Spillover Effects of Quantitative Easing on Emerging-Market Economies

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- The effects on emerging-market economies (EMEs) of unconventional monetary policies implemented by some advanced economies have been a focus of debate among academics and policy-makers.
- The available evidence suggests that quantitative easing (QE) likely increased capital flows to EMEs and put somewhat unwelcome upward pressure on asset prices and exchange rates. However, the overall impact of QE on EMEs was likely positive because of the beneficial trade and confidence effects stemming from stronger economic activity in the countries adopting QE.
- There could be episodes of volatility in global financial markets when advanced economies begin to normalize monetary policy. For EMEs, the best defence against capital-flow volatility, and the potential financial and economic instability that could ensue, is likely to be further improving their macroeconomic and financial policy frameworks as well as developing their financial sectors so that they can intermediate capital flows in a stable and efficient manner.
- For central banks in advanced economies, clear and effective communication strategies will play a crucial role in promoting stability as they begin to normalize their monetary policies in line with the strengthening recovery.

The introduction of unconventional monetary policies (UMPs) and the eventual exit from these policies by some advanced economies have sparked a vigorous, ongoing debate among policy-makers and academics about the spillover effects of these policies on emerging-market economies (EMEs).[1] This article reviews the debate and assesses the evidence of spillovers from quantitative easing (QE), which, in this context, are the overall external

1 Although UMPs include quantitative easing (QE), forward guidance, and credit and liquidity facilities, in this article we focus on the Federal Reserve's large-scale asset purchase programs that were introduced in 2010 and 2012. These programs are often referred to as QE2 and QE3, respectively. We do not consider the unconventional measures undertaken in other advanced economies, such as Japan, the euro area and the United Kingdom.

effects of QE, including real and financial impacts. However, this article pays particular attention to capital flows, since they are the vehicle through which cross-border financial effects are transmitted.

Some policy-makers in emerging markets have argued that the U.S. Federal Reserve's large-scale asset purchase (LSAP) programs, otherwise known as QE, may have fostered undue risk taking and larger-than-normal capital inflows to EMEs, contributing to excessively loose financial conditions in these countries.[2] Some emerging-market policy-makers also complained about the upward pressure on exchange rates and loss in competitiveness resulting from QE policies. Moreover, they have been concerned about the risk of a disruptive capital withdrawal from EMEs once the process of monetary policy normalization in advanced economies commences.

Reflecting these concerns, the Group of 20 has put QE spillovers on its policy agenda (G-20 2013), with some members advocating a greater internalization of global spillover effects in the Federal Reserve's monetary policy decisions (Rajan 2014). However, the extent of the surge in capital flows generated by QE remains an open question. At the same time, some observers have argued that the overall impact of QE on EMEs may not be very different from that of conventional monetary easing and thus does not deserve special consideration. Moreover, there are positive effects on EMEs from QE policies, such as stronger emerging-market exports (Bernanke 2013). While acknowledging that talk of tapering the QE program triggered some short-lived financial market volatility in the summer of 2013, some proponents of this view argue that underlying vulnerabilities in certain EMEs were at the core of the problem (see Murray (2013), for example).

This article first describes the different channels through which QE can affect capital flows, asset prices, interest rates, financial market conditions and economic activity in EMEs.[3] It then briefly summarizes the recent literature on QE spillovers, including possible "spillbacks" from emerging markets to advanced economies. The following findings are supported by the literature:

- QE has likely increased capital flows to EMEs, but these were also supported by the relatively strong fundamentals in emerging markets.
- The overall impact of QE on EMEs was likely positive because of the beneficial trade and confidence effects stemming from stronger economic activity in the countries adopting QE, which then spilled over to the rest of the world.
- Talk about potential tapering in May and June 2013 had a disruptive impact on capital flows to EMEs;[4] however, after the initial impact subsided, there is some evidence that markets discriminated among countries according to fundamentals.

2 EMEs differ significantly in terms of both exchange rate regime and capital account openness. In this article, we refer mostly to EMEs with relatively flexible exchange rate regimes and at least partially open capital accounts. EMEs that have a fixed exchange rate regime and a closed capital account, such as China, are not included in our sample.

