presents estimation results on the sources of growth volatility by explicitly incorporating three different measures of monetary cyclicality, $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$, γ_Y and γ'_Y. As can be seen, monetary procyclicality - corresponding to the negative values of $Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$, γ_Y and γ'_Y - leads to greater volatility in output growth in all specifications for all three measures of cyclicality. It is also clear that when FoF is included in the estimations (proxied by the correlation measure - $Corr(i^{cyc}_{i,t-1}, \varepsilon^{cyc}_{i,t-1})$ - both FoF and monetary policy procyclicality are estimated to increase growth volatility and these results are highly statistically significant. That is, both FoF and procyclical monetary policy aggravate output volatility, holding all else constant. To quantify these results, a one standard deviation increase in monetary procyclicality increases growth volatility by 2-3 percent of a standard deviation in growth volatility, whereas a one standard deviation increase in our FoF measure generates a 9 percent of a standard deviation in growth volatility.

Table 4 presents estimation results where the dependent variable is now the average real GDP growth (measured over the rolling ten year average of changes to real GDP). As is seen, monetary procylicality is estimated to reduce economic growth; with one standard deviation increase in monetary procyclicality reducing the growth rates by between 10-20 percent of a standard deviation. FoF, on the other hand, does not exert a statistically significant effect on long run growth performance directly. As above, these results are not sensitive to: adding more control variables to the analysis; lagging monetary cyclicality and fear of floating; using GMM estimation; and no overlapping periods, as presented in Appendix B.

3.3.2 Impact on inflation

Table 5 performs similar analysis as Table 3-4 where now the dependent variable is average inflation, π, measured as the rolling average of the price deflator over ten years and is transformed by using $\pi/(1+\pi)$ to remove the impact of high outliers following Cukierman et al. (1992). It is clear that, higher levels of both FoF and monetary procyclicality lead to higher levels of inflation. More specifically, a one standard deviation increase in monetary procyclicality increases average inflation by 2-5 percent depending on the specification, whereas a one standard deviation increase in our FoF measure increases average inflation by 5-6 percent of a standard deviation in inflation; further, this latter estimation does not include the estimated reduction in monetary countercyclicality as a result in higher FoF, as established by the earlier results presented in Table 2.

3.4 Further robustness

The robustness of our results from Section 3 have already been tested against: varying data frequency; the method of estimation; varying measures of monetary cyclicality; the

Table 3: The effects of monetary cyclicality and fear of free floating on growth volatility

	(1)	(2)	(3)	(4)	(5)	(6)
INITIALLNRGDPCH	-0.016***	-0.017***	-0.017***	-0.018***	-0.017***	-0.018***
	(0.002)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)
$Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$	-0.005***	-0.004***				
	(0.001)	(0.001)				
γ_Y			-0.003***	-0.002**		
			(0.001)	(0.001)		
γ'_Y					-0.002**	-0.002**
					(0.001)	(0.001)
AVGLNPOP	0.034***	0.047***	0.038	0.053***	0.037	0.052***
	(0.012)	(0.012)	(0.030)	(0.012)	(0.030)	(0.012)
AVGTRADE	-0.005	-0.003	-0.007	-0.005	-0.007	-0.004
	(0.004)	(0.004)	(0.012)	(0.004)	(0.012)	(0.004)
AVGGEXP	-0.075***	-0.073***	-0.066*	-0.065***	-0.068*	-0.068***
	(0.014)	(0.014)	(0.038)	(0.014)	(0.038)	(0.014)
$Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$		0.015***		0.015***		0.015***
		(0.001)		(0.001)		(0.001)
Adjusted R Square	0.8177	0.8177	0.7903	0.7903	0.7957	0.7957
Observations	2562	2562	2562	2562	2562	2562
Number of Countries	108	108	108	108	108	108

Estimations from specification (8) with annual data and dependent variable volatility of growth rate of real GDP per-capita in percentage terms calculated by taking ten year rolling standard deviation of annual percentage change of real GDP per-capita. Level of Significance ***1%, **5%, *10%.

Table 4: The effects of monetary cyclicality and fear of free floating on GDP growth

	(1)	(2)	(3)	(4)	(5)	(6)
INITIALLNRGDPCH	0.178***	0.180***	0.173***	0.173***	0.173***	0.173***
	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)
INITIALLNRGDPCHSQ	-0.035***	-0.035***	-0.034***	-0.034***	-0.034***	-0.034***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
INITIALHC	0.043***	0.043***	0.044***	0.044***	0.044***	0.045***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
$Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$	0.011***	0.011***				
	(0.002)	(0.002)				
γ_Y			0.003***	0.003***		
			(0.001)	(0.001)		
γ'_Y					0.004***	0.004***
					(0.001)	(0.001)
AVGTRADE	0.006	0.006	0.006	0.006	0.005	0.005
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AVGGEXP	-0.179***	-0.182***	-0.177***	-0.177***	-0.176***	-0.176***
	(0.019)	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)
$Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$		0.002		0		0
		(0.002)		(0.002)		(0.002)
Adjusted R Square	0.7456	0.748996	0.742	0.498365	0.7322	0.494561
Observations	2466	2466	2466	1486	2466	1725
Number of Countries	102	102	102	66	102	66

Estimations from specification (8) with annual data and dependent variable growth rate of real GDP per-capita. Level of Significance ***1%, **5%, *10%.

Table 5: The effects of monetary cyclicality and fear of free floating on inflation

	(1)	(2)	(3)	(4)	(5)	(6)
INITIALLNRGDPCH	-0.047***	-0.047***	-0.049***	-0.048***	-0.049***	-0.049***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	-0.002**	-0.001**				
	(0.001)	(0.000)				
γ_Y			-0.002**	-0.002***		
			(0.001)	(0.000)		
γ'_Y					-0.002***	-0.002***
					(0.000)	(0.000)
AVGTRADE	0.028***	0.027***	0.029***	0.028***	0.0291***	0.028***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
EXEVOL	0.121***	0.118***	0.122***	0.119***	0.121***	0.118***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$		0.006***		0.006***		0.007***
		(0.001)		(0.001)		(0.001)
Adjusted R Square	0.8812	0.884	0.8794	0.8828	0.8792	0.8836
Observations	2592	2592	2592	2592	2592	2592
Number of Countries	113	113	113	113	113	113

Estimations from specification (8) with annual data and dependent variable of the GDP price deflator rolling average for ten years in percentage terms. Level of Significance ***1%, **5%, *10%.

use of lagged independent variables; additional control variables; and the use of non-overlapping time horizons. In Appendix D, we carry out further robustness checks with alternative measures of FoF, the exchange rate, and the interest rate.

4 Conclusion

Having empirically linked the macroeconomic outcomes in the form of higher output and inflation volatility and lower level of growth with procyclical monetary policy, our findings point to the importance of shifting from procyclical to countercyclical monetary policy. Given the role fear of floating plays in monetary procyclicality, overcoming the fear of floating emerges as a critical factor in graduating from monetary policy procyclicality. Our results highlight the importance of strengthening policy frameworks to build up resilience against exchange rate variability as a key step in establishing countercyclicality and hence in boosting both short-term stability and long-term growth.

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A Data appendix

Variable	Description and source
$i^{cyc}_{j,t-1}$	The cyclical component of the central bank's nominal short term-policy rate derived from deviation of its Hodrick-Prescott Trend. We use HP filter with a frequency ($\lambda = 100$) for annual data and ($\lambda = 1{,}600$) for quarterly data. We use discount window interest rate depending on data availability as a proxy for monetary policy instruments. Where the discount rate is not available, we use money deposit rate, market rate, lending rate, saving rate or treasury bill rate. The rates are in percentage terms. We exclude observations of very large nominal interest rates during hyperinflation episodes above the 99th percentile to remove outliers. For the sample countries, which has experienced hyperinflation we start our analysis just after the hyperinflation period (inflation rate below 99th percentile). Annual and quarterly data are collected over the time horizon 1951-2019. Data are obtained from Vegh and Vuletin (2012) and IMF International Financial Statistics (IFS, 2020) which are accessed through UK data services.
$\pi^{cyc}_{j,t-1}$	The cyclical components of inflation derived from deviation of its Hodrick-Prescott Trend. Inflation is calculated using the consumer price index (CPI) percentage change over the corresponding period of the previous year. Wherever the CPI is not available, we use the GDP Deflator to calculate inflation. The rates are in percentage terms. We use non-seasonally adjusted data for quarterly frequency, where we use the X12 multiplicative method to remove the seasonal components. Data are obtained from the World Development Indicator (WDI, 2020) and IMF International Financial Statistics (IFS, 2020).
$Y^{cyc}_{j,t-1}$	The cyclical components of real GDP derived from logarithm deviation of its Hodrick-Prescott Trend. Real GDP converted from its nominal values, where possible, using GDP deflator and otherwise by using Consumer Price Index (CPI). Wherever the nominal GDP data are not available in quarterly frequency for long time horizon, we use real GDP volume index. Data source: WDI (2020) and IFS (2020).
$\varepsilon^{cyc}_{j,t-1}$	Exchange rate cycle is the cyclical component of the rate of change of the exchange rates derived from deviation of its Hodrick-Prescott (HP) Trend. The rate of change of currency deprecation or appreciation is calculated by taking the percentage change over the corresponding period of the previous year. A positive value of the exchange rate cycle is the currency depreciation, and a negative value of the exchange rate cycle is the currency appreciation. We use the nominal exchange rate of domestic currency against US dollar to compute the exchange rate cycle. For European countries, we use the nominal effective exchange rate. We restrict our sample to include countries with floating or dirty floating exchange rate regimes. We follow Ilzetzki et al. (2019) for exchange rate classification.
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	Fear of free floating is the correlation between the cyclical components of the short-term nominal interest rate cycle and the rate of the exchange rate cycle. To compute the exchange rate cycle, we used three different sets of data, nominal exchange rate, real effective exchange rate, nominal effective exchange rate. For annual data, we use 10 years rolling correlation, and for the quarterly data we used 20 quarter rolling correlation.
FC	The cyclicality of fiscal policy calculated based on the country's yearly data using 10-year rolling correlation between the cyclical component of real GDP and general government final consumption expenditure over the period 1951-2019. Cyclical component of real general government final consumption expenditure derived from logarithm deviation of its Hodrick-Prescott trend. Real annual consumption converted from its nominal values, where possible, using GDP deflator and otherwise by using CPI. Data are in the current local currency. Cyclical component of real GDP derived from logarithm deviation of its Hodrick-Prescott trend. Real annual GDP converted from its nominal values, where possible, using GDP deflation and otherwise by using CPI.
CBIUI	Central Bank Independence Index (CBI) unweighted index: Raw average of the four components: Chief Executive Officer, Objectives, Policy Formulation, and Limitations on lending to the government. It ranges from 0 (minimum) to 1 (maximum) CBI. For the non-overlapping panel, the central bank independence index was measured using 10-year average data in 10-year intervals. Data are obtained from Cukierman, Webb, and Neyapti (1992). Data Coverage: 1970 to 2012.
TRANIN	Transparency Index is a combined index of the Information Transparency Index and Accountability Transparency Index. Accountability Transparency. It ranges from 0 (minimum) to 100 (maximum) Transparency. There are 16 separate indicators for the Accountability Transparency Index (six for the measurement of free media, four for fiscal transparency, and six for political constraints). Information Transparency. Sub-indicators are constructed to reflect the nuances of this type of transparency. Specifically, three sub-components are constructed: (1) the existence of a free and independent media; (2) fiscal (budgetary) transparency; (3) political constraints. The author has 13 separate indicators for the Information Transparency Index (six for the quantity of information, four for the processes that generate that information, and three for the infrastructure required to disseminate that information). For the non-overlapping panel, the transparency index was measured using 10-year average data in 10-year intervals. Data obtained from Williams (2015). Data Coverage: 1980-2010.
CORRI	Political corruption index. The index is calculated by taking the average of (a) the public sector corruption index; (b) the executive corruption index; (c) the indicator for legislative corruption; and (d) the indicator for judicial corruption. It ranges from 0 (minimum) to 1 (maximum). For the non-overlapping panel, the political corruption index was measured using 10-year average data in 10-year intervals. Data are obtained from Coppedge et al. (2020), Data Coverage: 1950-2019.

