Announcement Effects of Unconventional Monetary Policies on Portfolio Flows to Hong Kong

Lam, R.

Abstract—As the Federal Reserve continues its bond purchases to support the economy, the spillover effects created by unconventional monetary policies in the U.S. have garnered more attention. In particular, there is a need to better understand how money and to determine whether unconventional bond purchases have played a role in increasing capital flows to emerging markets. Since former Federal Reserve Chairman Ben Bernanke’s testimony, weekly equity fund flow out of emerging markets has averaged a staggering $3.4 billion. Although it is unclear whether such rapid outflow has negative consequences on economies, policymakers must make every effort to end unconventional purchases with minimal damage on the financial stability of the global economy. As an important financial center in the Asia Pacific region, Hong Kong is an interesting case to study because of its currency peg to the USD and the possibility that investors use Hong Kong as an entry point to China and other emerging and developing economies in that region. If the latter point were true, examining portfolio flows to Hong Kong would be an essential step towards understanding whether unconventional monetary policies have changed the nature of portfolio flows to emerging markets in Asia and whether these flows have brought about booms in local markets.

Portfolio Flows to Hong Kong

Fig. 1 shows the directions and magnitudes of flows for the four non-reserve components of the Balance of Payments (BoP) financial account. These BoP statistics capture cross-border transactions between residents and nonresidents. Thus, they do not necessarily convey the nature of flows into and out of the HKD. Data on changes in the Aggregate Balance and in the net foreign currency assets of the Authorized Institutions and the Exchange Fund are more suitable for analyzing flows involving foreign currencies and the HKD.

This article focuses on portfolio investment, which the Hong Kong Monetary Authority (HKMA) defines as “transactions in financial instruments, including equity securities, debt securities, and money market instruments” (He et al. 2009). Although portfolio flows do not provide the overall picture of capital flows into and out of an economy, they are appropriate for studying changes in investor sentiment, as investors are able to react quickly to economic news and events by adjusting their portfolio allocations. On the other hand, foreign direct investment in an economy reflects a longer-term view on growth and thus does not respond immediately to events such as announcements of asset purchase programs. Fig. 2 displays the top sources of portfolio inflow to Hong Kong and Fig. 3 the top destinations of portfolio outflow from Hong Kong.

Overview of Unconventional Monetary Policies

Large Scale Asset Purchases

By late 2008, the Federal Reserve had exhausted its standard monetary policy tools - open market operations - and had brought the federal funds rate down to just above zero percent. In order to prevent the crisis from worsening, policymakers resorted to unconventional monetary policy tools: direct purchases of securities. The three most prominent programs of large scale asset purchases are commonly referred to as LSAP1, LSAP2, and LSAP3. Table 1 details these purchase programs and Figure 4 the cumulative amount of securities held outright by the Federal Reserve.

Table 1: Amounts of Asset Purchases

<table>
<thead>
<tr>
<th>Announcement</th>
<th>Date</th>
<th>Agency Debt</th>
<th>Agency MBS</th>
<th>LT Treasuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSAP1</td>
<td>11/25/2008</td>
<td>$100 bil</td>
<td>$500 bil</td>
<td></td>
</tr>
<tr>
<td>LSAP1</td>
<td>03/18/2009</td>
<td>$100 bil</td>
<td>$350 bil</td>
<td></td>
</tr>
<tr>
<td>LSAP2</td>
<td>11/03/2010</td>
<td>$100 bil</td>
<td>$75 bil</td>
<td></td>
</tr>
<tr>
<td>LSAP3</td>
<td>08/27/2013</td>
<td>$15 bil/mo</td>
<td>$75 bil/mo</td>
<td></td>
</tr>
</tbody>
</table>

Another notable asset purchase program is the Maturity Extension Program (MEP), commonly known as Operation Twist, in which the Federal

Reserve purchases Treasuries with remaining maturities of 6 to 30 years and sells them with remaining maturities of three or fewer years. Originally intending to terminate the program in 2012, the Federal Reserve decided to continue purchases of Treasuries with long remaining maturities to keep long-term interest rates down until economic conditions improved.