3 QE spillovers are not limited to EMEs. In principle, similar cross-border effects will operate in advanced economies as well. But owing to institutional features as well as financial market imperfections, capital-flow volatility and the consequent economic and financial instability risks have historically been a major concern for EMEs.

4 In testimony before the Joint Economic Committee of the U.S. Congress on 22 May 2013, former Federal Reserve Chairman Ben Bernanke first hinted at the possibility of scaling back the LSAPs. For further details, see http://www.federalreserve.gov/newsevents/testimony/bernanke20130522a.htm.

- Given the rising trend toward financial and trade integration, spillovers have likely increased between advanced economies and EMEs, underscoring the importance of communication among central banks to create a shared understanding of their policies and a better discussion of potential impacts.

Quantitative Easing and Spillovers to Emerging-Market Economies: Transmission Channels

QE may affect cross-border capital flows, asset prices and economic activity through several channels that are not mutually exclusive, since some may be at play simultaneously:[5]

(i) Portfolio-balance channel: QE involves the purchase of longer-duration assets such as government bonds and mortgage-backed securities. These purchases reduce the supply of such assets to private investors, compressing the term premium, which, in turn, increases the demand for all substitute assets, including emerging-market assets, as investors turn to riskier assets in search of higher expected risk-adjusted returns.[6] Such portfolio rebalancing lowers risk premiums, boosts asset prices and lowers yields in EMEs, effectively easing their financial conditions.

(ii) Signalling channel: If QE is taken as a commitment by the Federal Reserve to keep future policy rates lower than previously expected, the risk-neutral component of bond yields may decline.[7] Large interest rate differentials with respect to EMEs will be expected to persist, which, in turn, prompts carry trades and capital flows into EMEs.[8]

(iii) Exchange rate channel: The portfolio flows discussed above could result in a depreciation of the U.S. dollar. This would act as a drag on U.S. demand for foreign-produced goods and services relative to those produced domestically. Consequently, emerging-market exports could be negatively affected.

(iv) Trade-flow channel: QE would boost the demand for emerging-market exports, since it supports domestic demand in the United States. This may fully or partially offset the negative effect from the exchange rate channel on emerging-market exports.

The spillover effects of quantitative easing may have been amplified by the differences in the macroeconomic and financial conditions of advanced and emerging-market economies

The effects of QE on cross-border capital flows work through channels similar to those of conventional monetary policy. More work is required to assess whether unconventional and conventional monetary policies have, at least in principle, similar cross-border effects on asset prices and economic activity. However, the spillover effects of QE may have been amplified by the differences in the macroeconomic and financial conditions of advanced economies and EMEs in the period following the global financial crisis of 2007–09.[9]

5 Fratzscher, Lo Duca and Straub (2013), Chen et al. (2012), Kozicki, Santor and Suchanek (2011), and Santor and Suchanek (2013) provide summaries of the various channels of transmission.

6 A number of studies have highlighted this as the central transmission channel through which QE affects cross-border capital flows (Gagnon et al. 2010; D'Amico and King 2010; Hamilton and Wu 2012). In contrast, some have expressed skepticism about the empirical significance of this channel (for example, Cochrane (2011)).

7 The risk-neutral component of bond yields is defined as the average level of short-term interest rates over the maturity of the bond. In other words, it is the interest rate that would prevail if all investors were risk neutral. Bauer and Rudebusch (2013b) stress the importance of the signalling channel for Federal Reserve announcements since 2008, and show that this channel was as important as the portfolio-balance channel.

8 Federal Reserve actions may also provide new information about the current state of the economy, which in turn can influence asset prices and portfolio decisions by altering the risk appetite of investors.