IT	Presence of inflation targeting framework. Dummy variable. 1=inflation targeting; 0=not inflation targeting. Source: IMF AREAER; Carare and Stone (2006); Caceres, Carriere-Swallow, and Gruss (2016), Data Coverage: 1970-2019.
KAOPEN	The Chinn-Ito index (KAOPEN) is an index measuring a country's degree of capital account openness. Index normalized to range between zero (minimum) to one (maximum). For the non-overlapping panel, the Chinn-Ito index was measured using 10-year average data in 10-year intervals. Source: Chinn and Ito (2006), Data Coverage: 1970-2018.
DEFACTOFINOPEN	De facto financial openness, defined as the sum of international assets and liabilities in percent of GDP.For non-overlapping panel, the de facto financial openness measured using 10-year average data in 10-year interval.Source: Lane and Milesi-Ferretti (2007); IMF Balance of Payments and International Investment Position Statistics, Data Coverage: 1970-2019.
LIQLIB	Liquid liabilities to GDP. The ratio of liquid liabilities to GDP, calculated using the following deflation method: $(0.5) * [Ft/P_et + Ft - 1/P_et - 1]/[GDPt/P_at]$ where F is liquid liabilities, P_e is end-of period CPI, and P_a is average annual CPI. Raw data are from the electronic version of the IMF's International Financial Statistics. Liquid liabilities (IFS lines 55L or, if not available, line 35L); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B. CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and average annual CPI is calculated using the monthly CPI values (IFS line 64M..ZF) For Eurocurrency area countries liquid liabilities are estimated by summing IFS items 34A, 34B and 35. For the non-overlapping panel, the liquid liability was measured using 10-year average data in 10-year intervals. Source: IFS. Data Coverage: 1960-2017.
DEBTGDP	Gross public debt as a percent of GDP.For the non-overlapping panel, the gross public debt was measured using 10-year average data in 10-year intervals.Source: Abbas et al. (2011); Mauro et al. (2015); IMF Historical Public Debt Database; IMF World Economic Outlook, Coverage: 1970-2018.
RGDPCHVOL	Measures the volatility of the growth rate of real GDP per capita in percentage terms. The volatility is calculated by taking 10-year rolling standard deviation of the annual percentage change of real GDP per capita. For the non-overlapping panel, the volatility of growth of real GDP per capita was measured using 10-year standard deviation of data in 10-year intervals. Data Source: WDI (2020). Data Coverage: 1960-2017.
AVGINF	Measures the GDP price deflator rolling average for 10 years in percentage terms. The GDP price deflator (π_t) is obtained from the World Development Indicator (WDI, 2020) and IMF International Financial Statistics (IFS, 2020). Following Cukierman et al. (1992), the price deflator is transformed using $(\pi_t/(1+\pi_t))$ to remove the high inflation outliers; using the raw inflation figures would give undue weight to a few outliers with very high inflation rates. For the non-overlapping panel, the average inflation was measured using a 10-year average of data in 10-year intervals. Data Source: WDI (2020). Data Coverage: 1960-2017.
GRGDPCH	Growth rate of real GDP per capita. GDP per capita is based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. Data are in constant 2017 international dollars.For the non-overlapping panel, the real GDP per capita was measured using 10-year intervals. Data Source: WDI (2020). Data Coverage: 1960-2017.
INITIALLNRGDPCH	Initial real GDP per-capita measured by Log of real GDP per-capita. GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the country plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2017 international dollars.For non-overlapping panel, the real GDP per-capita and squared value of the real GDP per-capita measured by taking 10-year before data in 10-year interval.Data Source: WDI (2020).
MC	Cyclicality of monetary policy calculated based on country's yearly data using 10 year rolling correlation between the cyclical component of cyclical component of the central bank's nominal short term-policy rate derived from deviation of its Hodrick-Prescott Trend and the cyclical components of real GDP derived from logarithm deviation of its Hodrick-Prescott Trend for the time 1951-2019. For non-overlapping panel, cyclicality of monetary policy measured using 10-year periods (in interval) and 20-quarter (in interval) correlation between the cyclical component of cyclical component of the central bank's nominal short term-policy rate for annual and quarterly data respectively. Data source: WDI (2020) and IFS (2020).
AVGLNPOP	Population size is measured by the natural logarithm of the population. For the non-overlapping panel, the population size in the natural logarithm was measured using a 10-year average of data in 10-year intervals. Data source: WDI (2020).
AVGTRADE	Measures the trade openness (sum of export and import) to GDP in percentage terms.For the non-overlapping panel, the average trade openness was measured using a 10-year average of data in 10-year interval. Data source: WDI (2020).
AVGGEXP	General government final consumption expenditure (% of GDP) in percentage terms.For non-overlapping panel, the general government final consumption expenditure measured using 10-year average of data in the 10-year interval. Data source: WDI (2020) and IFS (2020).
AVGPOLITY	The polity score ranges from +10 (strongly democratic) to -10 (strongly autocratic).For the non-overlapping panel, the polity score was measured using a 10-year average of data in 10-year interval. Data are obtained from Marshall and Gurr (2020).

TRADEVOL	Trade openness volatility is measured by 10 10-year rolling standard deviation of trade openness, where the trade openness (sum of export and import) to GDP in percentage terms.For non-overlapping panel, trade volatility was measured using a 10-year standard deviation of data in the 10-year interval. Data source: WDI (2020).
EXEVOL	Measures the exchange rate volatility in percentage term. The volatility is calculated by taking the 10-year rolling standard deviation of the annual nominal exchange rates between the sample country and the USA. For European countries, we use the nominal effective exchange rate. We do not incorporate countries with an exchange rate that follow no separate legal tender and pre-announced peg or currency board arrangement. More specifically, we restrict our sample to include the countries with a period of dirty floating and floating exchange rate regimes with at least 15 observations by following Ilzetzki et al.(2016) for exchange rate de facto fine classification.For the non-overlapping panel, the exchange rate volatility was measured using a 10-year standard deviation of data in 10-year interval. Data source: WDI (2020) and IFS (2020).
CBIWI	Central Bank Independence Index (CBI) weighted index: Weighted average of the four components (weights between parentheses), following Cukierman, Webb and Neyapti's (1992) criteria: Chief Executive Officer (0.20), Objectives (0.15), Policy Formulation (0.15), and Limitations on lending to the government (0.5). It ranges from 0 (minimum) to 1 (maximum) CBI.For the non-overlapping panel, the central bank independence index was measured using a 10-year average of data in 10-year interval. Data Coverage: 1970-2012. Data are obtained from Garriga (2016).
AVGCBICEO	Chief executive officer of the central bank. Weighted average of the following variables (weights between parentheses): Term of officer of CEO (0.25), Who appoints the CEO (0.25), Provisions for dismissal of CEO (0.25), CEO allowed to hold another office in government (0.25).For non-overlapping panel, the chief executive officer of central bank measured using 10-year average of data in 10-year interval.Data are obtained from Garriga (2016).
AVGMPF	Monetary policy framework. 2=Monetary aggregate targeting, 3=Inflation targeting regimes, 4=Free floating without inflation targeting regimes (including all Euro Area countries), 11= Exchange rate anchor, U.S. dollar (including ECCU), 12= Exchange rate anchor, euro (including WAEMU and CEMAC), 13= Exchange rate anchor, composite, 14=Exchange rate anchor, other currency. Source: IMF AREAER, Coverage: 1990-2017.For the non-overlapping panel, the monetary policy framework was measured using a 10-year average of data in the 10-year interval. Data source: IMF AREAER, Coverage: 1990-2017.
INITIALHC	Human capital index, based on years of schooling and returns to education. Data source: PWT 9.
AVGFER	Fertility rate (births per woman) in percentage term. The total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children by age-specific fertility rates of the specified year. For the non-overlapping panel, the fertility rate was measured using a 10-year average of data in 10-year intervals. Data source: WDI (2020).
AVGLIFEEXP	The log of the life expectancy at birth. Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. For the non-overlapping panel, the log of life expectancy was measured using 10-year average of data in 10-year intervals. Data source: WDI (2020).
AVGINV	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress." According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. For the non-overlapping panel, the gross capital formation was measured using a 10-year average of data in the 10-year interval. Data source: WDI (2020).
AVGGTOT	Growth rate of Terms of Trade. Net barter terms of trade index is calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000. Unit value indexes are based on data reported by countries that demonstrate consistency under UNCTAD quality controls, supplemented by UNCTAD's estimates using the previous year's trade values at the Standard International Trade Classification three-digit level as weights. To improve data coverage, especially for the latest periods, UNCTAD constructs a set of average price indexes at the three-digit product classification of the Standard International Trade Classification revision 3 using UNCTAD's Commodity Price Statistics, international and national sources, and UNCTAD secretariat estimates and calculates unit value indexes at the country level using the current year's trade values as weights. For the non-overlapping panel, the growth rate of terms of trade was measured using a 10-year average of data in 10-year intervals. Data Source: WDI (2020).