To get a sense of the magnitudes of these purchases, it is useful to consider the size of the balance sheet before the policies took place. At the beginning of 2008, the Federal Reserve held approximately $750 billion worth of securities outright. LSAP1, including its expansion, more than doubled the size of the balance sheet to $2 trillion. While LSAP2 and LSAP3 added a significant amount to the balance sheet, their effects were much less significant when considering the purchase amounts as a fraction of the existing assets.

**How Unconventional Monetary Policies Work**

In normal open market operations, the Federal Reserve buys or sells short-term Treasury bills or conducts repurchase agreements to achieve a target interest rate. The Federal Reserve makes these transactions with its primary dealers who hold Treasury securities as assets. It is important to note that the Federal Reserve is not directly purchasing bonds from the Treasury. Because the primary dealers have accounts at clearing banks, the Federal Reserve is in effect increasing reserves in the banking system when it purchases the short-term government securities. As the size of reserves increases, the federal funds rate, the rate at which banks may lend to each other overnight, decreases. When the federal funds rate is very close to zero, policymakers can no longer rely on setting short-term interest rates to stimulate the economy.

Unconventional monetary policies adopted in response to the crisis adhere to similar principles with a few differences. First, the sizes of the outright purchases in the asset purchase programs are much larger. Second, the Federal Reserve purchases other securities, such as mortgage-backed securities from Fannie Mae and Freddie Mac and government bonds with longer maturities. The intention is to directly affect the markets for these securities and increase the reserves of the primary dealers. In turn, these financial institutions can more easily write loans to boost the economy.

As part of its work in analyzing these asset purchase programs, the IMF highlights three channels through which bond purchases may lower long-term yields. The signaling channel is closely related to the idea of forward guidance and functions by convincing the markets that the Federal Reserve is committed to loose monetary policies. Actual bond purchases provide such evidence, as the markets understand that purchase programs tend to last for a substantial period. On the other hand, the scarcity channel functions through the laws of supply and demand. As the Federal Reserve purchases more bonds, supply decreases in the market. Given that demand remains strong, a decrease in supply leads to an increase in price and consequently a decrease in yields. Finally, the duration channel complements the other two channels by decreasing the interest rate risk of portfolios, thus lowering both the price of risk and the yield curve as investors accept lower yields.

**Announcement Effects**

Because the actions of the Federal Reserve have a huge impact on economic conditions, the markets have scrutinized the Federal Reserve’s every move since the beginning of the crisis. Both investors and financial institutions have sought to position themselves in accordance with the views of the Federal Reserve. Thus, beyond the actual asset purchases, the announcements of these programs have become significant events. Ready to act, the markets attempt to predict the material in the Federal Reserve’s press releases, which focus on intention and forward guidance about both target interest rates and asset purchases. Therefore, the responses to these announcements should be examined.

The focus on the Federal Reserve has intensified in recent months as policymakers consider halting bond purchases. Investors are looking for a precise timeline so they may adjust their allocations as interest rates rise. Such reallocation may lead to large portfolio flows globally and threaten financial stability. In fact, initial hints about the end of large scale asset purchases have indeed resulted in an overreaction from the market and a sizable withdrawal of funds from the emerging markets. Markets’ responses to Federal Reserve announcements in the past five years provide insight into how portfolio flows will be affected.
Hong Kong as a Case Study

As an international financial center, Hong Kong is an interesting case to study for several reasons. First, Hong Kong is unique in that it acts as an entry point to China and as the offshore market for many Chinese assets. As the Chinese economy continues to grow in size and influence, Hong Kong has hardly seen its financial importance wane and has maintained its role in spearheading RMB transactions internationally. In its Five Year Plan for 2011 - 2015, China emphasized Hong Kong’s place as an international financial center, suggesting the future will likely see more cooperation between it and its Special Administrative Region. Even without considering transactions involving H-Shares and dim sum bonds, a thriving China has incentive to bolster the Hong Kong economy because Hong Kong is the major financial center in the Asia Pacific region in addition to Singapore and has much closer economic ties with China. Thus, portfolio flows into and out of Hong Kong are highly dependent on conditions in China, making the analysis of portfolio flows more complex.