9 Glick and Leduc (2013); IMF (2013b); Moore et al. (2013); Rosa (2012); Wu and Xia (2014).

Empirical Evidence of the Spillovers from Quantitative Easing

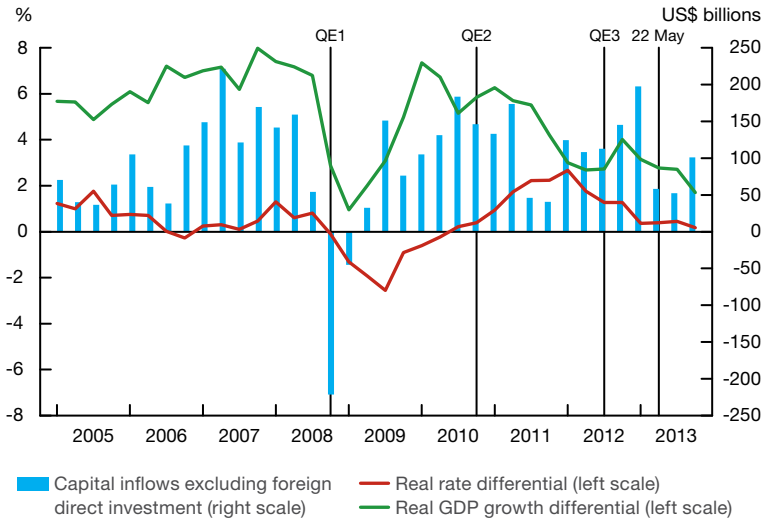
Spillovers during QE episodes

Gross capital inflows (excluding foreign direct investment) to EMEs rose steadily during the years before the crisis, peaking at about $660 billion in 2007. Inflows turned to outflows during the crisis, reaching $221 billion in the fourth quarter of 2008; however, they recovered quickly, averaging nearly $112 billion per quarter in inflows between the second quarter of 2009 and the fourth quarter of 2013. While this recovery took place at the same time as QE was implemented by the Federal Reserve and other advanced economies, several country-specific "pull" factors were also at play during the period. In particular, interest rate and growth differentials supported flows to EMEs in the years following the crisis (**Chart 1**), when the economic performances of advanced economies and EMEs differed significantly.

Several empirical studies have attempted to distinguish among the various channels through which QE affects EMEs. However, it is difficult to draw clear inferences, since experience with these unconventional measures is very limited. Lim, Mohapatra and Stocker (2014) examine gross financial flows to developing countries between 2000 and 2013, with a particular focus on the potential effects of QE. They find evidence that QE operated through portfolio-balancing, signalling and liquidity

Chart 1: Capital inflows to emerging-market economies, and interest rate and growth differentials

Quarterly data



Notes: Capital inflows include portfolio investments and other investments. The interest rate differential is calculated as the difference between PPP-weighted real interest rates of EMEs and advanced economies. The GDP growth differential is calculated as the difference between PPP-weighted real GDP growth of EMEs and advanced economies (PPP = purchasing-power parity). EMEs include Argentina, Brazil, Bulgaria, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine and Venezuela. Advanced economies include Australia, Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

Sources: International Monetary Fund and national sources Last observation: 2013Q4

channels.[10] Episodes of QE were accompanied by increases in inflows to developing countries over and above these observable channels. In a similar vein, Fratzscher, Lo Duca and Straub (2013) find that bond-purchase policies under QE2 triggered some modest portfolio rebalancing across EMEs and the United States. They also find that while the Federal Reserve's policies were enacted to counter the U.S. business cycle, the capital flows that were prompted by these policies were procyclical from an EME perspective. This finding, however, needs to be weighed against the fact that, without QE, EMEs might have experienced weaker demand for their exports.