Table A2: Country Specific Sample Period, Policy Rate, Hyperinflation Episode, and Exchange Rate Regime: Advanced economies

Country	Start	End	Years	Policy Rate	Hyperinflation	Exchange Rate Regime (1950-2019)
Australia	1975	2018	43	Lending Rate	NA	1950-1974
Austria	1973	1998	25	Discount rate	NA	1953-1971
Belgium	1980	2017	37	Treasury Bills Rate	NA	1954-1955
Canada	1970	2017	47	Treasury Bills Rate	NA	1950, 1962-1969
Cyprus	1975	2007	32	Discount Rate	NA	1950-1971
Czech Republic	1994	2018	24	Deposit Rate	NA	NA
Denmark	1972	2018	46	Money Market Rate	NA	1950-1971
Finland	1979	2017	38	Money Market Rate	NA	1950, 1958-1972
France	1966	2017	51	Deposit Rate	NA	1969 and 1971
Germany	1972	2012	40	Discount Rate	NA	1959-1970 and 1972
Greece	1975	2018	43	Treasury Bills Rate	NA	1954-1965
Iceland	1986	2018	32	Money Market Rate	NA	1950
Ireland	1972	2017	45	Money Market Rate	NA	1950-1978
Israel	1986	2018	32	Discount Rate	1980-1985	1950, 1962-1970
Italy	1971	2018	47	Money Market Rate	NA	1950-1972
Japan	1956	2017	61	Discount Rate	NA	1972
Korea, Republic of	1980	2018	38	Discount Rate	NA	1974-1979
Malta	1975	2012	37	Treasury Bills Rate	NA	1950-1972
Netherlands	1980	2012	32	Discount Rate	NA	1953-1970
New Zealand	1978	2018	40	Treasury Bills Rate	NA	1950-1973
Norway	1973	2014	41	Discount Rate	NA	1957-1972
Portugal	1973	1998	25	Discount Rate	NA	1950-1972
Singapore	1973	2017	44	Money Market Rate	NA	1950-1972
Slovenia	1993	2006	13	Money Market Rate	1987-1992	1950-1986
Spain	1974	2018	44	Money Market Rate	NA	1960-1973
Sweden	1973	2017	44	Money Market Rate	NA	1955-1972
Switzerland	1973	2011	38	Discount Rate	NA	1950-1972, 2012-2014
United Kingdom	1972	2016	44	Treasury Bills Rate	NA	1951-1971
United States	1972	2018	46	Treasury Bills Rate	NA	1950-1971

Hyperinflation recorded and observations removed from the anlaysis when above 100%. Exchange rate regime reported only for the time and country, when they follow pre announced peg or currency board arrangement or no separate legal tender 1960-2019.

Table A3: Country Specific Sample Period, Policy Rate, Hyperinflation Episode, and Exchange Rate Regime: Emerging economies

Country	Start	End	Years	Policy Rate	Hyperinflation	Exchange Rate Regime (1950-2019)
Albania	1994	2018	24	Lending Rate	1992-1993	NA
Algeria	1980	2018	38	Lending Rate	NA	1950-1963
Angola	2003	2018	15	Discount Rate	1991-2003	1950-1963
Argentina	2002	2018	16	Discount Rate	1989-1990	1964-1970, 1992-2001
Azerbaijan	1998	2018	20	Deposit Rate	1993-1995	1950-1992
Belarus	2001	2018	17	Deposit Rate	1992-1995, 1999-2000	1950-1991
Botswana	1980	2018	38	Discount Rate	NA	1950-1979
Brazil	1995	2018	23	Deposit Rate	1981-1994	NA
Bulgaria	1998	2018	20	Money Market Rate	1991, 1996-1997	NA
Chile	1985	2018	33	Deposit Rate	1973-1977	1960-1961, 1979-1981
China	1980	2018	38	Deposit Rate	NA	NA
Colombia	1964	2018	54	Discount Rate	NA	NA
Costa Rica	1982	2018	36	Deposit Rate	NA	1970, 1974-1980
Croatia	1995	2014	19	Discount Rate	1987-1994	NA
Dominican Republic	1991	2017	26	Deposit Rate	NA	1950-1959
Ecuador	1983	1999	16	Savings Rate	NA	1971, 1973-1981, 2000-2016
Egypt, Arab Republic of	1964	2018	54	Discount Rate	NA	NA
Fiji	1977	2017	40	Discount Rate	NA	1950-1974
Guatemala	1997	2017	20	Deposit Rate	NA	1950-1984
Hungary	1988	2018	30	Discount Rate	NA	1950-1956
India	1976	2018	42	Discount Rate	NA	1950-1975
Indonesia	1974	2017	43	Lending Rate	1962-1968	1971
Iran, Islamic Republic of	2004	2017	13	Deposit Rate	NA	1957-1973
Iraq	2004	2016	12	Savings Rate	1991-1995	1950-1959, 1972-1981
Jamaica	1983	2018	35	Treasury Bills Rate	NA	1950-1977, 1979-1982, 1990
Jordan	1989	2018	29	Discount Rate	NA	1950-1988
Kosovo	2004	2017	13	Discount Rate	NA	NA
Kuwait	2007	2018	11	Discount Rate	NA	1950-1960, 1972-1973, 2003-2006
Libya	1990	2013	23	Discount Rate	NA	1950-1951, 1956-1971
Lithuania	1996	2014	18	Money Market Rate	1992-1993	1950-1990
Malaysia	1976	2018	42	Deposit Rate	NA	1950-1975, 1999-2005
Mauritius	1980	2018	38	Deposit Rate	NA	1950-1967
Mexico	1989	2018	29	Deposit Rate	1983, 1987-1988	1950-1976
Morocco	1973	2014	41	Deposit Rate	NA	1950-1972
North Macedonia	1995	2018	23	Deposit Rate	1994	1950-1992
Pakistan	1982	2018	36	Money Market Rate	NA	1950-1958, 1972-1981
Paraguay	1989	2017	28	Deposit Rate	1952	NA
Peru	1992	2016	24	Discount Rate	1983-1985, 1988-1991	1959-1967
Philippines	1976	2018	42	Deposit Rate	NA	1966-1969
Poland	1991	2018	27	Money Market Rate	1982, 1989-1990	NA
Romania	1998	2018	20	Deposit Rate	1991-1994, 1997	NA
Russian Federation	1997	2018	21	Deposit Rate	1991-1995	NA
Serbia	1998	2015	17	Deposit Rate	NA	1950-1996
Seychelles	1981	2017	36	Deposit Rate	NA	1950-1975
South Africa	1976	2018	42	Money Market Rate	NA	1950-1972
Sri Lanka	1968	2010	42	Discount Rate	NA	1950-1967
Swaziland	1979	2011	32	Deposit Rate	NA	NA
Thailand	1978	2018	40	Discount Rate	NA	1964-1977
Trinidad and Tobago	1993	2017	24	Discount Rate	NA	1950-1992
Tunisia	1981	2017	36	Money Market Rate	NA	1959-1973
Turkey	1961	2018	57	Discount Rate	1994, 1998	1971
Uganda	1990	2018	28	Savings Rate	1984-1989	1950-1971
Ukraine	1996	2018	22	Deposit Rate	1993-1995	1950-1990
Uruguay	1976	2018	42	Deposit Rate	1968, 1990-1991	1968-1970
Venezuela	1985	2002	17	Discount Rate	1996, 2015-2016	1950-1982, 2003-2012

Hyperinflation recorded and observations removed from the anlaysis when above 100%. Exchange rate regime reported only for the time and country, when they follow pre announced peg or currency board arrangement or no separate legal tender 1960-2019.

