Journal of Macroeconomics 41 (2014) 122–132

Contents lists available at ScienceDirect

Journal of Macroeconomics

journal homepage: www.elsevier.com/locate/jmacro

Financial regulation policy uncertainty and credit spreads in the US

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ARTICLE INFO

Article history:
Received 9 September 2013
Accepted 26 May 2014
Available online 12 June 2014

JEL classification:
E32
E44
E61
G18

Keywords:
Uncertainty shocks
Financial regulation policies
Credit spreads
Financial frictions

ABSTRACT

This paper investigates the linear and nonlinear effects of financial regulation policy uncertainty shocks on US macroeconomic aggregates within a Vector Autoregressive (VAR) framework. Financial regulation policy uncertainty (FRPU) is quantified with a news-based index developed by Baker et al. (2013). Particular attention is paid to the reaction of corporate credit spreads to FRPU shocks. The linear VAR results suggest that exogenous increases in the FRPU index trigger increases in the cost of external finance as well as a persistent negative impact on the real economy. By using a nonlinear (Smooth-Transition) VAR model, I then show that these effects are asymmetric over the business cycle, i.e., credit spreads are estimated to rise three times more during recessions than in non-recessionary periods. Importantly, in both the linear and nonlinear models, FRPU shocks account for large shares of the variability of unemployment and credit spreads. My findings are supported by various robustness checks.

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1. Introduction

The US financial regulation system has come under criticism in the aftermath of the financial crisis of 2007–2008. Since then, policymakers have instituted various reforms, and have thereby substantially increased public uncertainty about the financial regulatory framework. Regulatory reforms play an important role in re-establishing trust in the financial system. The reforms underway in the US are aimed at making markets and institutions more transparent, less complex, and less leveraged. These features are a precondition for restoring appropriate levels of credit growth to support economic recovery. However, the ongoing reforms may trigger undesirable effects on the economy due to the policymaking process concerning implementation being surrounded by uncertainty.

This paper quantifies the macroeconomic effects of financial regulation policy uncertainty shocks within a Vector Autoregressive (VAR) framework. Financial regulation policy uncertainty can be thought of as the increased volatility of the expected outcome resulting from changes in the regulatory framework, which is unforecastable from the perspective of economic agents.[1] The fact that there is no directly observed measure of uncertainty in the economy poses a significant problem for researchers, who have to resort to uncertainty proxies. The empirical counterpart of uncertainty employed in my analysis is the news-based financial regulation policy uncertainty index (henceforth, the FRPU index) developed by Baker

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[1] The definition of financial regulation policy uncertainty is adopted from Jurado et al. (2013)'s definition of economic uncertainty: "at a general level, uncertainty is typically defined as the conditional volatility of a disturbance that is unforecastable from the perspective of economic agents".

http://dx.doi.org/10.1016/j.jmacro.2014.05.006
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et al. (2013). The FRPU index quantifies perceived macroeconomic uncertainty concerning US financial regulation policies since 1985. My investigation aims to provide empirical evidence on the linear and nonlinear effects of FRPU shocks under financial frictions. To do so, I focus on the role of FRPU shocks in driving corporate credit spreads and some key macroeconomic aggregates, namely industrial production, unemployment, inflation, and the federal funds rate.

The early theoretical literature has extensively analyzed the real-option channel as a transmission mechanism of uncertainty shocks to the real economy. Bernanke (1983) and Dixit (1989), for instance, show that real-option effects materialize within the framework of irreversible investment, where uncertainty plays a role in delaying investment decisions. Within this framework, firms defer investment decisions that involve sunk costs whenever facing a highly uncertain environment, because uncertainty increases the option value of waiting (the real-option) until new information about the state of the economy arrives. As a result, increases in uncertainty are typically followed by drops in investment. The real-option channel has also been recently investigated by Bloom (2009). Using a linear VAR, he provides evidence that uncertainty shocks in the US generate a rapid drop, rebound, and overshoot in economic activity. He then replicates this evidence with a model in which firms face a region of inaction in the hiring and investment space. The region of inaction arises from two features of the model: non-convex labor and capital adjustment costs, and time-varying uncertainty. Under high uncertainty, the region of inaction expands, and in the aggregate firms become less reactive to business conditions and adopt a "wait-and-see" strategy.