Other studies, however, do not find any special or exaggerated effects of QE beyond those of conventional easing. Ahmed and Zlate (2013) examine the determinants of net private capital flows to EMEs and find that growth and interest rate differentials, as well as global risk appetite, are important determinants of net private capital inflows. They do not find statistically significant positive effects of QE on net emerging-market inflows, although there seems to be a change in composition toward portfolio inflows. Bowman, Londono and Sapriza (2014) find that the Federal Reserve's UMPs might not have had outsized effects on asset prices in emerging markets once each country's time-varying vulnerability is taken into account. In other words, their evidence suggests that, as an EME's financial or macroeconomic conditions deteriorate, UMPs might have unexpected, and sometimes unwelcome, effects on domestic asset prices. This highlights how correcting obvious vulnerabilities is key to reducing negative spillovers. Finally, there is also little or no evidence of QE having a different spillover effect on the exchange rate than conventional policies. Currency depreciation is simply an inevitable consequence of monetary easing (Santor and Suchanek 2013). Glick and Leduc (2013) show that QE had the "same 'bang' per unit of surprise" on the U.S. dollar as the reduction in policy rates prior to hitting the zero lower bound.

The net effects of quantitative easing on emerging-market economies were generally positive

These various studies are, however, silent on whether such spillovers are net positive or negative, since the potentially negative effects of procyclical capital flows, such as asset bubbles, risks of sudden stops or loss of export competitiveness, need to be weighed against the positive effects of QE, such as stronger aggregate demand, improved confidence and more favourable global financial conditions. The net effects of QE have been studied to some extent by the International Monetary Fund (IMF), which finds that the overall impact on EMEs was generally positive (IMF 2013a).[11] Positive spillovers from stronger demand in advanced economies, as well as lower costs of capital, cheaper sovereign financing and higher equity prices, outweighed the negative effect of currency appreciation. In this context, the Great Depression of the early 1930s can provide a useful historical comparison. For example, without the appropriate monetary responses in advanced economies to shocks in the 1930s, Latin America suffered large losses in output (IMF 2013c).[12]

Ongoing research at the Bank of Canada evaluates the international spillover effects of LSAPs using a two-country dynamic stochastic general-equilibrium model with portfolio balance effects (Alpanda and Kabaca forthcoming).

10 Lim, Mohapatra and Stocker (2014) refer to the signalling channel as the confidence channel. The liquidity channel operates primarily through bank lending, which we do not explicitly identify in our measure of capital flows.

11 Estimates of the net effects of QE reported by the IMF (2013a) do not account for potential financial stability risks. Work is under way at the IMF to develop a model that accounts for these risks (IMF 2013b).

12 This was further aggravated by the adherence to fixed exchange rates, which impeded the needed external adjustment.

When calibrated to the United States and the "rest of the world," the model suggests that LSAPs can lower both domestic (i.e., U.S.) and foreign long-term yields, and stimulate both domestic and foreign activity, while generating appreciation pressures on the foreigners' currency. Note, however, that the model does not include EMEs explicitly, but only within the heterogeneous "rest of the world" block, and abstracts from some of the potential positive and negative effects of QE on EMEs mentioned above.

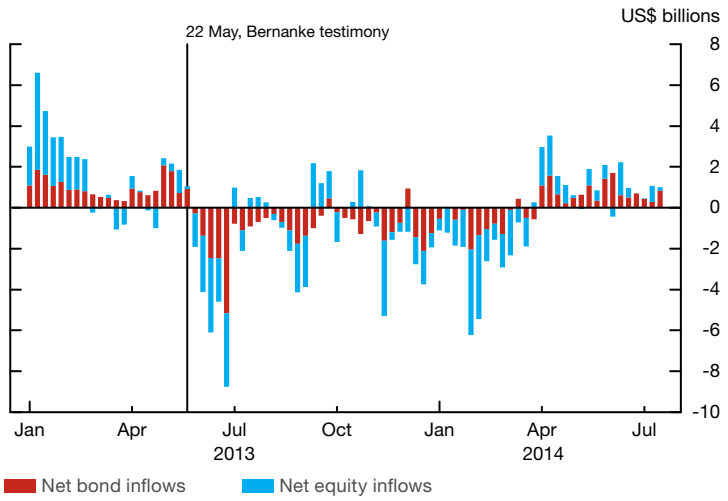
Spillovers after the tapering announcement

The initial hints of tapering by former Chairman Bernanke, on 22 May 2013, surprised market participants, leading them to advance the date at which they expected the Federal Reserve to actually begin tapering and the timing of the eventual increase in the federal funds rate (Bauer and Rudebusch 2013a). These changes in policy expectations likely reduced market participants' tolerance for risk and triggered a reassessment of the risk-adjusted returns from investing in EMEs. As global long-term interest rates rose abruptly, many EMEs experienced a sharp withdrawal of private capital inflows and increased financial market volatility (**Chart 2**). However, after an initial widespread withdrawal of capital from EMEs in June and July 2013, capital flows became more differentiated: the size of capital outflows appeared to be related to a country's macroeconomic fundamentals, reflecting, to some extent, the policies that countries pursued during the years immediately following the global financial crisis.

