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Financial intermediaries' instability and euro area macroeconomic dynamics

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ABSTRACT

Fitting a Markov-switching structural vector autoregression to euro area data, we show that, after taking into account heteroskedasticity, the differences in the behavior of the economy between tranquil and financial distress periods (e.g., Great Recession and sovereign debt crisis) reflect variations in the transmission mechanism. When and only when a period of financial distress occurs, disruptions in financial intermediation trigger adverse effects for the real economy and turn out to be the primary source of business cycle fluctuations. Finally, we provide strong evidence that ECB interventions in the financial sector had beneficial effects on the real economy during the sovereign debt crisis.

1. Introduction

> "The special nature of financial systems [...] is that they can result in [...] powerful feedback and amplification mechanisms, which render their implications more severe and widespread. In the aggregate, they lead to the nonlinear adjustments that are so characteristic of financial instability. [...] Such adjustments may cause violent regime changes, pushing the system from a state of tranquility to a state of turmoil."
>
> —Jean-Claude Trichet[1]

It is widely recognized that disturbances to the financial intermediation sector, triggered by capital losses after the Lehman Brothers event and during the European sovereign debt crisis, have played a central role in the double-dip recession experienced by the euro area. Fig. 1 plots the industrial production growth rate, along with the excess bond premium – an indicator of credit supply conditions – from October 1999 to June 2016. As can be seen, there is a close connection between sharp reductions in output and violent surging risk premia during crises.

These rare and episodic events, which are not often observed by nature, have led the macro-finance theorists to depart from log-linearized models (e.g., Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997; Bernanke et al., 1999), which study the dynamics around a non-stochastic steady state, and to study global dynamics of the system, characterized by "normal" and "crisis" states. These states are determined by financial constraints in the intermediation sector, depending upon

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[1] See Trichet (2009).

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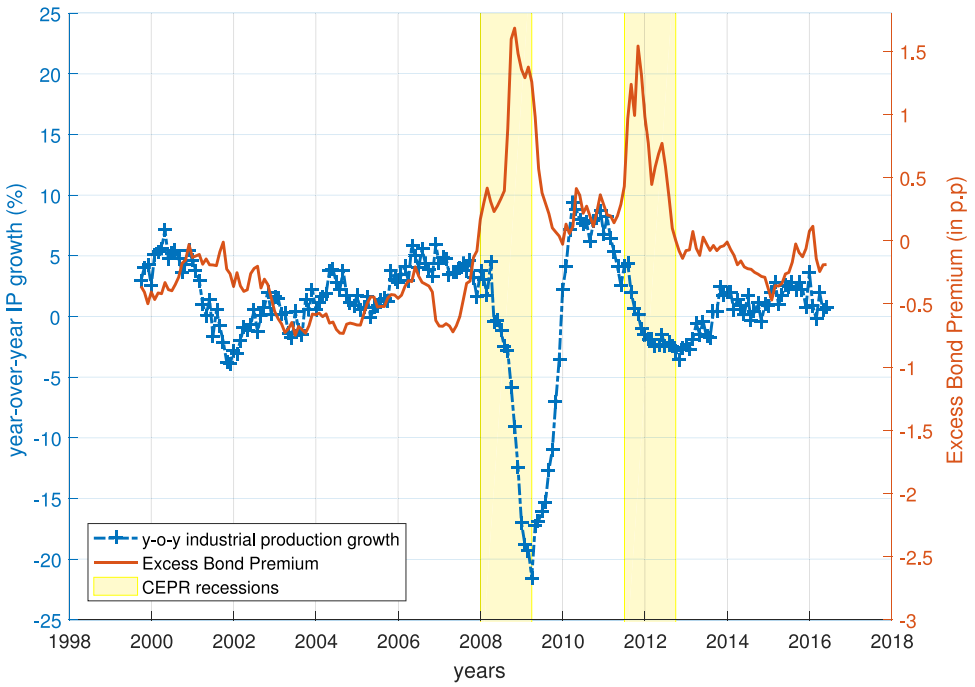

Fig. 1. Output growth and excess bond premium. *Note:* Sample period: October 1999–June 2016. The year-over-year industrial production growth rate (dotted blue line) is labeled on the left. The De Santis (2016) excess bond premium (solid red line) is labeled on the right. The yellow areas denote the CEPR recessions of the euro area. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

whether they bind or not. This new generation of theoretical models (e.g., He and Krishnamurthy, 2012; 2013; Brunnermeier and Sannikov, 2014; Adrian and Boyarchenko, 2012; Maggiori, 2012) is thus able to study explicitly nonlinear effects. Intuitively, while in normal times the good financial conditions of financial intermediaries can absorb losses induced by a negative shock, in times of crisis the financial sectors fragility creates grave and long lasting problems with firms' financing conditions tightened, leading to substantial cuts in spending, employment and production.

Although it is widely accepted, from a theoretical perspective, that financial markets could act as an important nonlinear amplification mechanism, quantitative studies have been scant. The reason lies in the fact that most empirical models used by the profession rule out, by construction, the possibility of change in the economy.

This paper aims to fill part of this gap by modeling empirically the nonlinear link between financial intermediaries' health and the macroeconomy in a multivariate regime-switching framework. We first provide some statistical regularities and establish evidence that the connection of financial intermediaries' health to real economy is very unstable. While there exists a strong link between them in periods of financial distress, there is almost non-existent link in tranquil periods.

To better understand these features of the data, we confront a number of structural vector autoregressions (SVARs), with several possible patterns of time variation inequation coefficients and disturbance variances, to macroeconomic and financial data of the euro area. Following closely the methodology of Sims and Zha (2006), the first objective is to consider whether the euro area economy has been subject in periods of "turmoil" times to changes in the transmission of structural shocks so that macroeconomic variables are more sensitive to them or, rather, changes in the sizes of these shocks? The second objective is to understand how different is the importance of the financial sector as a source of business cycle fluctuations between turmoil and tranquility times.

Time variations in the multivariate time series model are allowed while we maintain weak identifying assumptions to isolate financial institutions behavior and its effects on economic activity. Identification is achieved by using the so-called excess bond premium constructed by De Santis (2016) for the euro area, an indicator that reflects the ability of financial institutions to provide funds. Following the methodology of Gilchrist and Zakrajšek (2012), the author construct this financial indicator by purging euro area corporate credit spreads – the difference in yields between various corporate bonds and government securities of matched maturities – from countercyclical movements in expected defaults. We postulate that innovations in excess bond premium represent financial disturbances, which we refer as *credit supply shocks*. These disturbances are orthogonal to the current state of the economy; that is to say, they affect output and prices, as well as monetary policy actions, with at least one period of lag.

Our results show changes not only in the variances of structural disturbances over time, but also in *the predictable* and *systematic part* of the economy. By this, we mean changes in the transmission mechanism, i.e., the way aggregate macroeconomic variables respond to shocks. These changes in equation coefficients prevailed in periods of financial crisis; i.e., from