Journal of International Economics 108 (2017) S23–S41

Contents lists available at ScienceDirect

Journal of International Economics

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

If the Fed sneezes, who catches a cold?

Luca Dedola[a,*], Giulia Rivolta[b], Livio Stracca[a]

[a] European Central Bank, Sonnemannstrasse 20, Frankfurt am Main 60314, Germany
[b] University of Brescia, Department of Economics and Management, Via San Faustino 74/b, Brescia 25122, Italy

ARTICLE INFO

Article history:
Received 26 August 2016
Received in revised form 22 December 2016
Accepted 1 January 2017
Available online 8 January 2017

JEL classification:
F3
F4

Keywords:
Identification of monetary shocks
International transmission
Capital mobility
Trilemma

ABSTRACT

This paper studies the international spillovers of US monetary policy shocks on a number of macroeconomic and financial variables in 36 advanced and emerging economies. In most countries, a surprise US monetary tightening leads to depreciation against the dollar; industrial production and real GDP fall, unemployment rises. Inflation declines especially in advanced economies. At the same time, there is significant heterogeneity across countries in the response of asset prices, and portfolio and banking cross-border flows. However, no clear-cut systematic relation emerges between country responses and likely relevant country characteristics, such as their income level, dollar exchange rate flexibility, financial openness, trade openness vs. the US, dollar exposure in foreign assets and liabilities, and incidence of commodity exports.

1. Introduction

This paper offers a re-examination of the international repercussions of U.S. monetary policy shocks. Does a monetary contraction in the U.S. lead to recessions or expansions in other countries? Does a monetary contraction improve or worsen financial conditions abroad? Does it lead to capital inflows or outflows? Are spillovers different across advanced and emerging economies, or across countries pegging their exchange rate to the dollar and those retaining monetary autonomy? These questions have long been studied and discussed, but empirical answers remain controversial, as recently argued by the former chairman of the Federal Reserve (Bernanke, 2015). A source of this lack of consensus is that most studies have tended to focus either on a limited set of countries (e.g., G7 countries, as in Kim, 2001) or on a limited set of variables (mainly output, inflation, short-term rates and bilateral dollar exchange rates as in e.g., Miniane and Rogers, 2007). In turn, the heterogeneity in the scope of these studies has made comparability of spillovers from their different estimates not very straightforward.

In this paper we contribute to this debate by documenting the effects of US monetary policy shocks on a broad set of macroeconomic and financial variables in 18 advanced and 18 emerging economies. We expand on previous work mainly in two dimensions. First, we identify US monetary policy shocks assuming that they have empirically plausible effects consistent with "textbook" monetary theory, also modelling their impact on a range of interest rates and asset prices. Second, and most importantly, in order to better understand the international transmission of monetary policy, we expand the set of the variables in countries other than the US included in our analysis. Going beyond measures of real activity and inflation, we also consider the responses of financial variables such as equity and housing prices, credit, and bank and portfolio flows. This allows us to better document any trade-off in terms of macroeconomic and financial stability for other countries brought about by a US monetary policy shock.

Our main findings are as follows. First, we find that a surprise US monetary tightening leads to a depreciation vis-à-vis the dollar in most countries in our sample, and drives them into recession. In a large majority of countries industrial production and real GDP fall, and unemployment rises; however, the trade balance improves. Inflation (both GDP deflator and CPI) also falls in a majority of countries, although these effects are less precisely estimated. Emerging economies tend to experience higher macroeconomic volatility. At the same time, and this is our second finding, the responses of financial variables are less clear cut and quite heterogeneous across countries. While many countries see their bond yields increase relative to the US, real equity and housing prices drop in just about half of the countries, mainly comprising emerging economies. Likewise, many countries experience opposite effects on domestic credit and capital flows, including borrowing from foreign banks. Finally,

* Corresponding author.

http://dx.doi.org/10.1016/j.jinteco.2017.01.002
0022-1996/

we do not find evidence of a systematic relation between likely relevant country characteristics (such as income level, exchange rate regime, financial openness, trade openness vs. the US, dollar exposure and incidence of commodity exports) and the distribution of cross-country responses to US monetary policy shocks.[1] For instance, across more and less financially open countries, asset prices and capital flows do not seem to react much differently.[2]

We carry out our analysis in two steps. First, we estimate US monetary policy shocks in a structural VAR identified with sign restrictions. These restrictions are consistent both with standard monetary theory, and with recent results in the empirical literature on the effects of monetary shocks. We then regress third country variables on estimated shocks. Hence, we are asking the following question: What are the consequences on the rest of the world of a US monetary policy shock, conditional on this shock having the assumed effects on the US economy?[3] Namely, we take for granted that monetary shocks have "textbook" effects on the US economy, such as that a tightening should reduce economic activity and inflation, while at the same time raising a range of interest rates.[4]

