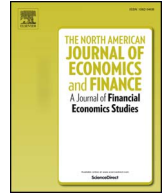


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The impact of credit and fiscal policy under a liquidity trap[☆]

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ABSTRACT

This study examines the interaction of non-conventional credit policy and fiscal policy when adverse financial conditions drive the economy to a deep contraction and conventional monetary policy becomes ineffective as the policy interest rate reaches its effective lower bound. Consistent with other studies, under counter-cyclical financial intermediation costs, credit easing policies aimed at reducing credit spread ameliorate the response of the economy and lead to a faster recovery. More importantly, I find that expansionary fiscal policy during an episode of liquidity trap is associated with a large multiplier effect that prevents an otherwise deeper and longer recession. Moreover, the large impact of expansionary fiscal policy is maintained even if credit policy is already in place.

1. Introduction

The Global Financial Crisis (2007–2008) posed major policy challenges as many economies worldwide entered a liquidity trap. Namely, a period of very low interest rates that rend (conventional) monetary policy ineffective. Recent experiences show that central banks around the world tackled this problem – and some still continue to do so – through the implementation of unconventional policies as their economies were stuck for long spells at very low interest rates. For instance, in U.S. the Fed held the federal funds rate at its effective lower bound for seven years, the Bank of Japan has kept interest rates at ultra low levels for over a decade, and more recently the ECB has cut the policy rate to zero while charging interest on overnight deposits which even pushed interest rates into negative territory. Importantly, the recent prevalence of low interest rate regimes across developed countries puts important constraints on the effectiveness of conventional monetary policy, which added to the limited scope of unconventional policies, underscores the need to revisit policy alternatives, such as fiscal policy when interest rates are very low.

Recent empirical work has found evidence of state-dependence on the effectiveness of fiscal expansions at the zero lower bound (ZLB) state. Based on U.S. historical data, [Ramey and Zubairy \(2014\)](#) finds no evidence of important effects (multipliers less than one) of government spending except during ZLB periods where multipliers are as high as 1.5. In a similar vein, [Leeper, Traum, and Walker \(2017\)](#) quantify short-run fiscal multipliers at around 1.3 under passive money/active fiscal regimes in the U.S. Relatedly, based on historical data from Japan, [Miyamoto, Nguyen, and Sergeyev \(2016\)](#) find that the size of the fiscal multiplier is larger (as high as 1.4) during ZLB periods than during normal periods.

On the theory side, influential studies such as [Eggertsson \(2011\)](#), [Woodford \(2011\)](#) and [Christiano, Eichenbaum, and Rebelo \(2011\)](#) use variants of the New Keynesian model with sticky prices or wages to show that when monetary policy is constrained at the ZLB the government expenditures multiplier can be well above one. The intuition for a large multiplier effect is that during normal

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times expansionary fiscal policy increases both nominal and real interest rates, which crowds out investment and output; while at the ZLB this channel is broken. More recently, however, this literature has been challenged on the basis that the implied multipliers of sticky price (or wage) models at the ZLB are implausibly large (Kiley, 2016). A crucial aspect that has been largely overlooked by these studies is: What are the quantitative implications of financial frictions on the size of the government spending multiplier? As the Global Financial Crisis made it painfully clear, financial markets are crucial for a well-functioning economy. Notably, credit spreads and not the policy rate reflect the degree to which financial conditions are contractionary or expansionary. Therefore, in this study we ask two questions: (1) What is the effect of financial frictions on the size of the fiscal multiplier at the ZLB?, and (2) How effective is fiscal policy when unconventional monetary policy is already in place? The contribution of this study is twofold. First, we investigate the implications of imperfect financial intermediation for fiscal policy at the ZLB. Second, we examine the interaction between unconventional monetary policy and fiscal policy when the economy is at the ZLB state.

