Discussant Report on Kenneth N. Kuttner, "**Outside the Box: Unconventional Monetary Policy in the Great Recession and Beyond"**

Introduction

The paper aims to provide the latest insight into the unconventional monetary policy implemented during the global financial crisis and the following years by the Federal Reserve. The paper reviewed several related works of literature about the impacts of the two unconventional policies: quantitative easing (QE) and forward guidance. There is evidence that confirms some linkages between the policies and interest rates, bank lending, the business sector, and the overall macroeconomy, however, since the policy was first utilized only a decade only, there is still no consensus on how the impacts persist in the long run.

Paper Summary

The paper began by introducing a timeline of the policies starting from the first round of large scale asset purchase (LSAP) known as "QE1" during November 2008 and March 2009, followed by the second round of LSAP or "QE2", the Maturity Extension Program (MEP) or "The Second Operation Twist", and lastly, the third round of LSAP or "QE3" during 2012 and 2014. Furthermore, starting in December 2008, the Fed began to implement the forward guidance policy by providing more explicit information regarding directions of future policy. These policies are unconventional because they are not directly involved with adjusting the fed funds rate, and furthermore, they have pertained to the global financial crisis which is not a normal type of recession.

There are two unconventional monetary policies discussed: quantitative easing and forward guidance. Quantitative easing is when the Fed purchases a large volume of assets from the financial markets and financial institutions. The type of assets that the Fed purchases depends on the target of each purchase. For example, in the QE1, the Fed purchased a large number of mortgage-backed securities (MBS) to ease conditions in the credit market by increasing the supply of credit, whereas, in MEP, the Fed purchased 6-to 30-year Treasuries to decrease long-term interest rates. There are two types of quantitative easing: sterilized and non-sterilized. Sterilization prevents expansion in the Fed's balance sheet (and by extension, the money supply) by selling some assets (in the case of MEP, short-term

Treasuries were sold) to counteract the value of asset purchases, and therefore, only the composition of the balance sheet is altered. On the other hand, forward guidance is when the Fed implicitly or explicitly conveys information about the future trend of monetary policy, for example, how long the Fed will keep the interest rate at a near-zero level. Even though by convention, the Fed provides several insights regarding economic conditions, the economic outlook, and inflation expectations, nevertheless, forward guidance provides a more explicit expectation about future policy. Due to extreme economic conditions following the Great Recession, the financial markets were unclear about the Fed's policy rule. By providing forward guidance, the Fed was able to communicate its policy rules more effectively; in this case, Fed signaled an extended period of expansionary monetary policy.

Since the implementation of these policies differs from the normal practices, we need to reexamine the transmission channels of monetary policy, especially the financial market channel. For quantitative easing, it can work through three processes: imperfect substitutability, signaling about future policy, and improvements in the financial balance sheet. Under imperfect substitutability, expected returns on different classes of financial assets do not necessarily move together as each asset class has a separate market. With this condition, QE will directly help alter the long-term interest rate, while the conventional policy may or may not work. QE can also convey information about future policy by signaling the financial markets about the future interest rate policy so that agents in the markets can forma clear expectation about the future. It reveals the Fed's commitment to keeping interest rates low for a longer period from the fact that the asset side of Fed balance sheet will worsen if there is a rise in interest rates, and the fact that if the Fed is pessimistic about the economic outlook, it will keep interest rates low for an extended period. Finally, QE can work through banks' balance sheets by improving their capital ratio as well as their liquidity, and hence, encourages them to extend more loans. With forward guidance, the Fed transmits information via a signaling channel with a mechanism similar to QE, and furthermore, the policy explicitly discloses the future policy rule of the Fed.

While the impact of conventional monetary policy is well-documented, assessing impacts of unconventional monetary policy is currently complicated since the policy variables are ambiguous and the economic conditions during the period of policy implementation are unique, and this makes it difficult to make comparisons with past events. To evaluate the impact of unconventional policy, we inspect the

impact on interest rates first since they are among the first variables that are affected by the policy. Later, the further impact of the policy on bank lending, firm behavior and the macroeconomy are discussed.