A few recent studies have analyzed the impact of news about tapering on EMEs, producing disparate results. Mishra et al. (2014) find that countries with stronger fundamentals, deeper financial markets, and a tighter stance toward capital flows and macroprudential policies before tapering

Chart 2: Net portfolio flows to emerging-market economies

Weekly data



Notes: Bond and equity inflows are the sum of the respective inflows to the following countries: Argentina, Brazil, Bulgaria, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine and Venezuela. The database contains weekly portfolio investment (net) flows by equity and bond funds. Although the database represents less than 20 per cent of the market capitalization in equity and bonds for most countries, it is regarded as closely matching portfolio flows in the balance of payments data and is being increasingly used in academic research on capital flows. The vertical line representing Chairman Bernanke's testimony on 22 May 2013 corresponds to that week on the x-axis.

Source: EPFR Global

Last observation: 16 July 2014

experienced smaller currency depreciations and smaller increases in bond yields. At the same time, however, there was less differentiation in the behaviour of stock prices across EMEs based on fundamentals.

Ongoing research at the Bank of Canada also explores the effects of U.S. monetary policy normalization on EMEs. Using an event-study approach, Rai and Suchanek (forthcoming) examine the effects on financial variables within a two-day window around four key Federal Reserve/Federal Open Market Committee announcement dates related to tapering. Their results suggest that EMEs with strong fundamentals (such as faster growth, smaller current account deficits, lower debt and higher productivity growth) experienced relatively fewer disruptions to capital flows and currency depreciation following the Federal Reserve's communication on tapering. In another study, Dahlhaus and Vasishtha (forthcoming) use a vector autoregressive (VAR) approach to assess the potential effects of the normalization of U.S. monetary policy on portfolio flows to a sample of 23 EMEs. The authors define a "policy normalization shock" as a shock that increases both the yield spread of U.S. long-term bonds and monetary policy expectations, as derived from federal funds futures contracts, while leaving the policy rate per se unchanged. Their results indicate that the impact on portfolio flows (as a share of GDP) of a normalization of U.S. monetary policy is expected to be small.

In a similar vein, Lim, Mohapatra and Stocker (2014) use a VAR model to generate a scenario where unconventional monetary policy normalizes over the course of 2014–16. Simulation results show that, relative to the status quo of no change in QE,[13] capital flows contract by a modest 0.6 per cent of aggregate GDP in developing countries by the end of 2016, regardless of the pace of monetary policy normalization.[14] While these estimates are quantitatively small, they can still be economically relevant. The experience of the summer of 2013 has shown that changes in capital flows of a similar magnitude were associated with significant financial turmoil in EMEs.

The experience of the summer of 2013 has shown that changes in capital flows were associated with significant financial turmoil in emerging-market economies

There are, however, dissenting views based on empirical findings. Eichengreen and Gupta (2014) examine the movements in exchange rates, equity prices and foreign reserves between April and August 2013, and find that strong fundamentals (a low budget deficit and public debt, and a high level of reserves and GDP growth) did not provide insulation, and that flows were largely driven by the size of the country's financial market. It is not immediately clear why there are such contrasting results in the literature. The use of different countries and time periods, as well as a partial versus general-equilibrium approach, may be among the reasons.

"Spillbacks" from Emerging-Market Economies to Advanced Economies

Some policy-makers in emerging markets have argued that the negative effects of QE on their economies would ultimately "spill back" to advanced economies (Rajan 2014). Indeed, since EMEs represent a large and rising share of the global economy, there is growing evidence of spillbacks from

13 The authors define the status quo of no change in QE as a scenario in which the flow of asset purchases continues at the same pace as that before the start of tapering by the Federal Reserve.