Table A4: Country Specific Sample Period, Policy Rate, Hyperinflation Episode, and Exchange Rate Regime: Low income developing economies

Country	Start	End	Years	Policy Rate	Hyperinflation	Exchange Rate Regime (1950-2019)
Afghanistan	2006	2018	12	Savings Rate	NA	1950-1952
Armenia	1996	2018	22	Deposit Rate	1994-1995	1950-1991
Bangladesh	1976	2018	42	Deposit Rate	NA	1950-1974
Bolivia	1987	2018	31	Deposit Rate	1953-1954, 1956-1957, 1982-1986	NA
Burundi	1984	2016	32	Deposit Rate	NA	1950-1964, 1970-1983
Cambodia	1994	2017	23	Deposit Rate	NA	NA
Congo, Democratic Republic of	2006	2018	12	Discount Rate	1970, 1979, 1989, 1991-1997, 1999-2001	NA
Ethiopia	1986	2008	22	Deposit Rate	NA	1950-1985
Gambia, The	1981	2014	33	Deposit Rate	NA	1950-1980
Georgia	1997	2018	21	Deposit Rate	1995	1950-1990
Ghana	1984	2016	32	Treasury Bills Rate	1977, 1981, 1983	1950-1971
Guinea	1991	2018	27	Discount Rate	NA	1950-1970, 1986-1990
Guyana	1992	2018	26	Treasury Bills Rate	1987, 1989, 1991	1950-1981
Haiti	1995	2018	23	Lending Rate	NA	1950-1984
Honduras	1985	2004	20	Deposit Rate	NA	1950-1984,2005-2010
Kenya	1987	2018	31	Lending Rate	NA	1950-1986
Kyrgyz Republic	1996	2018	22	Discount Rate	NA	1950-1990
Lao People's Democratic Republic	1991	2010	19	Discount Rate	1999	1950-1954, 1959-1961
Liberia	1988	2014	26	Deposit Rate	NA	1950-1987
Madagascar	1989	2018	29	Deposit Rate	NA	1950-1971, 1974-1981
Malawi	1979	2017	38	Lending Rate	NA	1950-1973, 1995-1997
Maldives	2006	2019	13	Deposit Rate	NA	1950-1971,1995-2005
Mauritania	1985	2017	32	Discount Rate	NA	1950-1973
Moldova	1996	2018	22	Deposit Rate	1992-1994	1950-1990
Mongolia	1994	2017	23	Deposit Rate	1992-1993	1950-1990
Mozambique	1994	2017	23	Deposit Rate	1987	1950-1985
Myanmar	1976	2009	33	Lending Rate	NA	NA
Nepal	1981	2018	37	Treasury Bills Rate	NA	1959-1977, 1993-1995
Nicaragua	1993	2019	26	Deposit Rate	1985-1991	1950, 1963-1969, 1975-1978, 1992
Nigeria	1972	2018	46	Deposit Rate	NA	1950-1971
Papua New Guinea	1980	2017	37	Deposit Rate	NA	1950-1974
Rwanda	1996	2018	22	Deposit Rate	NA	1950-1963, 1973-1983
Samoa	2001	2017	16	Deposit Rate	NA	1950-1975
Sierra Leone	1992	2017	25	Treasury Bills Rate	1986, 1991	1950-1973
Solomon Islands	1981	2018	37	Treasury Bills Rate	NA	1950-1977
Tajikistan	1999	2018	19	Deposit Rate	1993-1997	1950-1991, 1998
Tanzania	1988	2018	30	Deposit Rate	NA	1950-1971
Tonga	1991	2017	26	Deposit Rate	NA	1950-1990
Vanuatu	1981	2017	36	Deposit Rate	NA	1950-1972
Vietnam	1997	2018	21	Deposit Rate	NA	1950-1955
Zambia	1994	2017	23	Treasury Bills Rate	1989-1990, 1992-1993	1950-1971

Hyperinflation recorded and observations removed from the anlaysis when above 100%. Exchange rate regime reported only for the time and country, when they follow pre announced peg or currency board arrangement or no separate legal tender 1960-2019.

B Further results

B.1 Monetary procyclicality and fear of free floating

Table B1: The impact of fear of free floating on monetary cyclicality: lagged dependent independent variables

	(1)	(2)	(3)	(4)
Data	Yrly	Yrly	Qrtly	Qrtly
$\pi^{cyc}_{j,t-1}$	0.079***	0.069***	0.128***	0.126***
	(0.011)	(0.010)	(0.019)	(0.019)
$Y^{cyc}_{j,t-1}$	0.090***	0.093***	0.064***	0.064***
	(0.021)	(0.021)	(0.014)	(0.015)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$*$Y^{cyc}_{j,t-1}$	0.066	0.077*	0.03	0.025
	(0.040)	(0.040)	(0.036)	(0.037)
$\varepsilon^{cyc}_{j,t-1}$		0.017***		0.007
		(0.004)		(0.005)
Adjusted R Square	0.1096	0.2425	0.0348	0.0349
Observations	2715	2715	6667	6667
Number of Countries	125	125	85	85

Estimations from specification (7) with annual data and dependent Variable $i^{cyc}_{j,t}$, repeating the work of Table 2 now with lagged dependent variables. All estimations are performed using EGLS and cross-sectional country-fixed effects and a cross-sectional weighting matrix.

Table B2: The impact of fear of free floating on monetary cyclicality: further control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\pi^{cyc}_{j,t}$	0.160***	0.149***	0.146***	0.144***	0.146***	0.143***	0.147***	0.145***	0.151***	0.175***
	(0.017)	(0.018)	(0.019)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.020)
$Y^{cyc}_{j,t}$	0.086***	0.143**	-0.111	0.181***	0.074***	0.041	0.091***	0.059**	0.074***	-0.037
	(0.020)	(0.066)	(0.070)	(0.041)	(0.019)	(0.032)	(0.020)	(0.029)	(0.027)	(0.232)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	-0.001	-0.001	0.0004	-0.0004	-0.001	-0.001	-0.001	-0.0004	-0.001	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$*$Y^{cyc}_{j,t}$	-0.079**	-0.152***	-0.200***	-0.056	-0.078**	-0.082**	-0.107***	-0.090**	-0.082**	-0.196***
	(0.036)	(0.042)	(0.060)	(0.036)	(0.034)	(0.039)	(0.031)	(0.038)	(0.037)	(0.061)
$\varepsilon^{cyc}_{j,t}$	0.018***	0.022***	0.026***	0.019***	0.019***	0.020***	0.020***	0.019***	0.020***	0.025***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.010)
FC	0.002***									0.001
	(0.001)									(0.001)
FC*$Y^{cyc}_{j,t}$	-0.009									0.094
	(0.035)									(0.060)
CBIUI		-0.003**								-0.001
		(0.002)								(0.004)
CBIUI*$Y^{cyc}_{j,t}$		-0.053								-0.273
		(0.121)								(0.182)
TRANIN			-0.0003***							-0.0001
			(0.000)							(0.000)
TRANIN*$Y^{cyc}_{j,t}$			0.005***							0.004
			(0.001)							(0.004)
CORRI				0.006*						0.002
				(0.004)						(0.010)
CORRI*$Y^{cyc}_{j,t}$				-0.189***						-0.059
				(0.059)						(0.156)
IT					-0.004***					-0.004**
					(0.001)					(0.002)
IT*$Y^{cyc}_{j,t}$					0.113					0.109
					(0.087)					(0.098)
KAOPEN						-0.003**				-0.004
						(0.001)				(0.002)
KAOPEN*$Y^{cyc}_{j,t}$						0.071				0.166*
						(0.050)				(0.092)
DEFACTOFINOPEN							0			0
							(0.000)			(0.000)
DEFACTOFINOPEN*$Y^{cyc}_{j,t}$							0.001			0.008
							(0.001)			(0.007)
LIQLIB								0.0003		0.0006
								(0.001)		(0.002)
LIQLIB*$Y^{cyc}_{j,t}$								0.03		-0.108
								(0.019)		(0.081)
DEBTGDP									-0.002**	-0.0004
									(0.001)	(0.002)
DEBTGDP*$Y^{cyc}_{j,t}$									0.015	0.129*
									(0.018)	(0.066)
Adjusted R Square	0.1463	0.188	0.1933	0.1414	0.13577	0.1351	0.1447	0.1329	0.1388	0.234
Observations	2792	2142	1944	2797	2833	2776	2741	2705	2762	1732
Number of Countries	123	116	113	122	125	120	121	124	121	108

Estimations from specification (7) with annual data and dependent Variable $i^{cyc}_{j,t}$, repeating the work of Table 2 now with further control variables. All estimations are performed using EGLS and cross-sectional country-fixed effects and a cross-sectional weighting matrix.

Table B3: The impact of fear of free floating on monetary cyclicality: longer time horizons

	(1)	(2)	(3)	(4)	(5)	(6)
Data set	Yrly	Yrly	Yrly	Qrtly	Qrtly	Qrtly
Dependent	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	γ_Y	γ_Y	γ'_Y	γ'_Y
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	-0.218***	-0.062***	-0.043**	-0.064**	-0.032***	-0.038**
	(0.037)	(0.020)	(0.022)	(0.030)	(0.003)	(0.003)
Adjusted R Square	0.759	0.5934	0.554	0.7468	0.4111	0.4244
Observations	2839	2840	2839	6621	6621	6621
Number of Countries	125	125	125	82	82	82

Estimations from specification (7) with both annual data ('Yrly') and the quarterly dataset ('Qrtly', as described in the second row) and dependent Variable $i^{cyc}_{j,t}$, repeating the work of Table 2 and **??** now using averages for the variables, not period-by-period estimates. The analysis on the annual dataset uses ten year and the quarterly dataset 20 quarter rolling average for the estimates monetary cyclicality and fear of free floating. All estimations are performed using EGLS and cross-sectional country-fixed effects and a cross-sectional weighting matrix.