The studies for interest rate effects can be classified into two methods; event studies and time series analysis. Event studies focus on interest rate movements after the date of the QE announcement by invoking the assumption that the announcement is unexpected and does not convey any information about the economic conditions. By synthesizing results from Gagnon, Rasking, Remache & Sack (2011), Krishnamurthy & Vissing-Jorgenson (2011), Ehlers (2012), and Bauer & Neely (2014), the four rounds of policy depressed the 10-year Treasury yield by a minimum of 1.5 percentage points. Nonetheless, such results could not be completely reliable as in the reality, the announcement can be anticipated by agents in the markets, and is likely to reveal some conditions about the economy. The second approach to evaluate impacts on interest rates is time series analysis, which could be superior to event studies since it deploys a larger number of observations. Combining the studies by Gagnon, Rasking, Remache & Sack (2011), D'Amico, English, Lopez-Salido & Nelson (2012), and Hamilton & Wu (2012), the four rounds of asset purchases cumulatively reduce the 10-year term premium by a maximum of 1.5 percentage points, with the caveats that the results are sensitive to different model specifications, and some assumptions of the models could be violated. Even though the two methods suggest similar results of the unconventional policy, the channels by which policy translates into lower interest rates are ambiguous, especially, the signaling channel. This is because the channel transmits both QEs and forward guidance, and it is difficult for econometric methods to distinguish the separate impact of the two policies. In summary, even if the studies confirm a decrease in the long-term interest rate as a result of unconventional policy, the magnitude of the change and the relative contributions of these two policies may not be precise.

With only an evaluation of interest rate effects, an assessment of the unconventional monetary policy is not complete, since, contrary to the conventional policy, impacts fell mostly on term premiums but not the fed funds rate. Consequently, we cannot directly employ the magnitude of interest rate decreases in analyzing further macroeconomic impacts. Instead, we need to review the literature that specifically studies the impact of QE and forward guidance. The paper discusses impacts on the following three sectors; banks, firms, and the overall macroeconomy. For the bank lending channel, only QE1 and QE3 (both involved the purchases of MBS) induce banks to extend credits, especially the ones holding a

higher share of MBS as assets. (Rodnyansky & Darmouni, 2017) However, commercial and industrial lending increased only after the QE3. (Luck & Zimmerman, 2017) For firm financing and investment decisions, Foley-Fischer, Ramcharan & Yu (2016) conclude that the MEP lowered costs of long-term debt for firms that motivated firms to increase their investment and employment. Considering the macroeconomic impact, several studies suggest that the unconventional monetary policy contributes to a reduction in the unemployment rate. For example, Wu & Xia (2016) estimated a one percentage point drop in unemployment attributable to the unconventional monetary policies, whereas Engen, Laubach, & Reifschneider (2015) conclude that unemployment fell by 1.2 percentage points owing to the four rounds of QE. Gertler & Karadi (2013) find that the GDP contraction is reduced by 3.5% as a result of QE1, while QE2 leads to an increase in GDP by 1%. Chen, Curdia, Vasco & Ferraro (2011) suggest that QE3 helped to increase GDP only by 0.4%. These discrepancies in estimations, especially in the impact on GDP, arise from differences in model specifications as well as the input observations.

While unconventional monetary policy appeared to be substantially beneficial to the economy, despite the lack of conclusion about the magnitude of impact, , the policy could potentially contribute to unintentional consequences. There were concerns that such a policy might lead to high inflation and higher risk tolerance of financial institutions, which worsens financial stability. In fact, none of those problems actually materialized, furthermore, motivating financial institutions to invest in riskier (yet high quality) assets, which helped accelerate economic recovery. (Chodorow-Reich, 2014) On the other hand, the impact of QE did spill over internationally where emerging markets with higher returns on bonds bore the most significant impact. With a zero or near-zero return on assets in developed economies, the emerging markets saw a huge financial inflow, and as a result, an appreciation of their currencies, which worsened exports. The monetary authorities then faced the following dilemma: they could decrease interest rates to counteract their currency appreciation, but in turn, they could end up with an excessively expansionary monetary policy given economic conditions. The assessment of the side-effect of QEs indicates that the unintentional consequences are modest when compared to the benefit they provided to the economy.

The paper then provides six concluding remarks as lessons learned from the literature review as follows:

1) There should be rules for conducting unconventional monetary policy.

2) QE can be performed in two ways: with or without sterilization.

3) QE and forward guidance work via different channels, and thus, are not substitutes.

4) QE exposes the Fed to a higher interest rate risk, and therefore, can signal its commitment to an extended period of low interest rates.

5) The class of asset purchases in QE should be guided by the goal of the policy.

6) QE provides the Fed more flexibility in conducting monetary policies to achieve several mandates.