Closely related to this study, Canzoneri, Collard, Dellas, and Diba (2016) use a model with counter-cyclical bank intermediation costs developed by Curdia and Woodford (2010) to quantify the size of the fiscal multiplier. These authors posit that due to counter-cyclical credit spreads there is state-dependency in the multiplier such that it is quite large during recessions (with an output multiplier of two) while it is small (with an output multiplier of one) during expansions. Our study is differentiated from Canzoneri et al. (2016) in two key aspects. On the one hand, these authors do not focus on the ZLB problem. On the other, our study examines the interaction of unconventional monetary and fiscal policies, while the aforementioned study does not.

In this study, we add two ingredients to the framework of imperfect financial intermediation proposed in Gertler and Kiyotaki (2010) and Gertler and Karadi (2011) (henceforth GK2011). Namely, we extend the model with (i) the ZLB constraint, and (ii) autonomous fiscal policy. Under this framework, financial shocks are amplified through a financial accelerator mechanism that is triggered by changes in intermediaries balance sheets. Specifically, an exogenous increase in the demand for financial intermediation assets pushes up asset prices and lowers credit spread. This stimulates investment spending and leads to an expansion in aggregate economic activity. In a similar fashion, poor balance sheet conditions of financial intermediaries are associated with a rise in credit spread and a reduction in asset prices, which leads to a drop in investment spending as well as a drop in aggregate economic activity. As a result, the financial accelerator operating through financial intermediation results in a counter-cyclical credit spread that amplifies the transmission of financial shocks (i.e., shocks that affect the balance sheet of the bank). In this framework, GK2011 argue that (unconventional) credit policy (CP) can reduce the welfare loss associated with passive (conventional) monetary policy. Hence, our study adds to this literature by examining (i) the role of fiscal policy at the ZLB state; and (ii) the interaction of both credit and fiscal policies when the economy is under a liquidity trap.

Our findings are as follows. First, and most important, we find that fiscal policy has a sizable multiplier during a liquidity trap which is not as large as the ones reported by other studies that ignore either (i) financial frictions or (ii) the ZLB state. Furthermore, the quantitative size of our output impact multipliers is very close to the empirical estimates reported by recent studies. Second, we find that the multiplier effect remains even when both credit and fiscal policies are in place. We also confirm the result that without credit policy, recessions are deeper while recoveries are weaker and slower. The key transmission mechanism hinges on the response of counter-cyclical credit spread at the ZLB state. An increase in government spending pushes the real interest rate into negative territory which moderates the rise in credit spread (i.e., the real cost of borrowing). As a result, the crowding out effect of a fiscal expansion is lower during a liquidity trap. Notably, our results suggest that the real impact of expansionary fiscal policy is the same, whether or not CP is already in place. The reason is that the ‘credit easing’ role of CP on asset prices and credit spread operates while the economy is at the ZLB state, and a fiscal stimulus has the largest impact during that state.

The rest of the paper proceeds as follows. Section 2 describes the model. Section 3 discusses the results implied by the calibrated model. Section 4 concludes.

2. Model

This section presents an augmented financial frictions model in the spirit of the financial intermediation framework developed by Gertler and Kiyotaki (2010) and Gertler and Karadi (2011). The model economy is composed by three agents, namely: (i) entrepreneurs who borrow to fund their projects, (ii) households who work and save, and (iii) financial intermediaries that channel funds from households to entrepreneurs. The financial friction is based on a moral hazard problem in financial intermediation in which intermediaries may choose to default on their obligations and walk away with a share of intermediated assets. I augment the standard model by (i) allowing for occasionally binding constraints on the policy rate at its effective zero lower bound, and by (ii) explicitly incorporating autonomous government spending shocks to examine the role of fiscal policy and its interaction with credit policy during a liquidity trap.

2.1. Financial intermediaries

A continuum of intermediaries of mass one raises deposits from households by issuing one-period non contingent debt D_t that pays a gross interest rate R_{t+1} in period $t + 1$. Financial intermediaries (indexed by ‘ j ’) channel deposits (D_{jt}) and their own net worth (N_{jt}) to fund investment in the productive side of the economy by buying one-period financial claims S_{jt} priced at Q_t . Borrowing firms pay back a gross interest rate R_{t+1}^k to intermediaries the following period. The balance sheet of financial intermediary ‘ j ’ is:

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