B.2 The macroeconomic consequences of monetary procyclicality and fear of free floating

Table B4: The effects of monetary cyclicality and fear of free floating on growth volatility: more control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
INITIALLNRGDPCH	-0.017***	-0.017***	-0.016***	-0.019***	-0.016***	-0.016***	-0.013***	-0.024***	-0.017***	-0.018***	-0.019***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$	-0.004***	-0.005***	-0.005***	-0.002**	-0.005***	-0.004***	-0.004***	-0.006***	-0.005***		
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		
γ_Y										-0.003***	
										(0.001)	
γ'_Y											-0.002**
											(0.001)
AVGLNPOP	0.047***	0.047***	0.046***	0.085***	0.054***	0.046***	0.038***	0.077***	0.107***	0.115***	0.115***
	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
AVGTRADE	-0.003	-0.004	-0.015***	-0.007**	0.001	-0.004	-0.005	0.0001	-0.007	-0.010**	-0.009*
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
AVGGEXP	-0.073***	-0.080***	-0.098***	-0.089***	-0.067***	-0.076***	-0.068***	-0.088***	-0.091***	-0.088***	-0.090***
	(0.014)	(0.015)	(0.014)	(0.013)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.015)
$Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$	0.015***	0.014***	0.015***	0.009***	0.014***	0.014***	0.015***	0.016***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AVGPOLITY		-0.0001							0.0002*	0.0002*	0.0002*
		(0.000)							(0.000)	(0.000)	(0.000)
TRADEVOL			0.079***						0.067***	0.071***	0.069***
			(0.011)						(0.013)	(0.013)	(0.013)
EXEVOL				0.218***					0.225***	0.228***	0.228***
				(0.007)					(0.009)	(0.009)	(0.009)
LIQLIB					-0.007**				-0.009***	-0.010***	-0.009***
					(0.004)				(0.003)	(0.003)	(0.003)
FC						0.005***			0.001	0.001	0.001
						(0.001)			(0.001)	(0.001)	(0.001)
KAOPEN							-0.012***		-0.007**	-0.008***	-0.007**
							(0.003)		(0.003)	(0.003)	(0.003)
DEBTGDP								0.019***	0.017***	0.018***	0.0180***
								(0.002)	(0.002)	(0.003)	(0.002)
Adjusted R Square	0.8177	0.8191	0.8179	0.8244	0.8254	0.8025	0.8202	0.8415	0.8496	0.833	0.8392
Observations	2562	2472	2560	2562	2464	2558	2539	2533	2328	2328	2328
Number of Countries	108	105	108	108	108	107	107	106	102	102	102

Estimations from specification (8) with annual data and dependent variable volatility of growth rate of real GDP per-capita in percentage terms calculated by taking ten year rolling standard deviation of annual percentage change of real GDP per-capita. Results replicating the work in Table 3 now with more control variables.

Table B5: The effects of monetary cyclicality and fear of free floating on growth volatility: lagged indepedent variables

	(1)	(2)	(3)
INITIALLNRGDPCH	-0.018***	-0.020***	-0.020***
	(0.002)	(0.002)	(0.002)
$Corr(i^{cyc}_{j,t-1}, Y^{cyc}_{j,t-1})$	-0.006***		
	(0.001)		
$\gamma_{Y,t-1}$		-0.002**	
		(0.001)	
γ'_{Yt-1}			-0.002**
			(0.001)
AVGLNPOP	0.056***	0.063***	0.062***
	(0.012)	(0.012)	(0.012)
AVGTRADE	-0.001	-0.003	-0.003
	(0.004)	(0.004)	(0.004)
AVGGEXP	-0.075***	-0.069***	-0.071***
	(0.014)	(0.015)	(0.015)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	0.018***	0.018***	0.018***
	(0.001)	(0.001)	(0.001)
Adjusted R Square	0.8482	0.8218	0.824
Observations	2457	2457	2457
Number of Countries	108	108	108

Estimations from specification (8) with annual data and dependent variable volatility of growth rate of real GDP per-capita in percentage terms calculated by taking ten year rolling standard deviation of annual percentage change of real GDP per-capita. Results replicating the work in Table 3 now with lagged independent variables.

Table B6: The effects of monetary cyclicality and fear of free floating on growth volatility, inflation and growth: GMM estimation

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth Vol		Inflation		Growth	
$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	-0.008***	-0.010***	-0.003***	-0.003***	0.014***	0.012***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.002)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	0.023***	0.029***	0.008***	0.008***	0.013***	0.023***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)	(0.003)

Estimations from specification (8) with annual data and dependent variable volatility of growth rate of real GDP per-capita in percentage terms calculated by taking ten year rolling standard deviation of annual percentage change of real GDP per-capita. Results replicating the work in Table 3, 5 and 4 now with GMM estimation. The instrument set used in column (1) comprises of $INITIALLNRGDPCH_{t-1}$, $INITIALLNRGDPCH_{t-2}$, $Corr(i^{cyc}_{j,t-2}, Y^{cyc}_{j,t-2})$, $AVGLNPOP_{t-2}$, $AVGTRADE_{t-2}$, $AVGGEXP_{t-2}$, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$ and a constant; in column (2) $INITIALLNRGDPCH_{t-1}$, $INITIALLNRGDPCH_{t-2}$, $Corr(i^{cyc}_{j,t-3}, Y^{cyc}_{j,t-3})$, $AVGLNPOP_{t-2}$, $AVGTRADE_{t-2}$, $AVGGEXP_{t-2}$, $Corr(i^{cyc}_{j,t-2}, \varepsilon^{cyc}_{j,t-2})$ and a constant; in column (3) $INITIALLNRGDPCH_{t-1}$, $Corr(i^{cyc}_{j,t-2}, Y^{cyc}_{j,t-2})$, $AVGTRADE_{t-1}$, $AVGTRADE_{t-2}$, $EXEVOL_{t-1}$, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$ and a constant; in column (4) $INITIALLNRGDPCH_{t-1}$, $Corr(i^{cyc}_{j,t-2}, Y^{cyc}_{j,t-2})$, $Corr(i^{cyc}_{j,t-3}, Y^{cyc}_{j,t-3})$, $AVGTRADE_{t-1}$, $AVGTRADE_{t-2}$, $EXEVOL_{t-1}$, $Corr(i^{cyc}_{j,t-2}, \varepsilon^{cyc}_{j,t-2})$ and a constant; in column (5) $\text{INITIALLNRGDPCH}_{t-3}$, $\text{INITIALLNRGDPCHSQ}_{t-3}$, INITIALHC_{t-3}, $Corr(i^{cyc}_{j,t-3}, Y^{cyc}_{j,t-3})$, $Corr(i^{cyc}_{j,t-2}, Y^{cyc}_{j,t-2})$, AVGTRADE_{t-3}, AVGGEXP_{t-3}, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$ and a constant; in column (6) $\text{INITIALLNRGDPCH}_{t-3}$, $\text{INITIALLNRGDPCHSQ}_{t-3}$, INITIALHC_{t-3}, $Corr(i^{cyc}_{j,t-3}, Y^{cyc}_{j,t-3})$, $Corr(i^{cyc}_{j,t-2}, Y^{cyc}_{j,t-2})$, $Corr(i^{cyc}_{j,t-4}, Y^{cyc}_{j,t-4})$, AVGTRADE_{t-3}, AVGGEXP_{t-3}, $Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t} - 1)$ and a constant.

Table B7: The effects of monetary cyclicality and fear of free floating on growth volatility: non over-lapping panels

	(1)	(2)	(3)
INITIALLNRGDPCH10	-0.011**	-0.043***	-0.048***
	(0.005)	(0.004)	(0.005)
$Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$	-0.005*		
	(0.003)		
γ_Y		-0.005***	
		(0.001)	
γ_Y'			-0.002**
			(0.001)
AVGLNPOP10	-0.023	0.025	0.031*
	(0.024)	(0.018)	(0.018)
AVGTRADE10	0.007	0.013***	0.015***
	(0.008)	(0.002)	(0.003)
AVGGEXP10	0.067**	-0.002	-0.028
	(0.030)	(0.017)	(0.021)
FOFER10	0.014***	0.023***	0.025***
	(0.003)	(0.003)	(0.003)
Adjusted R Square	0.783	0.919	0.8891
Observations	395	395	395
Number of Countries	108	108	108

Estimations from specification (8) with annual data and dependent variable volatility of growth rate of real GDP per-capita in percentage terms calculated by taking ten year rolling standard deviation of annual percentage change of real GDP per-capita. Results replicating the work in Table 3 now with non-overlapping panel periods.

Table B8: The effects of monetary cyclicality and fear of free floating on inflation: more control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
INITIALLNRGDPCH	-0.047***	-0.048***	-0.051***	-0.041***	-0.034***	-0.048***	-0.031***	-0.032***	-0.032***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	-0.001	-0.003***	-0.003***	-0.002**	0.0001	-0.001*	-0.001*		
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		
γ_Y								-0.001***	
								(0.000)	
γ'_Y									-0.001***
									(0.000)
AVGTRADE	0.027***	0.031***	0.028***	0.025***	0.024***	0.027***	0.027***	0.027***	0.027***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
EXEVOL	0.118***	0.113***	0.111***	0.122***	0.131***	0.119***	0.126***	0.126***	0.125***
	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	0.006***	0.005***	0.004***	0.005***	0.003***	0.006***	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
CBIWI		-0.018***					-0.014***	-0.015***	-0.014***
		(0.003)					(0.003)	(0.003)	(0.003)
AVGCBICEO			-0.009**				0.004	0.003	0.003
			(0.004)				(0.005)	(0.005)	(0.005)
IT				-0.022***			-0.015***	-0.015***	-0.015***
				(0.001)			(0.001)	(0.001)	(0.001)
AVGMPF					0.001***		0.001***	0.001***	0.001***
					(0.000)		(0.000)	(0.000)	(0.000)
FC						-0.003***	0	0	0
						(0.001)	(0.001)	(0.001)	(0.001)
Adjusted R Square	0.884	0.9144	0.9094	0.8946	0.912	0.8797	0.946	0.9473	0.9483
Observations	2592	1983	1984	2592	2266	2572	1676	1676	1676
Number of Countries	113	110	109	113	110	111	106	106	106

Estimations from specification (8) with annual data and dependent variable of the GDP price deflator rolling average for ten years in percentage terms. Results replicating the work in Table 5 now with more control variables.

Table B9: The effects of monetary cyclicality and fear of free floating on inflation: lagged indepedent variables

	(1)	(2)	(3)
INITIALLNRGDPCH	-0.046***	-0.047***	-0.047***
	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t-1}, Y^{cyc}_{j,t-1})$	-0.001		
	(0.001)		
$\gamma_{Y,t-1}$		-0.002***	
		(0.000)	
γ'_{Yt-1}			-0.002***
			(0.000)
AVGTRADE	0.027***	0.028***	0.028***
	(0.002)	(0.002)	(0.002)
EXEVOL	0.112***	0.113***	0.112***
	(0.005)	(0.005)	(0.005)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)
Adjusted R Square	0.9013	0.9045	0.9057
Observations	2482	2482	2482
Number of Countries	113	113	113

Estimations from specification (8) with annual data and dependent variable of the GDP price deflator rolling average for ten years in percentage terms. Results replicating the work in Table 5 now with lagged independent variables.