Conclusion

The paper synthesizes recent studies on unconventional monetary policy and provides the results above in Table 1. In addition, the studies confirm bank lending and balance sheet transmission channels of the unconventional monetary policy. However, the author claims that the estimations of effects from the QEs and forward guidance are not "definitive" and summarizes limitations of the studies into three key points: 1) the persistence of QE and forward guidance is still unclear, 2) distinguishing economic impact from forward guidance and QE is problematic, and 3) both the policy and financial conditions in the study period are novel and there is no guarantee that future applications of such policies will be equally effective, given different timing of the implementations and economic contexts.

Table 1 Summary of Estimations of Unconventional Monetary Policy Impacts

Program	Assets Purchased	Interest Rate Effect (Negative basis points)		Unemployment Reduction (%)	GDP Increase (%)
		T10[a]	Premium T10[b]		
QE1	Agency debt Agency MBs Treasuries	91 – 123[c]	35 – 40[g]	1.0 – 1.2[m]	3.5[n] (in contraction)
QE2	Long-dated Treasuries	14 – 40[d]	40 – 45[h]		1[n]
MEP	6-30 Year Treasuries	27 – 46[e]	17 – 27[j]		--
QE3	MBSs Long-dated Treasuries	14[f]	50[k]		0.4[p]

[a] Yield on the 10-year Treasury from event studies;
[b] Term premium on the 10-year Treasury from time series analysis;
[c] Gagnon, Raskin, Remache, & Sack (2011); Krishnamurthy & Vissing-Jorgenson (2011), and Bauer & Neely (2014);
[d] Krishnamurthy & Vissing-Jorgenson (2011), Ehlers (2012), and Bauer & Neely (2014);
[e] Ehlers (2012), and Bauer & Neely (2014); [f] Bauer & Neely (2014);
[g] Gagnon, Raskin, Remache, & Sack (2011), D'Amico, English, Lopez-Salido & Nelson (2012), and Ihrig, Klee, Li, Schulte & Wei (2012) ;
[h] D'Amico, English, Lopez-Salido & Nelson (2012), and Ihrig, Klee, Li, Schulte & Wei (2012);
[j] Ihrig, Klee, Li, Schulte & Wei (2012), and Hamilton & Wu (2012);
[k] Hamilton & Wu (2012);
[m] Wu & Xia (2016), and Engen, Laubach, & Reifschneider (2015) ;
[n] Gertler & Karadi (2013);
[p] Chen, Curdia, Vasco & Ferraro (2011)

Critique

This paper provides a quite complete overview of the unconventional monetary policy and the current assessments. The paper is made non-technical, and therefore, it is highly accessible since, in order to comprehend this paper, only basic knowledge of economics and finance is required. Even though the paper is non-technical, the author did a decent job of communicating complicated concepts without misleading the readers about the conclusion of studies. The author put significant effort in warning the

readers not to recklessly jump into the conclusion while still providing important insights. There is a large number of studies cited which allows the author to thoroughly discuss quantitative easing and forward guidance and their impacts. He also clearly laid out lessons learned from the review which provoked readers' further inquiries about the conduct and impact of policy, moreover, they are great foundations for further research to be conducted.

The paper is complete and self-contained given its brevity, however, there are areas that could be improved. On the presentation of the content, the first three parts of the paper (Introduction, What were the unconventional Federal Reserve policies, and Monetary policy transmission) are great in familiarizing the readers with the new concepts about the unconventional monetary policy. They are decently organized, and they carefully elaborate on how the unconventional policy is different from the conventional one. In the section concerning the further impacts of the policy, the organizations could be better, for example, the author can list traditional transmission channels of monetary policy first (as shown in figure 1), then, indicate which channels are worth exploring for the unconditional monetary policy. The linkages between channels would help the reader conceptualize how the QE affects economic outcomes in a macro picture and pin down the relationship among economic variables.

On the content itself, the paper would be more complete if it included some more studies regarding the issues that the author mentioned but did not elaborate. The first issue is how unconventional monetary policy affects other transmission channels such as households and exchange rates. The second issue is how the policy affects other economic outcomes such as inflation and exchange rates.

Overall, this paper provides a great number of insights about unconventional monetary policy in a non-technical, concise, and complete manner. It is a great introduction to unconventional monetary policy for the readers who may not be familiar with the policy. My suggestions could enhance the overall thoroughness and accessibility of the paper, but they are minor.

Figure 1: Transmission channels of conventional monetary policy (Brózda-Wilamek, 2016)