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What explains default risk premium during the financial crisis? Evidence from Japan

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ABSTRACT

As is well documented, subprime mortgage markets carried significant default risk. This paper investigates the relationship between default risk premium, stock market conditions and macroeconomic variables during the financial crisis. Using iTraxx Japan Credit Default Swap (CDS) index spreads covering the period from March 2006 to November 2009, we employ a time-varying dynamic factor model with Markov regime switching to generate regime probabilities for default risk. We analyze the sensitivity of default risk premium changes to stock market conditions and macroeconomic variables by using two-state Markov switching models: a crisis regime sparked by rising loan defaults in the sub-prime mortgage market, and a non-crisis regime. We found strong evidence that the relationship between default risk premium changes, stock market and macroeconomic variables is regime-dependent. Our results suggest that during periods of crisis, CDS indices behave as a higher-risk indicator and become more sensitive to stock market conditions and macroeconomic variables. This paper examines the effects of the financial crisis in explaining the default risk premium. Understanding the determinants of default risk premium is important for financial analysts, economic policy makers and credit risk management.

1. Introduction

The financial crisis started in 2007 with the collapse of two Bear Stearns hedge funds, the Bear Stearns High-Grade Structured Credit Fund, and the Bear Stearns High-Grade Structured Credit

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Enhanced Leveraged Fund. With this collapse, the so-called subprime mortgage crisis became clear with an increase in mortgage delinquencies in the United States. The impact went on to create a global banking crisis and recession. Subprime mortgages are those that do not meet the underwriting guidelines of the US government agencies Freddie Mac and Fannie Mae. The main problem facing financial institutions that either originated subprime loans or purchased subprime asset-backed securities is that the decline in housing prices contributed to an increase in subprime and Alt-A mortgage defaults. House prices continue to fall because borrowers who otherwise might have sold the property or refinanced their loans when they hit a cash flow problem no longer have these options. According to the two most often cited indices (S&P/Case-Shiller Index and the Office of Federal Housing Enterprise Oversight (OFHEO) House Price Index), US national average house prices rose between 93% and 137%, over the period covering 1996–2006.[1] Falling house prices began in 2006 for the majority of the states. As of January 2008, based on the S&P/Case-Shiller repeat sales index, house prices nationally had fallen 12.5% year-over-year, with a decline of over 20% in some urban areas. At this point, the subprime mortgage segment changed from being primarily used to refinance to a significant source of home purchase financing.[2]

The share of subprime mortgage products peaked at 23.5% of all mortgages originated during 2006, approximately coincident with the peak in the housing market (Inside Mortgage Finance, 2007). With the declines in underwriting standards, the demand for housing rose in the United States and a boom in house construction followed. Borrowers with flexible-rate mortgages faced problems as they could not refinance their mortgages. Mian and Sufi (2008) show that mortgage credit-underwriting standards were relaxed from 2001 to 2005, with larger numbers of high-risk borrowers. Lower standards were associated with increased mortgage lending, rising house prices, and an increase in defaults. The decrease in personal income growth and rise in mortgage rates aggravated the problem, causing mortgage-backed securities to decline in value and resulting in large financial losses.

A growing body of work studies the causes and consequences of the recent financial crisis. Kenc and Dibooglu (2010) explain that numerous factors that have contributed to the financial crisis; of particular importance are global macroeconomic imbalances, poor risk management practices, weak financial regulations and supervision, the asymmetric distribution of investment opportunities, and the desire to accumulate official exchange reserves for precautionary purposes. Duchin, Ozbas, and Sensoy (2010) study the effect of the recent financial crisis on corporate investment. They find that corporate investment declines significantly following the onset of crisis, controlling for firm fixed effects and time-varying measures of investment opportunities. The decline is greatest for firms that are financially constrained because they have low cash reserves or high net short-term debt, or firms that operate in industries dependent on external finance. Sanders (2008) examines the relationship between housing prices and seriously delinquent mortgage rates in three states (Arizona, California and Nevada). He finds that the housing and mortgage markets were often inversely related to each other until 2005. After 2005, housing prices and higher delinquent mortgage rates were closely related. Fratzscher (2009) explains global exchange rate movements during the financial crisis. He finds that macroeconomic fundamentals and financial exposure of individual countries have played a key role in the transmission process of US shocks. Ivashina and Scharfstein (2010) show that new lending declined substantially during the financial crisis across all types of loans. They show that new loans to large borrowers fell by 47% during the peak period of the financial crisis (fourth quarter of 2008) relative to the prior quarter and by 79% relative to the peak of the credit boom (second quarter of 2007). After the failure of Lehman Brothers in September 2008, there was a freeze in inter bank liquidity, making it difficult for banks to roll over their short term debt.

The ongoing financial crisis has had dramatic effects on the financial sector and generated higher default risk. While there are a number of papers discussing how the subprime mortgages crisis slowdown can affect the economy, regulators, central banks, equity markets and exchange rates

[1] *Sources*: S&P Case-Shiller, Inside Mortgage Finance.

[2] The share of mortgages issued for non-owner-occupied homes increase to over 20% in 2006 (First American CoreLogic's LoanPerformance Prime Servicing database).