Specifically, in our first step we impose sign restrictions broadly consistent with the empirical findings in Gertler and Karadi (2015), which are representative of the literature. In addition to responses of output and inflation in line with previous evidence, these authors also estimate the effects of monetary policy shocks on several asset prices and interest rate spreads. This is an attractive feature for us, given our focus on the propagation of US monetary policy to international asset prices and interest rates. Moreover, their identification and results are robust to the presence of the lower bound on short-term interest rates in the aftermath of the Great Recession. By basing our restrictions on their estimates we can thus hope to make our results robust over the period that includes the global financial crisis. However, to further sharpen our identification, we also require that shocks also satisfy two further restrictions.[5] First, we impose that on impact the US effective nominal exchange rate appreciates following a US tightening. Second, that an aggregate of short-term rates in other major currencies react less than one-to-one to US rates. This ensures that we focus on those US monetary policy shocks which are not too positively correlated with any monetary policy shocks in other major countries. This concern is especially relevant in the aftermath of the recent financial crisis, when short-term rates in most advanced economies have been close to their lower bound, and more or less contemporaneously very expansionary conventional (and unconventional) monetary policies have been deployed. We find that under our identification assumptions, estimated impulse responses in the VAR are indeed robust to the inclusion of the 5 years from January 2009 to December 2013.

In our second step, armed with our estimated monetary policy shocks, we turn to the estimation of their effects on other countries. Similarly to other papers (e.g., Romer and Romer, 2004), we regress a host of variables for each country both at monthly and quarterly frequency on the estimated shocks. We then aggregate these estimates across countries on the basis of several structural characteristics. Namely, we compute median responses across countries in the same group. We group countries on the basis of the following characteristics: a) income levels — advanced and emerging economies; b) exchange rate regime — floaters and dollar pegs according to the de facto classification in Klein and Shambaugh (2010); c) financial openness according to the classification in Chinn and Ito (2006); d) US trade exposure and financial dollar exposure, the latter based on the currency composition of gross assets and liabilities in Benetrix et al. (2015); and e) incidence of commodity exports. Therefore, similar to Klein and Shambaugh (2010), we look at the role of receiving countries' structural characteristics and choice of policy regime in influencing the degree to which US monetary policy may impose (positive or negative) externalities abroad.[6]

Of course, our work is quite closely related to previous contributions in the literature on the global effects of U.S. monetary policy shocks (see Bernanke, 2015). A large body of this literature has shown that in the post-Bretton Woods period interest rates are more closely linked in countries that peg and in countries with open capital markets compared with countries that do not peg or impose capital restrictions.[7] Di Giovanni and Shambaugh (2008) look at the effect of foreign interest rates on domestic growth in a large group of countries, finding that the effect is stronger in countries with fixed exchange rate regimes, mainly on account of the stronger impact of foreign interest rates on domestic interest rates. Among VAR studies which try to control for systematic components in US interest rates, Canova (2005) and Mackowiak (2007) identify the effects of US monetary policy shocks on selected emerging economies. The former focuses on Latin American countries, finding that floaters and pegs display similar output but different inflation and interest rate responses. The latter finds that the impact on output and the price level in a few emerging economies are actually larger than in the US. Miniane and Rogers (2007), identifying US monetary shocks with contemporaneous exclusion restrictions, find no evidence that capital controls are effective in insulating other countries. Also in line with our results, they find that the exchange rate regime does not matter much for the macroeconomic transmission of US shocks, with countries having a fixed exchange rate regime being similarly affected as floaters in terms of output and inflation. Georgiadis (2016) shows, among other findings, that a floating exchange rate reduces the output spillover from US monetary policy shocks (the more so, the more trade and financially open the receiving countries). Most of these contributions do not consider, however, the potential financial dimension of spillovers, as we do in this paper. Similarly to us, Banerjee et al. (2016) document that a US contractionary monetary policy shock leads to a retrenchment in EME capital flows, a fall in EME GDP, and an exchange rate depreciation. In a theoretical model built to account for these findings, they show that macroeconomic spillovers may be exacerbated by financial frictions. Recently, Rey (2013) has shown that capital flows and stock prices in most countries, regardless of their exchange rate regime against the dollar, display strong comovements with the global cycle. The latter in turn is affected by US monetary policy. Miranda-Agrippino and Rey (2015) provide further evidence along the same lines, also using a large Bayesian VAR. Hence, monetary autonomy from the US is either not granted by a float or not sufficiently used. In this view,

[1] A caveat is that the spillovers from US monetary policy shocks are much less precisely estimated if we end our sample in the half of 2008.

[2] A reason why we do not find sharp differences across exchange rate regimes (beyond a more muted response of the bilateral dollar exchange rate in countries with lower exchange rate flexibility) could be that none of the countries in our sample has been all the time in a dollar peg.

[3] Thus a more precise title of the paper would be "If the Fed makes the US sneeze, who catches the cold?"

[4] See however Ramey (2016) for a critical appraisal of the literature on the domestic effects of US monetary policy shocks, challenging the robustness of the consensus view that we instead take as our starting point.

[5] This is a key reason why we do not use the shocks by Gertler and Karadi (2015) directly. See a thorough discussion in Section 2.2.

[6] We assign a country to a given group over the whole sample. However, to the extent that some country characteristics have not been very stable in our sample, this approach can bias our results toward finding less stark differences across country groups. Moreover, characteristics like the exchange rate regime or the degree of financial openness may be endogenously chosen to some extent as a function of the effects of US monetary policy shocks.

[7] See e.g., Klein and Shambaugh (2010). However, Rose (2011) finds that the macroeconomic and financial consequences of exchange rate regime choices are surprisingly inconsequential. Business cycles, capital flows, and other phenomena for peggers have been similar to those for inflation targeters during the global financial crisis and its aftermath.