



Does tax policy affect credit spreads? Evidence from the US and UK



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ABSTRACT

This paper studies how exogenous tax changes affect credit market conditions in the US and UK. Using both structural VAR and structural factor-augmented VAR (FAVAR) model, we find that tax-policy shocks have significant effects on the credit spread. Specifically, the credit spread responds first positively and then negatively to an exogenous tax increase in the two countries. Moreover, the impulse responses of the credit spread to tax-policy shocks do not always accord well with the impulse responses of the output. This indicates that there are channels of tax policy transmission to the credit spread other than through its impact on the business cycle.

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1. Introduction

The 2008 financial crisis features the role of the banking sector that amplifies the effect of the crisis itself. Credit spreads surged internationally during the 2008 debt crisis. After the collapse of Lehman Brothers, [Lenza et al. \(2010\)](#) reported that the spread between unsecured interbank lending rate (EURIBOR) and overnight indexed swap (OIS) rates for three-month maturity approached 200 basis points in the Euro Area. Analogous spreads were even higher in the US and UK. This phenomenon supports the findings of a widening credit spread during economic downturns ([Gertler and Lown, 1999](#); [Aliaga-Díaz and Olivero, 2010](#)).

Many theoretical studies investigate the relationship between credit spreads and the business cycle, and explore their interaction with monetary policies. Some studies concentrate on the implications of lending relationships for monetary policy-making, introducing a cost-channel effect that affects the marginal cost of firms and linking the behavior of inflation to that of interest rates; see [Christiano et al. \(2005\)](#), [Ravenna and Walsh \(2006\)](#), and [Chowdhury et al. \(2006\)](#). This literature assumes a zero probability of default by the borrower and no role for a financial premium. Other studies focus on the financial accelerator effects of counter-cyclical credit spreads. They examine how, under a positive probability of default, the cost of borrowing is affected by variations in the borrowers' net worth and how this mechanism amplifies and propagates shocks to the economy. This literature follows the pioneering work of [Bernanke and Gertler \(1989\)](#) and [Bernanke et al. \(1999\)](#).

However, there has been little direct investigation into the relationship between the fiscal stimulus and credit spreads. Fiscal policies play a rather limited role as a stabilizing tool in the mainstream business-cycle literature. It is argued that fiscal

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policies are either ineffective on the grounds of Ricardian equivalence arguments or inherently not timely. Since monetary policies are able to maintain both price and output-gap stability, any policy instrument other than the monetary policy rate is considered to play a minor role (Blanchard et al., 2010). However, the recent crisis has shown that the monetary-policy interest rate has almost reached its limit: in many cases, including the US and UK, it was soon effectively at the zero lower bound. Therefore, the role of fiscal stimulus as a counter-cyclical policy is now being reconsidered. An unanswered question is whether there are significant interactions between the fiscal policy, the credit spread and the business cycle.

We attempt to fill the gap in the literature by exploring how the credit spread reacts to tax-policy changes. There are various theoretical channels through which a tax policy change can affect the credit spread. First, one can apply the financial accelerator story of monetary policy transmission to tax policy transmission. If a tax policy change causes business cycle fluctuations, changes in firms' net worth caused by those fluctuations affect the credit spread they have to pay. For example, if a tax increase reduces aggregate demand, which worsens firms' balance sheets, lenders will charge a higher credit spread to compensate the default risk. Second, Melina and Villa (2014) suggest that business cycle fluctuations can also affect the credit spread through the bank-firm lending relationship. In such a relationship, the borrower is held up by the lender. This means that breaking the relationship and shifting to another lender is very costly. In this case, the lender tends to charge a lower credit spread in a boom to attract and lock in more borrowers, and exploit the lending relationship to charge a higher credit spread from locked-in customers in a bust. According to this theory, if a tax increase reduces aggregate demand and output, banks will charge a higher credit spread to smooth its own income. While both the financial accelerator theory and the bank-firm lending relationship predict a higher credit spread after a tax policy increase, the banking attenuator theory of Goodfriend and McCallum (2007) suggests that the reverse can happen. According to Goodfriend and McCallum (2007), bank deposit is necessary to facility business transactions. In a bust, deposit demand for transaction purpose decreases. As a result, deposit rate must increase to attract deposits, leading to a reduction in the credit spread. Thus, by cutting aggregate demand, a tax increase reduces the credit spread.