14 The results in Dahlhaus and Vasishtha (forthcoming) and Lim, Mohapatra and Stocker (2014) are subject to certain caveats and thus should be interpreted with caution. First, the results in both studies partly reflect average relationships prior to the global financial crisis and may not fully capture the dynamic adjustment of capital flows to financial market variables during the crisis period. Second, the analysis in Dahlhaus and Vasishtha (forthcoming) does not incorporate the role of emerging-market macroeconomic fundamentals in driving capital flows to EMEs.

EMEs to advanced economies, primarily through trade, financial and commodity-price channels. Specifically, weak economic activity in EMEs may lead to softer demand for advanced-economy exports, as well as lower equity and commodity prices. Preliminary analysis conducted by the IMF suggests that spillback effects from EMEs tend to be modest, but could be larger in crisis periods. In addition, the effects are larger for countries or regions with greater trade exposure to EMEs, such as Japan and the euro area (IMF 2014). Moreover, major advanced-economy commodity exporters, such as Canada and Australia, may be negatively affected by lower prices for commodities due to slowing growth in EMEs that are major consumers of commodities.

Citing these concerns about spillovers and associated spillbacks, some observers have stressed the need for central banks to factor in the effects of their policies on other countries and have argued for greater coordination of international monetary policy. However, the Federal Reserve has noted that it does pay attention to the global spillover effects of its policies and associated spillbacks within the context of its domestic mandate.[15] Considerable information sharing also occurs among central banks at various international forums, such as the G-20 and the Bank for International Settlements, which helps to create both a shared understanding of the need for such policies and a discussion of their potential impacts. Beyond this, it is not obvious what coordination among central banks (which must follow domestic policy mandates) would look like in practice or how it would lead to a different policy path for the Federal Reserve or any other central bank engaging in QE.

◀ *Considerable information sharing among central banks at international forums helps to create both a shared understanding of the need for unconventional monetary policies and a discussion of their potential impacts*

Another important consideration associated with spillbacks is the emerging markets' policy reactions to QE, such as an increase in sterilized foreign exchange rate intervention, stricter macroprudential measures and a greater use of capital controls. So far, there has been little research on the spillback from such policies, although some observers, such as Murray (2013), have argued that there might have been less need for unconventional policies were it not for such restrictive measures impeding necessary adjustment in real exchange rates.

Conclusion

Given the available evidence, QE appears to have increased capital flows to EMEs, although there is no convincing proof that the overall effects are significantly different from conventional monetary easing. Moreover, diverging fundamentals between advanced economies and EMEs were likely at least as important. Overall, the benefits of QE appear to outweigh the costs, especially if advanced economies withdraw exceptional monetary easing in an appropriate fashion as economic conditions improve.

Nevertheless, there could be instances of volatility in global financial markets, particularly in EMEs, when advanced economies begin to normalize monetary policy, highlighting the need for policy-makers in both EMEs and advanced economies to remain vigilant. For central banks in advanced economies, recent experience underlines the importance of ensuring that monetary policy normalization be communicated as effectively as possible in order to appropriately shape market expectations.

Even if the exit is well managed, a certain amount of capital-flow reversal and higher borrowing costs are likely in some EMEs. Higher bond yields will prompt portfolio rebalancing, the effects of which could be amplified in the presence

15 See the comments by Federal Reserve Chair Janet Yellen in the "Inaugural Michel Camdessus Central Banking Lecture," at the IMF in Washington, D.C. (2 July 2014), at http://www.imf.org/external/np/seminars/eng/2014/camdessus/.

of market imperfections. The effects of policy normalization on EMEs will thus depend on their resilience and the extent of their vulnerabilities. EMEs with strong fundamentals and sound macroeconomic and financial policies will likely be better able to insulate themselves from any excessive negative spillovers as the monetary policy of advanced economies normalizes.

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