Second, the Hong Kong currency runs under the Linked Exchange Rate system, which effectively keeps the USD/HKD rate within the range of 7.75 to 7.85. Any change in the monetary base is fully backed by a change in foreign reserves. When the rate hits either side of the band, the HKMA intervenes. Moreover, due to the currency board, Hong Kong lacks its own monetary policy tools and has adopted low interest rates from the U.S: Figure 5 shows the correlation between Hong Kong and U.S. interest rates. BoP statistics and Figure 2 also show that the U.S. has consistently been the top source of portfolio inflows, especially equity inflows. Thus, economic activity in Hong Kong is also strongly influenced by conditions in the U.S. As a proxy to both the Chinese and U.S. markets, Hong Kong is, therefore, useful as a case study.

Data

This article analyzes data on weekly equity and bond country flows from EPFR Global. Unlike BoP statistics on portfolio flows, EPFR data are gathered from surveys of fund managers. These funds are domiciled across global markets, and, by definition, funds flow tracks the amount of money flowing into and out of a fund. In turn, country flow can be estimated by multiplying funds flows by the country allocations of the funds to track the amount of money flowing into the local equity or bond market. In this article, portfolio flow is used interchangeably with country flow and indicates net flow. By convention, positive portfolio flow means that there is net flow into the local market.

In the case of Hong Kong, the use of EPFR data alleviates one of the most severe problems of using BoP statistics - the treatment of H-Shares, shares of companies based in China but listed on the Hong Kong stock exchange. When a local investor buys an H-Share, the transaction is recorded in the BoP as capital outflow. This practice is not a problem per se, but capital outflow generally indicates a decrease in demand for local equity. Due to the unique economic relationship between Hong Kong and China, a local investor’s purchase of H-Shares is unlikely to be a signal for decreasing demand in local equity. Furthermore, when a foreign investor purchases H-Shares on the Hong Kong stock exchange, this transaction is not recorded at all in the BoP because Hong Kong only serves as an intermediary. As interest in Chinese stocks continues to grow, the BoP statistics will portray a less accurate picture of investor sentiment.

EPFR classifies H-Shares as Chinese equity; therefore, local purchases of H-Shares are accounted for as country flow from Hong Kong to China. Because EPFR provides data on the domicile country level and also on the aggregate level, the flow from Hong Kong to China can be separated from other outflows. However, a foreign fund investing in H-Shares is still recorded as country flow between the domicile of the fund and China. Thus, the transaction, while affecting local economic activity, does not show up in the data for Hong Kong. Therefore, although the use of EPFR data is an improvement in that it is possible to extract transactions involving H-Shares, the unique setup of these shares remains a complication.

Perhaps the most important advantage of using EPFR data is the data frequency. Quarterly BoP statistics on portfolio flows are not appropriate for studying the announcement effects of unconventional monetary policies, as many other factors contribute to portfolio
flows over time. Thus, data frequency serves as one of EPFR's strengths. One caveat in using EPFR data is that investors often invest in funds domiciled in other markets. For example, a Canadian investor may invest in a fund domiciled in the U.K., which in turn invests in the Hong Kong equity market. This transaction is recorded as country flow from the U.K. to Hong Kong, and the data does not indicate the origin of the money. Another caveat is that country flow is estimated from a representative sample of funds and does not equal the total amount of portfolio flows.