Tax policy changes can also affect the credit spread through channels not directly linked to business cycle fluctuations. As a tax increase improves the government's balance sheet, it increases the possibility of a government bailout in case of a banking crisis. Such a reduction in the systemic risk can reduce the risk premium charged by banks, and hence lower the credit spread. From a more micro perspective, tax policies can affect firms' capital structure. As interest payments are deducted from earnings before tax is collected, debt can serve as a tax shield for the firms. An increase in tax raises the importance of the tax shield, which makes debt finance more attractive to the firms than equity finance. In this case, borrowers' demand on loan and other forms of debt increases, pushing up lenders' lending rate. Therefore, credit spread increases. Because those transmission channels of tax policy shocks lead to different directions of credit spread changes, theoretical direction of credit spread changes after a tax increase is ambiguous. In case that changes in those different directions completely offset each other, a tax policy change just has no effect on the credit spread. This paper asks the empirical question whether tax policy changes will significantly change the credit spread and what are the directions of the changes.

We make three contributions. First, we employ a Romer–Romer narrative identification approach in combination with a recursive scheme to identify exogenous tax changes. In analyses of the impacts of fiscal policy changes, the correct identification of exogenous policy shocks has been widely recognized as crucial. A large empirical literature relies on the recursive identification scheme. Although popular, the recursive identification scheme has been heavily criticized. Romer and Romer (2010) and Cloyne (2013) constructed series of legislated tax changes on the basis of narrative records from official resources in the US and UK. The tax changes, which are intended to boost long-run economic growth or to deal with inherited budget deficits, are classified as exogenous tax changes. They are exogenous to output and government-spending shocks. In this paper, we combine the narrative and recursive approaches for identification. In the structural vector autoregressive (SVAR) models, we first place the exogenous tax changes constructed by Romer and Romer (2010) and Cloyne (2013), followed by government spending and then by output. By doing so, we effectively combine the narrative and recursive approaches.

Second, to see if the US experience applies to other countries, we compare the US and UK. Several characteristics make these two countries ideal for a comparative study. First, in the literature, the US is usually considered to be a closed economy, while the UK is regarded as a small open economy. Second, both countries have a long history of tax policies, and there have been many policy changes. Third, the tax policy is highly centralized in the UK, but this is not the case in the US. Another difference is that announcements of tax changes almost always become law in the UK (Cloyne, 2013). A recent study by Mertens and Ravn (2012) reveals that anticipated and surprise tax policies can have different output effects. This implies that the credit spread, which is related to output fluctuations, can respond differently in countries where announcements of tax changes have different anticipation effects. A comparative study can assist theoretical modeling. It indicates whether or not there is a one-size-fits-all model for tax changes and credit spread.

Finally, we study the effect of tax-change shocks by estimating a factor-augmented vector autoregressive (FAVAR) model. Small-scale VAR models include only a few variables, so they suffer from the limited-information problem and are unlikely to correctly estimate the fiscal-policy shock. The FAVAR model extends traditional VAR techniques and uses a large number of variables driven by a much smaller number of economic shocks. This rich information helps to mitigate the limited-information problem and to eliminate the omitted-variable bias. We extract common factors from variables that describe all aspects of the general economic situation, including real activities, inflation, the money market, and asset prices. Those informational variables are widely used in business cycles studies. Since business cycle fluctuations can cause changes in the credit spread, our model with a richer informational dataset is more likely to generate reliable estimates.

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