Table B10: The effects of monetary cyclicality and fear of free floating on inflation: non over-lapping panels

	(1)	(2)	(3)
INITIALLNRGDPCH10	-0.064***	-0.061***	-0.061***
	(0.002)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t-1}, Y^{cyc}_{j,t-1})$	-0.004***		
	(0.001)		
$\gamma_{Y,t-1}$		-0.001**	
		(0.001)	
γ'_{Yt-1}			-0.0004
			(0.001)
AVGTRADE10	0.007*	-0.002	0.0005
	(0.004)	(0.002)	(0.003)
EXEVOL10	0.002**	0.111***	0.123***
	(0.001)	(0.006)	(0.008)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	0.004**	0.005***	0.005***
	(0.002)	(0.002)	(0.002)
Adjusted R Square	0.9098	0.9983	0.9787
Observations	425	425	425
Number of Countries	118	118	118

Estimations from specification (8) with annual data and dependent variable of the GDP price deflator rolling average for ten years in percentage terms. Results replicating the work in Table 5 now with non overlapping panel time periods.

Table B11: The effects of monetary cyclicality and fear of free floating on GDP growth: more control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
INITIALLNRGDPCH	0.180***	0.068***	0.169***	0.155***	0.124***	0.177***	0.181***	0.112***	-0.019	-0.025	-0.02
	(0.011)	(0.010)	(0.010)	(0.011)	(0.013)	(0.011)	(0.011)	(0.010)	(0.019)	(0.018)	(0.018)
INITIALLNRGDPCHSQ	-0.035***	-0.020***	-0.033***	-0.030***	-0.027***	-0.034***	-0.035***	-0.024***	-0.004	-0.003	-0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
INITIALHC	0.043***	0.020***	0.038***	0.036***	0.050***	0.034***	0.042***	0.058***	0.031***	0.032***	0.032***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.006)	(0.009)	(0.009)	(0.009)
$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	0.011***	0.0123***	0.011***	0.008***	0.014***	0.011***	0.011***	0.009***	0.013***		
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)		
γ_Y										0.002**	
										(0.001)	
γ'_Y											0.003***
											(0.001)
AVGTRADE	0.006	0.005	0.009	0.006	0.014**	0.010*	0.006	0.007	0.016**	0.021	0.020***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
AVGGEXP	-0.182***	-0.200***	-0.174***	-0.111***	-0.226***	-0.176***	-0.180***	-0.110***	-0.090***	-0.075	-0.083***
	(0.019)	(0.019)	(0.019)	(0.021)	(0.023)	(0.019)	(0.020)	(0.019)	(0.026)	(0.026)	(0.026)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	0.002	0.003	0.002	0.003**	-0.004**	0.003*	0.002	-0.002	0.0002	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
AVGLNPOP		0.142***							0.0460*	0.046	0.053*
		(0.020)							(0.027)	(0.027)	(0.027)
AVGFER		-0.089***							-0.148***	-0.138	-0.133***
		(0.016)							(0.020)	(0.019)	(0.019)
AVGLIFEEXP		-0.218***							-0.372***	-0.327	-0.349***
		(0.058)							(0.065)	(0.065)	(0.065)
AVGCORRI			0.079***						0.0297**	0.032	0.028**
			(0.011)						(0.015)	(0.014)	(0.014)
AVGINV				0.182***					0.175***	0.17	0.168***
				(0.024)					(0.027)	(0.027)	(0.027)
AVGGTOT					0.348***				0.247***	0.238	0.246***
					(0.029)				(0.028)	(0.028)	(0.028)
EXEVOL						-0.065***			-0.042***	-0.046	-0.047***
						(0.010)			(0.011)	(0.011)	(0.011)
FC							-0.001		-0.002	-0.003	-0.003
							(0.002)		(0.002)	(0.002)	(0.002)
DEBTGDP								-0.054***	-0.051***	-0.05	-0.049***
								(0.003)	(0.004)	(0.004)	(0.004)
Adjusted R Square	0.7489	0.9791	0.7704	0.6558	0.9147	0.7332	0.4877	0.9202	0.6185	0.6118	0.6115
Observations	2466	2466	2456	2421	1986	2466	2462	2437	1912	1912	1912
Number of Countries	102	102	102	101	100	102	101	100	96	96	96

Estimations from specification (8) with annual data and dependent variable growth rate of real GDP per-capita. Results replicating the work in Table 4 now with more control variables.

Table B12: The effects of monetary cyclicality and fear of free floating on GDP growth: lagged indepedent variables

	(1)	(2)	(3)
INITIALLNRGDPCH	0.184***	0.178***	0.179***
	(0.011)	(0.011)	(0.011)
INITIALLNRGDPCHSQ	-0.035***	-0.034***	-0.034***
	(0.002)	(0.002)	(0.002)
INITIALHC	0.043***	0.047***	0.045***
	(0.007)	(0.007)	(0.007)
$Corr(i^{cyc}_{j,t-1}, Y^{cyc}_{j,t-1})$	0.009***		
	(0.002)		
$\gamma_{Y,t-1}$		0.001	
		(0.001)	
γ'_{Yt-1}			0.003***
			(0.001)
AVGTRADE	0.005	0.005	0.004
	(0.006)	(0.006)	(0.006)
AVGGEXP	-0.206***	-0.200***	-0.203***
	(0.020)	(0.020)	(0.020)
$Corr(i^{cyc}_{j,t-1}, \varepsilon^{cyc}_{j,t-1})$	0.008***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)
Adjusted R Square	0.6774	0.7504	0.7471
Observations	2367	2367	2367
Number of Countries	102	102	102

Estimations from specification (8) with annual data and dependent variable growth rate of real GDP per-capita. Results replicating the work in Table 4 now with lagged independent variables.

Table B13: The effects of monetary cyclicality and fear of free floating on GDP growth : non over-lapping panels

	(1)	(2)	(3)
INITIALLNRGDPCH10	-0.032	-0.035	-0.023
	(0.025)	(0.026)	(0.025)
INITIALLNRGDPCHSQ10	-0.020***	-0.019***	-0.021***
	(0.003)	(0.003)	(0.003)
INITIALHC10	0.137***	0.129***	0.129***
	(0.008)	(0.010)	(0.010)
$Corr(i_{j,t}^{cyc}, Y_{j,t}^{cyc})$	0.010***		
	(0.002)		
γ_Y		0.002	
		(0.001)	
γ_Y'			0.003***
			(0.001)
AVGTRADE10	0.006	-0.015*	-0.014*
	(0.007)	(0.009)	(0.009)
AVGGEXP10	-0.029	-0.160***	-0.162***
	(0.025)	(0.033)	(0.031)
$Corr(i_{j,t}^{cyc}, \varepsilon_{j,t}^{cyc})$	0.005	0.005	0.003
	(0.003)	(0.003)	(0.003)
Adjusted R Square	0.8869	0.8198	0.8733
Observations	385	385	385
Number of Countries	104	104	104

Estimations from specification (8) with annual data and dependent variable growth rate of real GDP per-capita. Results replicating the work in Table 4 now with non-overlapping time periods.

Table B14: The effects of monetary cyclicality and fear of free floating on growth volatility, inflation and GDP growth: γ'_ε as measure of fear of free floating

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline			2.5 std devs		
	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	γ_Y	γ'_Y	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	γ_Y	γ'_Y
(a) Growth volatility						
MC	-0.005***	-0.003***	-0.002***	-0.006***	-0.003***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
γ'_ε	0.002	0.001	0.002	0.010***	0.008***	0.009***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
(b) Inflation						
MC	-0.002***	0.002***	0.002***	-0.002**	0.002***	0.002***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
γ'_ε	0.001	0.001	0.000	-0.003	-0.003*	-0.004**
	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)
(c) Growth						
MC	0.011***	0.003***	0.004***	0.011***	0.003***	0.004***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
γ'_ε	0.001	0.001	0.000	-0.003	-0.002	-0.004
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)

Replicating results from 3 (panel (a)), Table 5 (panel (b) and Table 4 (panel (c)) γ'_ε as the measure of fear of free floating. The monetary cyclicality ('MC') variables in each instance are highlighted in the third row of the table. Level of Significance ***1%, **5%, *10%.