This article also employs data on other economic indicators:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Description/Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Announcements</td>
<td>W</td>
<td>Federal Reserve - Press Releases</td>
</tr>
<tr>
<td>Bond Purchases</td>
<td>W</td>
<td>Federal Reserve - Factors Affecting Reserve Balances</td>
</tr>
<tr>
<td>PMI</td>
<td>M</td>
<td>China Purchasing Managers Index</td>
</tr>
<tr>
<td>HIBOR - LIBOR Spread</td>
<td>D → W</td>
<td>Spread between MA of Interbank Offer Rates</td>
</tr>
<tr>
<td>VIX</td>
<td>D → W</td>
<td>MA of Volatility Index for S&amp;P500</td>
</tr>
<tr>
<td>CESNEM Index</td>
<td>D → W</td>
<td>MA of Citigroup Economic Surprise Index for EM</td>
</tr>
<tr>
<td>CESICNY Index</td>
<td>D → W</td>
<td>MA of Citigroup Economic Surprise Index for China</td>
</tr>
<tr>
<td>JPEI GLSP Index</td>
<td>D → W</td>
<td>MA of JPMorgan EMBI Global Spread</td>
</tr>
</tbody>
</table>

### Methods

This article takes a regression approach to determine whether the announcements of LSAP1, LSAP2, and LSAP3 had a significant impact on net portfolio flows to Hong Kong. Since the announcement effect may come before or after the announcement - anticipation and realization - portfolio flows are regressed on five dummy variables for each announcement: 2-week lead, 1-week lead, week-of, 1-week lag, and 2-week lag. Each dummy variable takes on a value of 1 if the announcement took place during that week. The regression controls for bond purchases that week and China PMI that month, in addition to weekly moving averages of the spread between HIBOR and LIBOR, the VIX, the CESNEM index, the CESICNY index, and the JPEI GLSP index.

Separate regressions are run for each of the three announcements, for various sources of portfolio flow, and for equity and bond flows. Newey-West standard errors are used to correct for autocorrelation and heteroskedasticity.

### Results

Tables 3 - 10 show the regression results are substantially different across announcements, sources of portfolio flow, asset classes, and the timeframe around the announcement.

In the case of total portfolio flows, which include Hong Kong itself as a source of funds, there were positive inflows of both equity and bond funds around the LSAP1 announcement but an inflow of equity funds and an outflow of bond funds around the LSAP2 announcement. There was no obvious direction of portfolio flows for LSAP3.

Since including Hong Kong as a source of funds is not appropriate for the analysis, it is crucial to examine results that exclude Hong Kong and China as source domiciles. Here, the results hold up well, and the significant coefficients are vastly similar to those in the regression for total portfolio flows. This finding suggests that local investments and investments from China do not drive overall flows. However, it is important to note that EPFR may lack data on funds domiciled in China.

The results for portfolio flows from only the U.S. are drastically different, with virtually no significant or clear direction of flows for any of the three major announcements. This is a surprise, given the aggregate results and that the U.S. makes up a sizable portion of the total portfolio flows to Hong Kong. The results for the U.S. suggest it is necessary to take a closer look at the remaining flows, which are mostly concentrated in Europe. As expected, the numbers for Europe largely mirror those of the total portfolio flows.

Considering that H-Shares are an important choice of investments in Hong Kong, analyzing portfolio flows from Hong Kong to China gives a sense of the flows between the two markets. Here, regression results paint an ambiguous picture of the direction of flow in response to the announcements.

Finally, portfolio flows to China from sources excluding Hong Kong and China itself show results very similar to those of flows to Hong Kong. However, while portfolio flow from the U.S. to Hong Kong is insignificant for the LSAP1 announcement, flow from the U.S. to China is significant, suggesting a key
difference between investing in Hong Kong and investing in China.

Conclusion

Announcement Effects
It is important to explain why the announcement effects varied across many dimensions. A good starting point is to compare these results with those in previous literature. Although much more research needs to be done in studying global portfolio flows in the context of post-crisis bond purchases, there are papers that offer insights on the subject. In their paper published in October 2012, Fratzscher et al. concluded that LSAP1 announcements resulted in portfolio inflow to U.S. equities and bonds while LSAP2 announcements led to a portfolio rebalancing towards the emerging market economies and a global flow out of bond funds. Their methodology takes into account many Federal Reserve actions, including speeches and press releases, serving as an appropriate point of comparison.

