A signaling effect of qualitative easing without fiscal support

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Abstract

1. Background

In recent years a number of central banks have faced low level of economic activity and low inflation. They have responded to the economic situation by letting their policy rate drop to zero. Facing the zero lower bound of the nominal rate of interest (henceforth, ZLB), they have also introduced qualitative easing. The definition of qualitative easing in this paper is that a central bank buys a long-term government bond and issues money or the reserve against it. Central banks are hoping that qualitative easing will stabilize the inflation and stimulate economic activity but it is not clear how qualitative easing influences the inflation and economic activity at the ZLB. On the other hand, qualitative easing exposes the central bank to the risk of potentially large losses on its balance sheet at an exit from the ZLB. Some have worried that these losses could require a recapitalization of the fiscal authority in countries like Japan where the central bank holds a lot of risky assets on its balance sheet.

2. The purpose of this paper

This paper shows that the transfer policy of the fiscal authority to the central bank has important implication for efficacy of qualitative easing; qualitative easing has a powerful effect on the inflation and macroeconomic activity at the ZLB if the fiscal authority precommits to never bailout the central bank. Higher qualitative easing exposes the central bank balance sheet to more interest-rate risk. If it realizes at an exit from the ZLB, under the commitment of the fiscal authority, the only way the central bank can satisfy its budget constraint is to earning seignorage, which increases the inflation at the exit. It translates into a higher inflation at the ZLB.

3. Related literature

Our paper is closest to Bhattarai, Eggertsson and Gafarov (2015) (henceforth, BEG) and Berriel and Mendes (2015). BEG have shown that the central bank can commit to lower the nominal rate of interest at an exit by buying a long-term government bond with money or the reserve. They analyze the model of the independent central bank in which, differently from our model, the fiscal authority fully covers the losses on the central bank

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balance sheet[1]. An important assumption in their analysis is that the central bank has an incentive to be averse to changing the level of the transfer to the fiscal authority from a target level. Thus, in a Markov Perfect Equilibrium, the central bank, which is exposed to interest-rate risk, has an incentive to lower the nominal rate of interest to reduce the loss on its balance sheet. Berriel and Mendes (2015) also show that, in the lack of fiscal support, a central bank can use its balance sheet as a commitment device. However, differently from BEG and our paper, they do not focus on a Markov Perfect Equilibrium.

4. The model

Following BEG and Benigno (2017), we construct a New Keynesian model in which the central bank faces its own budget constraint and that the fiscal authority issues a long-term government bond. A key assumption in our analysis is that while the central bank transfers its profit to the fiscal authority, the fiscal authority precommit to never cover the losses on the central bank balance sheet. In this setting, qualitative easing exposes the central bank balance sheet to interest-rate risk because it increases the duration of assets of the central bank while the duration of its liabilities is not changed. If the duration of the assets chosen at the ZLB is enough long, an increase of the nominal rate of interest decreases the net worth of the central bank because the interest payments on the reserve exceeds the revenues from assets. We show that in a Markov Perfect Equilibrium, qualitative easing is effective in increasing the inflation and the output gap.

Reis (2015) classifies central bank insolvency into three types: (1) period insolvency, (2) rule insolvency and (3) intertemporal insolvency and points out whether or not the central bank is insolvent depends on the transfer mechanism between the fiscal authority and the central bank. Our paper employs the first definition. If the fiscal authority does not bailout the central bank, the losses on its balance sheet have to be financed by seignorage. It is because that the central bank cannot issue the reserve of other securities to cover the losses since their values cannot be backed by the future central bank's profits which are transferred to the fiscal authority.

While the result of our analysis is similar to BEG, the main difference is the reason qualitative easing is effective. In our model, qualitative easing influences the economy at the ZLB not because the central bank is averse to reducing the transfer to the fiscal authority, but because, under the commitment of the fiscal authority, the central bank has to raise the inflation to satisfy its own budget constraint. Although BEG assume that the fiscal authority always bailouts the central bank, what actually matters for the central bank whose balance sheet is exposed on the risk of the losses is that there is no guarantee of the recapitalization of the fiscal authority as Ueda (2003) points out.

5. Numerical example

In the numerical example, we examine the effect of QE3 which has been conducted by the

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[1] BEG also analyze the model in which budget constraints of the fiscal authority and the central bank are consolidated to show the effectiveness of open market operation to stabilize the economy at the ZLB.

Federal Reserve from September 2011 to September 2013. The duration of the Federal Reserve is increased from 13.6 quarters to 18.95 quarters while the scale of the balance sheet does not so changed. In the simulation, we assume that the ZLB is caused by an exogenous shock to the natural rate of interest, which follows a two state Markov process with an absorbing state. The central bank chooses the duration of its assets when a shock to the natural rate of interest hit. We compare the case in which the Federal Reserve would remain the duration at 13.6 quarters and the one in which the duration is increased to 18.95 quarters. The simulation shows that when the central bank increases the duration at the ZLB, both inflation rate and the output gap after the ZLB increase, which mitigate deflation and negative output gap at the ZLB.

6. Conclusion

This paper examined the effect of qualitative easing as signaling for an exit strategy from the ZLB and shown that the commitment of the fiscal authority not to provide the financial support at an exit from the ZLB plays the central role.

This paper focused on the first definition of the central insolvency discussed by Reis (2015). We need further research to examine an effectiveness of qualitative easing under the other types of central bank insolvency.

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