Table B15: The impact of fear of free floating on monetary cyclicality: effective exchange rates

	(1)	(2)	(3)	(4)	(5)	(6)
	(EGLS)	(GMM) 1	(GMM) 2	(EGLS)	(GMM) 3	(GMM) 4
	Real effective			Nominal effective		
(a) Annual data						
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	-0.076*	-0.100*	-0.100*	-0.071*	-0.077	-0.077
	(0.044)	(0.055)	(0.055)	(0.039)	(0.053)	(0.053)
(b) Quarterly data						
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	-0.117***	-0.106*	-0.106*	-0.095***	-0.09**	-0.090**
	(0.033)	(0.058)	(0.058)	(0.023)	(0.041)	(0.041)

Estimations from specification (7) replicating results from Table 2 (panel (a)) and Table **??** (panel (b) now using the real effective exchange rate (columns (1)-(3)) and the nominal exchange rate (columns (4)-(6)) in the calculations for the fear of free floating. Level of Significance ***1%, **5%, *10%

Table B16: The effects of monetary cyclicality and fear of free floating on growth volatility and inflation: effective exchange rates

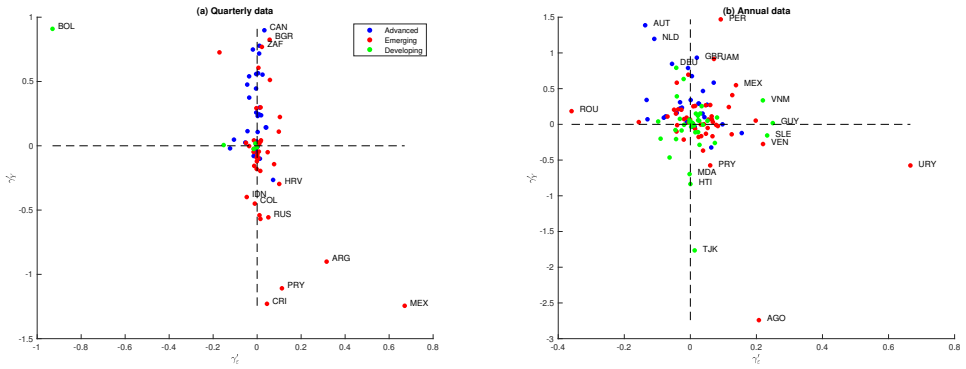
	(1)	(2)	(3)	(4)	(5)	(6)
	Real	Nom	Real	Nom	Real	Nom
	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	$Corr(i^{cyc}_{j,t}, Y^{cyc}_{j,t})$	γ_Y	γ_Y	γ'_Y	γ'_Y
(a) Growth volatility						
MC	-0.002**	-0.003***	-0.002**	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	0.014***	0.014***	0.014***	0.015***	0.014***	0.015***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
(b) Inflation						
MC	-0.003***	-0.003***	-0.004***	-0.005***	-0.003***	-0.004***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	0.001	0.008***	0.001	0.008***	0.0004	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Replicating results from 3 (panel (a)) and Table 5 (panel (b) now using the real effective exchange rate (columns (1), (3) and (5)) and the nominal exchange rate (columns (2), (4) and (6)) in the calculations for the fear of free floating. The monetary cyclicality ('MC') variables in each instance are highlighted in the third row of the table. Level of Significance ***1%, **5%, *10%.

B.3 The prevalence of monetary procyclicality and fear of free floating

Panel (a) of Figure B1 presents scatter plots looking at the response of the cyclical component of the interest rate to the cyclical component of the exchange rate (x-axis) and output (y-axis); these are obtained from estimates of γ'_ε and γ'_Y from specification (4) using the dataset with quarterly data for the whole sample period (1965-2018). We also highlight countries by their classification as in Nielsen (2011), separating between 'advanced economies', 'emerging market' and 'low income developing economies' . Panel (b) of Figure B1 performs the same analysis for our annual dataset, over the sample period (1950-2019). The former has the advantage of the Taylor rules being estimated over more observations and thus the results are more reliable; the latter, on the other hand, provides more observations (especially with respect to developing nations) as more countries report annual data. Given these trade-offs, where we have quarterly data for a country we give priority over these estimates, and where not, the annual data set provides a good second-best. Table B17 presents descriptive statistics from these estimates.

Figure B1: Distribution of γ'_Y and γ'_ε from estimates of (4)



Scatter plots taking estimates of γ'_Y and γ'_ε from estimates of (4) from the quarterly data set (panel (a)) and the annual data set (panel (b)). Countries are classified as in Nielsen (2011).

Monetary procyclicality is represented by negative values γ'_Y representing an interest rate fall when output is higher. As is observed in panel (a) of Figure B1, the majority of countries conduct counter-cyclical policy, but there is a significant minority of countries conducting procyclical monetary policy. Panel (a) of Table B17 presents descriptive statistics on estimates of γ'_Y for the whole sample and separating by country classification. In total, 35 (42%) countries conduct procyclical monetary policy; however, 50% of emerging economies and 70% of developing countries are estimated to have conducted procyclical policy over the period, compared with 20% of advanced economies. Moreover, the average estimate of γ'_Y for advanced economies is positive 0.163, compared to a negative (procyclical) estimate for emerging economies of -0.206 and -0.075 for developing countries. That is, monetary procyclicality is the norm for emerging and developing economies between 1965 and 2018; these results reconcile with Kaminsky et al. (2004) and McGettigan et al. (2013). Panel (b) of Figure B1 presents that monetary procyclicality also extends to more developing nations, 47% (18/38) of which are estimated to conduct procyclical policy when using the annual dataset, consistent with the results for emerging economies, as seen in panel (d) of Table B17.

Table B17: Decriptive statistics of γ'_Y and γ'_ε from estimates of (4)

	γ'_Y				γ'_ε			
	All	Advanced	Emerging	Developing	All	Advanced	Emerging	Developing
	(a) Whole sample, quaterly data							
Estimate	-0.059	0.163	-0.206	-0.075	0.009	-0.020	0.027	0.015
Count [Total]	35 [84]	6 [30]	22 [44]	7 [10]	50 [84]	15 [30]	29 [44]	6 [10]
	(b) Before 2000, quarterly data							
Estimate	0.432	0.471	-0.116	NaN	0.052	0.005	0.251	NaN
Count [Total]	4 [15]	3 [14]	1 [1]	0 [0]	6 [15]	5 [14]	1 [1]	0 [0]
	(a) 2000 and onwards, quarterly data							
Estimate	-0.044	0.180	-0.190	-0.075	0.013	-0.009	0.021	0.072
Count [Total]	34 [84]	5 [30]	22 [44]	7 [10]	45 [84]	10 [30]	29 [44]	6 [10]
	(d) Whole sample, annual data							
Estimate	0.071	0.315	0.060	-0.094	0.022	-0.008	0.042	0.018
Count [Total]	43 [117]	3 [28]	22 [51]	18 [38]	70 [117]	14 [28]	34 [51]	22 [38]

Descriptive statistics of γ'_Y (the left-hand-side of the table) and γ'_ε (the right-hand-side of the table) from estimates of (4). The 'Estiamte' is the mean average of the estimate and the 'Count [total]' rows represent the number of observations with either $\gamma'_Y < 0$ (on the left-hand-sde) or $\gamma'_\varepsilon > 0$ (on the right-hand-side) and in square brackets the total number of observations. Each panel represents a different dataset or time horizon, as illustrated in the title of each panel. Countries are classified as in Nielsen (2011).

Fear of free floating is represented by $\gamma'_\varepsilon > 0$ in specification (4) which is estimating a rise (fall) in the cyclical component of the interest rate when the exchange rate is depreciating (appreciating). As presented in panel (a) of Figure B1, many of the estimates for γ'_ε centre around zero; however, whereas advanced nations have moderately negative estimates, emerging economies have positive figures and represent those with the largest absolute values. The second right-hand-side set of results of panel (a) in Table B17 presents descriptive statistics on γ'_ε for the whole sample and split by country classification. On average, the mean estimate for γ'_ε across all countries is 0.009, with -0.020 for advanced nations and 0.027 for emerging economies and 0.015 for developing countires. Moreover, two-thirds of all emerging economies have a positive estimate of γ'_ε. In the total sample, there are eight statistically significant results (at the 95%) level, one for an advanced nation with $\gamma'_\varepsilon < 0$, and seven (representing 23% of the sample) with $\gamma'_\varepsilon > 0$. Using the annual data set, a similar two-thirds of emerging economies are found to have positive estimates of γ'_ε; moreover, 58% of developing nations have similar estimates. Mean estimates of γ'_ε for advanced nations are negative and negligible and positive for emerging and developing economies (panel (d) of Table B17).

It is also worth considering the outliers in Figure B1. Those outliers in the bottom-right quadrant of panel (a) represent both procyclical monetary policy and fear of free floating, consisting of three emerging economies (Costa Rica, Brazil and Mexico) and one developing country (Honduras). Peru, on the other hand, is observed to have the highest positive estimate of γ'_ε, but with a moderate degree of countercylcicality ($\gamma'_Y > 0$) with similer results for Bolivia, Ecuador and Turkey, but with lower estimates of γ'_ε. In panel (b), more countries from Central-and-South America are observed with estimates of $\gamma'_\varepsilon > 0$ including Uruguay, Guyana, Venezuela as well as Roumania, Sierra Leone and Vietnam; developing nations of Haiti and Tajikistan are estimated to conduct significantly procyclical monetary policy with negligible estimates of γ'_ε. Of those in the 18 bottom-right-hand quadrant of panel (a) of Figure B1 (representing $\gamma'_Y < 0$ and $\gamma'_\varepsilon > 0$) 15 of from emerging economies, representing 38% of all emergining economies. Of those 29 countries in the same quadrant of panel (b) 15 and 10 are from emerging and developing economies

respectively, representing just under a third of both cohorts of countries.

Panels (b)-(c) of Table B17 illustrate further descriptive statistics for estimates of γ'_{ε} and γ'_{Y} from specification (4) now separating the sample between observations up to 2000 and those from 2000 onward; note that we only present this analysis on the quarterly dataset due to the number of observations reducing when applying subsets of time. The scale of monetary procylcicality reduced in the post-2000 sample; however, more than half (20-of-39) emerging economies were seen to conduct procyclicality fiscal policy. These results reconcile with Coulibaly (2012) and Végh & Vuletin (2012) who find a 'graduation' of some emerging markets from procyclical to countercyclical policy, results confirmed in McGettigan et al. (2013). We also find a slight reduction in countercyclicality in response to the global financial crisis in both emerging and advanced economies, as in McGettigan et al. (2013). The scale of potential fear of free floating also diminished with time, although again, two thirds of emerging economies were estimated to have a positive γ'_{ε} in the 2000 and onward sample.