As discussed in the previous section, Hong Kong experienced inflows in both equity and bond funds during the LSAP1 announcement. This finding coincides with Fratzscher’s, given that the market viewed Hong Kong as a proxy for the U.S. at the time. Because of the currency peg, this is a reasonable claim, as interest rates in Hong Kong are effectively bound to their U.S. counterparts. This explanation holds its ground in the more segmented results. If investors did see Hong Kong as a proxy to the U.S., there should be no significant flow between the U.S. and Hong Kong. The regression results support this reasoning for both equity and bond funds. On the other hand, flows from Europe to Hong Kong were positive and significant around the LSAP1 announcement. One possible explanation is that the first large scale asset purchase program was seen as a monumental move by the Federal Reserve that redefined its purview and capabilities. Consequently, investors readjusted their allocations, leading to significant increases in portfolio flows to markets like the U.S. and China. One link that did not see an impact was that between Hong Kong and the U.S.

The outflow of bond funds during LSAP2 announcements also matches Fratzscher’s results. The onset of LSAP2 seemed to boost investor confidence worldwide, and investors adopted a risk-on mindset. This explains the flow out of bonds with low returns and the flow into equity with higher returns. Bond fund flows were negative from both the U.S. and Europe.

Finally, there is no clear direction of flow into or out of Hong Kong as a result of the LSAP3 announcement. One possible explanation is that LSAP3, as introduced in the Federal Reserve press release, was largely enacted to support the job recovery in the U.S. Moreover, it did not create enough change in the overall market sentiment to trigger a significant immediate response in portfolio flows. However, it is crucial to remember that these results only pertain to announcement effects. Portfolio flows to Hong Kong were large and positive after the LSAP3 announcement until news of possible tapering. In fact, the sustained high levels of portfolio flows since LSAP3 serve as a driving force behind the call for more academic research in understanding global portfolio flows.

In summary, given Hong Kong’s unique economic relationships with the U.S. and China, the results of this article generally support the conclusions made in previous literature. In addition, the analysis provides insight into the announcement effects of LSAP3 on portfolio flows to Hong Kong.

Effects of Other Variables
Although this article focuses mainly on the announcement effects, examining the results concerning the other variables in the regression provides a more complete picture of the channels through which unconventional monetary policies have affected portfolio flows.

One key variable to observe is the amount of actual bond purchases. Across all regressions of portfolio flows to Hong Kong, bond purchases have a positive effect on the amount of equity portfolio flows. A 1-percent increase in the size of the balance sheet is associated with an increase of $4 million in equity portfolio flows from both the U.S. and Europe. In contrast, the amount of bond purchases seems to have no effect on bond portfolio flows. This finding makes sense when taking into account the impact of the HIBOR-LIBOR spread, which captures the interest
rate differential between Hong Kong and the U.S.

Surprisingly, despite the high correlation between Hong Kong and U.S. interest rates, the HIBOR-LIBOR spread has a very significant effect on bond portfolio flows to Hong Kong. A 1-percent differential is associated with an increase in bond portfolio flows of about $1.3 million from the U.S. and $12 million from Europe. It is important to note that a 1-percent differential is very large and rarely occurred. As expected, the HIBOR-LIBOR spread has no significant impact on equity portfolio flows. Another measure of interest rate spread is the JP Morgan EMBI Global Spread, which calculates the spread of sovereign bond yields in emerging markets over the U.S. benchmark. If investors treated Hong Kong as a gateway to the emerging markets, the EMBI spread should have a significant effect on portfolio flows. However, this is not the case, suggesting that this hypothesis may not be accurate.

China PMI is included in the regression because of Hong Kong’s close ties to China; however, there is no evidence that the purchasing managers’ index affects portfolio flows to Hong Kong. One caveat in this finding is that PMI data are available on a monthly basis, such that all weeks in the same month are assigned the same value in this analysis. Similarly, the Citigroup Economic Surprise indices for emerging markets and China were used as variables in the regression to gauge how portfolio flows respond to surprises. Neither measure proved to be a major determinant.