Another growing strand of the literature focuses on financial frictions as an additional mechanism by which uncertainty interacts with the business cycle. Intuitively, uncertainty shocks may reduce the expected profitability of firms, which increases their actual or perceived riskiness. Under imperfect financial markets, increased risk raises firms' expected default probabilities, making outside borrowing more expensive. Gilchrist et al. (2013) explore this hypothesis within a general equilibrium model where heterogeneous firms face time-varying uncertainty, non-convex capital adjustment costs, and financial market frictions. They show, both theoretically and empirically (via a SVAR model), that unanticipated increases in uncertainty—based on aggregate idiosyncratic volatility of stock returns—significantly widen corporate credit spreads, which in turn influences investment dynamics. Bonciani and van Roye (2013) set up a Dynamic Stochastic General Equilibrium (DSGE) model featuring a frictional banking sector to analyze uncertainty shocks in the presence of frictions in the supply-side of the credit market. They assume monopolistic competition and sticky retail interest rates in the banking sector, which determine an imperfect pass-through of the central bank interest rate to the private sector. As a result, monetary policy is ineffective in offsetting the dampening effects of uncertainty shocks. Therefore, these frictions considerably amplify the negative effects of uncertainty shocks and make them more persistent than otherwise. Arellano et al. (2012), Cesa-Bianchi and Fernandez-Corugedo (2013), Christiano et al. (2014), among others, also find amplification effects of financial frictions in the context of uncertainty shocks. My study adds to this literature by providing empirical evidence on the effects of *financial regulation policy uncertainty* on credit spreads.[2]

Most of the empirical literature employs linear VAR models to investigate uncertainty shocks. A non-exhaustive list includes Alexopoulos and Cohen (2009), Bachmann et al. (2013), Baker et al. (2013), Bloom (2009), Gilchrist et al. (2013), Jurado et al. (2013), Leduc and Liu (2013). However, to the extent that empirical proxies of uncertainty show extreme values during economic downturns and are rather muted in non-recessionary periods, nonlinearities might be a concern. To deal with this issue, I analyze the effects of FRPU shocks within a linear as well as a nonlinear framework. As for the linear specification, I estimate a Structural VAR model and appeal to the standard Cholesky approach to identify FRPU shocks. In addition to the linear VAR, I then estimate a nonlinear Smooth Transition VAR (STVAR) model following Caggiano et al. (forthcoming), who investigate the effects of uncertainty shocks on unemployment dynamics. Their findings reveal strong asymmetric effects of uncertainty shocks over the business cycle. Bonciani and van Roye (2013) also emphasize the importance of nonlinearities within their DSGE model. To simulate a "distressed" scenario (i.e., a recession) in their model economy, they simultaneously hit the system with a TFP level shock and an uncertainty shock. They then show that the effects of the uncertainty shocks are significantly stronger in times of deep economic downturn.

The results of my linear VAR model show that a one-standard deviation shock to the FRPU index is associated with an increase in the cost of external finance due to a widening in corporate credit spreads. The credit spread measures which I consider in my analysis are the benchmark Baa–Aaa credit spread, the Aaa– and Baa–10 Year Treasury bond spreads, and a new corporate credit spread index constructed by Gilchrist and Zakrajšek (2012), the GZ spread. Gilchrist and Zakrajšek (2012) use an extensive dataset of prices of individual US corporate bonds traded in the secondary market to construct the GZ spread, which is shown to be a highly informative financial indicator in terms of future economic activity. Using an empirical credit-spread pricing framework, they then decompose the GZ into two parts, i.e., a component measuring movements in default risk, and a residual part beyond the compensation for expected defaults—the excess bond premium. I examine the reaction of each component of the GZ spread to FRPU shocks. This exercise shows that FRPU shocks increase the expected probability of firms' default, suggesting that the financial frictions on the demand side of credit markets might matter in the transmission of uncertainty shocks. On the real side of the economy, FRPU shocks considerably and persistently reduce industrial production, whose cumulative growth rate is about 6% below its trend one year after the shock. Further, the unemployment rate is estimated to increase by 0.15%, while prices fall by more than 1%. Thus, FRPU shocks act as negative aggregate demand shocks. This finding lines up with those of Leduc and Liu (2013), Caggiano et al. (forthcoming), Colombo

[2] Studies investigating the links between financial markets and *overall* economic policy uncertainty include Pástor and Veronesi (2012), Brogaard and Detzel (2013), Antonakakis et al. (2013), Sum (2012). The macroeconomic effects of *policy-specific* uncertainty shocks are assessed by Bauer (2012), Born and Pfeifer (2013) and Fernández-Villaverde et al., 2012. However, these contributions focus on uncertainty related to fiscal and monetary policies.

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