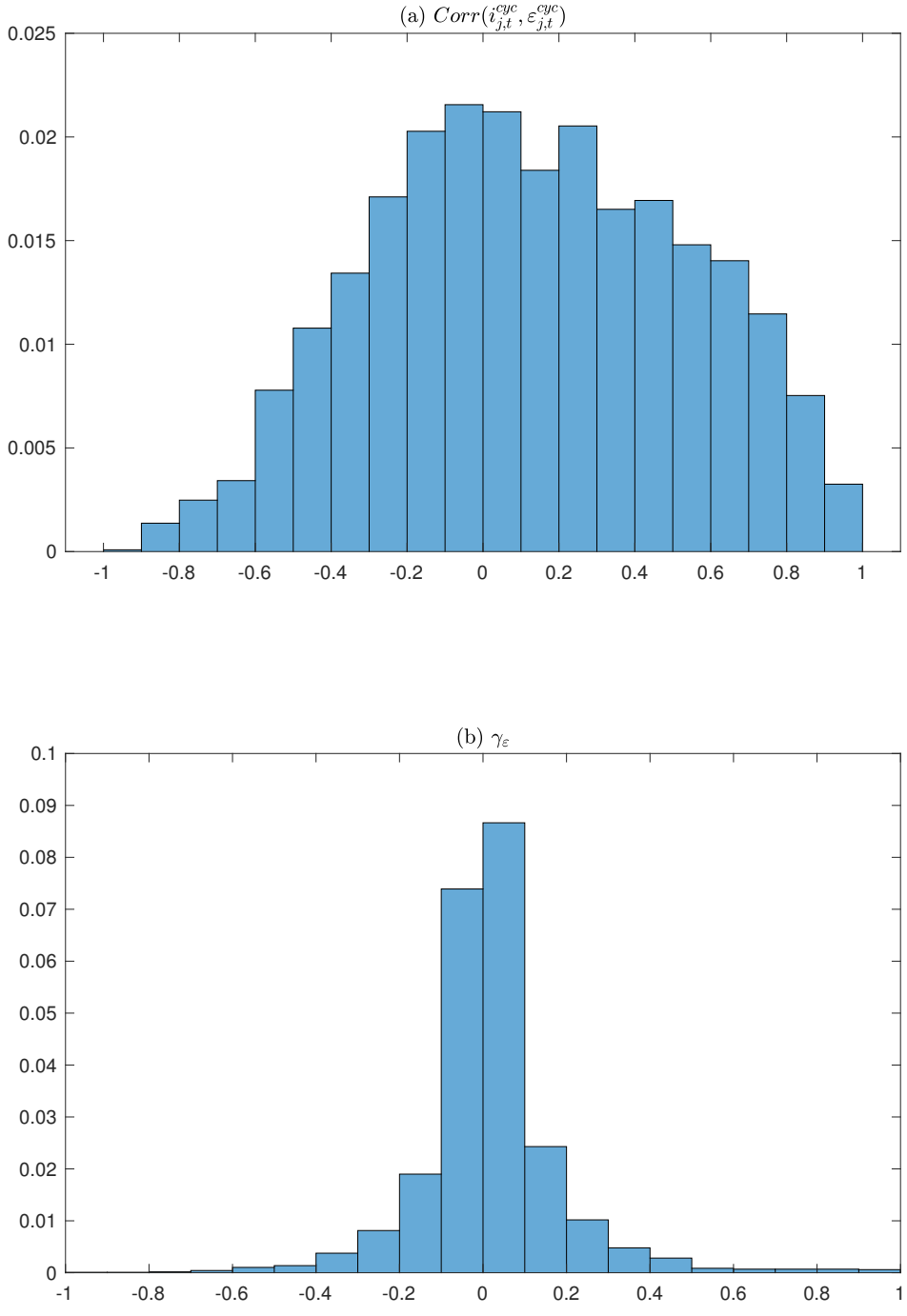
Table B18: The impact of fear of floating on monetary cyclicality: quarterly data, proxy and policy rates

	Emerging and Developing Economies				Developed Countries			
	Proxy		Policy		Proxy		Policy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\pi^{cyc}_{j,t}$	0.084***	0.078***	0.151***	0.131***	0.058*	0.056*	0.118	0.119
	(0.025)	(0.024)	(0.043)	(0.037)	(0.028)	(0.028)	(0.067)	(0.067)
$Y^{cyc}_{j,t}$	0.012	0.012	0.058***	0.056***	0.261***	0.261***	0.253***	0.254***
	(0.011)	(0.011)	(0.021)	(0.020)	(0.042)	(0.042)	(0.070)	(0.070)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	0.001	0.001	0.001	0.001	-0.002**	-0.002**	0	0
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})*Y^{cyc}_{j,t}$	-0.058**	-0.061**	-0.151***	-0.156***	-0.432***	-0.437***	-0.438*	-0.441*
	(0.022)	(0.023)	(0.054)	(0.052)	(0.078)	(0.081)	(0.224)	(0.221)
$\varepsilon^{cyc}_{j,t}$		0.010**		0.023**		0.003		0.003
		(0.005)		(0.009)		(0.005)		(0.005)
Adjusted R Square	0.029	0.0331	0.047	0.0541	0.1284	0.1281	0.1156	0.1156
Observations	3315	3315	1677	1677	2718	2718	1124	1124
Number of Countries	55	55	38	38	30	30	14	14

Estimations from specification (7) now using the both the proxy interest rate (i.e. discount rate, saving rate, treasury bill rate, deposit rate, money market rate, lending rate: columns (1), (2), (5), and (6)) and the policy rate (columns (3), (4), (7), and (8)). Moreover, to compare our results with De Leo et al. (2022), we also split between emerging and developing economies (columns (1)-(4)) and developed economics (columns (5)-(8)) and starting the sample time period from 1990. Level of Significance ***1%, **5%, *10%.

C Distribution of measures

Figure C1: Distribution of γ'_{ε} and $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$



The distribution of extimates for γ'_{ε} and $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$.

D Further robustness checks

D.0.1 Further measures of fear of floating

The results in Section 3 are based on $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ as measure of FoF. This metric is chosen because of its spread relative to that of the estimated coefficient of the exchange rate in the Taylor rule γ'_{ε}. As is seen in Appendix C, the distribution of $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ is more evenly spread, whereas the distribution of γ'_{ε} is highly centered around zero and has large outliers. For example, the minimum and maximum values of $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$ are 2.5 standard deviations away from the mean, whereas for γ'_{ε} they are 27 and 17 standard deviations from the mean, respectively.

Appendix B also presents results replicating the work above, now including γ'_{ε} instead of $Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$. After removing observations of more than 2.5 standard deviations from the mean, the finding that higher FoF leads to higher growth volatility prevails. The estimated relationship between FoF and inflation is no longer statistically significant while the impact of monetary cyclicality remain intact and is highly statistically significant in all specifications.

D.0.2 Further measures of the exchange rate

In all our estimated models above the exchange rate is defined as the nominal exchange rate *vis a vis* the US dollar. We now probe our definitions by considering the impact of using the real and nominal effective exchange. The result from the baseline analysis that FoF reduces the countercyclicality of monetary policy is maintained in the vast majority of cases. Our findings on the macroeconomic effects of FoF also remain intact with higher degrees of FoF inducing higher levels of growth volatility and higher levels of average inflation.

D.0.3 Further measures of the interest rate

In our estimations we utilize a variety of interest rates as proxies for policy rate: discount rate, saving rate, treasury bill rate, deposit rate, money market rate, lending rate. De Leo et al. (2022) find that using such rates to proxy for monetary policy leads to inaccurate conclusions regarding the cyclicality of monetary policy. While the policy rate would undoubtedly be a better measure of the actual policy stance, data on these are not as readily available, thus our preference for the range of other interest rates. To check the robustness of our findings to the choice of interest rate, we re-estimate specification (7) using the policy rate; further, to compare our results to De Leo et al. (2022) we also split our sample between emerging and developing and developed economies and starting the sample time period from 1990 (Table D1). Similar to De Leo et al. (2022), we find evidence of more countercyclical behaviour when using the policy rate for emerging and developing economies, although similar levels for developing countries. Importantly, however, we still find evidence of FoF leading to more procyclical policy for all three groups of countries; indeed, we find more evidence of this when using the policy rate (compared to the proxy rate) for emerging and developing economies. Appendix B also shows the reduction in the number of observations when utilizing the policy rate with the size of the sample shrinking by half.

Table D1: The impact of fear of floating on monetary cyclicality: quarterly data, proxy and policy rates

	Emerging and Developing Economies				Developed Countries			
	Proxy		Policy		Proxy		Policy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\pi^{cyc}_{j,t}$	0.084***	0.078***	0.151***	0.131***	0.058*	0.056*	0.118	0.119
	(0.025)	(0.024)	(0.043)	(0.037)	(0.028)	(0.028)	(0.067)	(0.067)
$Y^{cyc}_{j,t}$	0.012	0.012	0.058***	0.056***	0.261***	0.261***	0.253***	0.254***
	(0.011)	(0.011)	(0.021)	(0.020)	(0.042)	(0.042)	(0.070)	(0.070)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$	0.001	0.001	0.001	0.001	-0.002**	-0.002**	0	0
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Corr(i^{cyc}_{j,t}, \varepsilon^{cyc}_{j,t})$*$Y^{cyc}_{j,t}$	-0.058**	-0.061**	-0.151***	-0.156***	-0.432***	-0.437***	-0.438*	-0.441*
	(0.022)	(0.023)	(0.054)	(0.052)	(0.078)	(0.081)	(0.224)	(0.221)
$\varepsilon^{cyc}_{j,t}$		0.010**		0.023**		0.003		0.003
		(0.005)		(0.009)		(0.005)		(0.005)
Adjusted R Square	0.029	0.0331	0.047	0.0541	0.1284	0.1281	0.1156	0.1156
Observations	3315	3315	1677	1677	2718	2718	1124	1124
Number of Countries	55	55	38	38	30	30	14	14

Estimations from specification (7) now using the both the proxy interest rate (i.e. discount rate, saving rate, treasury bill rate, deposit rate, money market rate, lending rate: columns (1), (2), (5), and (6)) and the policy rate (columns (3), (4), (7), and (8)). Moreover, to compare our results with De Leo et al. (2022), we also split between emerging and developing economies (columns (1)-(4)) and developed economics (columns (5)-(8)) and starting the sample time period from 1990. Level of Significance ***1%, **5%, *10%.