Perhaps the most interesting finding was the impact of the VIX, an index of volatility and uncertainty. Historically, the VIX had risen in bear markets, which tended to be more turbulent. Looking at overall flows, an increase in the VIX has a negative effect on the amount of both equity and bond flows. However, segmenting the flows depicts a clearer picture - most of the negative impact comes from Europe while the VIX has no significant effect on portfolio flows from the U.S. This finding echoes the result that the LSAP1 announcement did not trigger portfolio flow from the U.S. but did so from Europe. Therefore, it provides further support for the hypothesis that investors see Hong Kong as a proxy for the U.S. rather than as a gateway to emerging markets. Such reasoning may explain why there is no extra incentive to reallocate funds between the U.S. and Hong Kong in response to announcements.

Policy Implications

The results presented in this article have implications for three major areas of policy. In the U.S., the Federal Reserve must play its role in ensuring financial stability while easing out of large scale asset purchase programs. In economies worldwide, there is a need to consider using macroprudential policy tools to dampen the effects of portfolio flows. Finally, Hong Kong must carefully juggle its economic ties to both the U.S. and China as economic conditions fluctuate in the two major economies.

From a global perspective, one of the greatest economic risks in the near future is the effect that tapering will have on other advanced economies and emerging economies. The analysis here generally indicates that the actions of the Federal Reserve regarding unconventional monetary policies have had an impact on an international financial center such as Hong Kong. Thus, it is reasonable to think that future announcements will similarly carry much weight in swaying investors’ appetites. In fact, initial hints about the end of bond purchases triggered very large outflows from Hong Kong and also from emerging markets, forecasting potentially harmful spillover effects and revealing investors’ lack of confidence over their allocations. To address the problems caused by significant flows in either direction, it is vital for both the U.S. and other economies to take steps towards minimizing any negative consequences of the flows. For the U.S., the Federal Reserve must carefully navigate towards the end of bond purchases. Word choice in press releases will be crucial in communicating the Federal Reserve’s intentions to the markets. An extra element in this process is the possibility of a new chairman for the upcoming term. All efforts must be made to ensure that the transition is smooth and that the Federal Reserve remains clear on its agenda. For other economies, policymakers may consider implementing macroprudential policies such as the loan-to-value ratio tool in Hong Kong to control bubbles and prevent collapses.

The results of this note suggest that Hong Kong may very well serve as a proxy to the U.S. market despite its close economic relationship with China. In the near
future, two major obstacles that Hong Kong must maneuver through are a rise in interest rates and the prospects of a slowdown in China. An increase in interest rates will push up mortgage rates, setting up an environment for a collapse of the skyrocketing property market. It is unclear whether portfolio flows have contributed to the rise of property prices, but current macroprudential policies have failed to make a significant dent in the property juggernaut. Therefore, policymakers should seek measures to curb further rises while preparing for a possible downturn by closely monitoring housing supply and local developers. In regards to a slowdown in growth in China, this analysis shows that total portfolio flows to Hong Kong are similar to those to China. This suggests that weakness in China will likely be accompanied by weakness in Hong Kong. In response, the Hong Kong government may seek ways to strengthen domestic demand.

On the whole, the end of unconventional monetary policies has the potential to severely shake up the global financial system once again. As the Federal Reserve continues to buy time, economies around the world may do well to take the opportunity to brace for any negative impacts by implementing appropriate policies. As the word unconventional suggests, this scenario has no precedent, and academic research has been slow to catch up. Much more work needs to be done in examining the effects of bond purchase programs and global capital flow since the crisis and especially in understanding whether macroprudential policies would be effective in shielding economies from the coming storm.

Footnotes

1. All dollar values are denominated in USD.

2. The financial account of the BoP is divided into reserve assets and four main components of non-reserve assets: direct investment, portfolio investment, financial derivatives, and other investment.

3. This note only looks at the announcement effects of LSAP1, not its expansion on 03/18/2009.

References


International Monetary Fund. 2013. Unconventional Monetary Policies - Recent Experience and Prospects, April.
Figure 3: Portfolio Outflows - Top 5 Destinations

Source: IMF Coordinated Portfolio Investment Survey

Figure 4: Federal Reserve Securities Held Outright

Source: Federal Reserve Balance Sheet
Figure 5: HIBOR and LIBOR

Source: CEIC Daily Database