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The interbank market risk premium, central bank interventions, and measures of market liquidity

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ABSTRACT

When the interbank market risk premium soared during the financial crisis, it created a wedge between interest rates actually paid by private agents and the rapidly falling policy rates. Many central banks attempted to improve the situation by supplying liquidity to the domestic interbank market. This paper studies the Swedish interbank market risk premium using a unique data set on traded volume between banks and between banks and the Riksbank. We find that the main determinants of the Swedish interbank premium are international variables, such as US and EURO area risk premia. International exchange rate volatility and the EURO/USD deviations from CIP also matters, while standard measures of domestic market liquidity and domestic credit risk have insignificant effects. Nonlinear smooth transition (STR) models show that U.S. financial variables are more important in times of a rising U.S. risk premium. Our measure of actual turnover in the interbank market is associated with a significant reduction of the interbank market risk premium, as are credit provisions by the central bank.

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1. Introduction

The interbank market received relatively little academic attention until the financial crisis in 2007–09, when the risk premium in this particular market sky rocketed. The resulting wedge between central bank policy interest rates and the interest rates paid by consumers and investors turned into a major concern during the recession, partly because it hampered the expansionary effects of monetary policy. For instance, the Federal Funds Rate was lowered by 5.25 percent between September 2007 and December 2008, but bank lending rates only fell by 1.1 percent during the same period. Instead, the interbank market risk premium increased from a stable level around 7 basis points to a maximum of 360 basis points or 3.60 percent in October 2008. Since this episode, both policy institutions and academic researchers have devoted considerable attention to how the interbank market risk premium is determined and what central banks can do to affect it. The relative importance of illiquidity versus credit risk (and/or other risks) is important not only from an academic point of view but also because different policy measures are called for depending on which factors that cause movements in the interbank market risk premium. Central banks have a variety of tools at their disposal for improving market liquidity, but these interventions are only effective to the extent that the interbank market risk premium is actually driven by illiquidity rather than by other factors.

This paper utilizes a unique data set on the transaction volume in the Swedish interbank market to investigate how liquidity, credit risk, Riksbank interventions, and other factors affect the interbank market risk premium in Sweden. Our data set differs from transaction volume data from e-Mid and target2 used by e.g. Michaud and Upper (2008), and Heijmans et al. (2010) in that the Riksbank collects all transactions in the Swedish interbank market, while e-Mid covers a small (less than 20 percent) and falling fraction of the EURO interbank market. We compare interbank market liquidity as measured by transaction volume data from the Riksbank to the standard liquidity measure in this literature, which is the interest rate spread between covered and uncovered sovereign bonds (Schwartz, 2010; Valenzuela, 2010, and others). We also apply a regime shift model with smooth nonlinear transition between the states as in van Dijk et al. (2002) and show that international variables have larger effects on the Swedish interbank market risk premium in times of an increasing risk premium than when the risk premium is falling.

Since 2008, the empirical literature on the interbank market risk premium has burgeoned. Different studies using different measures of liquidity, credit risk, and various other variables such as risk aversion have reached different conclusions concerning the importance of these factors to movements in the risk premium. Taylor and Williams (2009) and others find that the interbank market risk premium is mainly driven by credit risk. Their measure of liquidity does not have significant effects. Using different measures of both market liquidity and credit risk, Schwartz (2010) concludes that liquidity risk is the more important factor. Fukuda (2011) studies interbank rate rates across currency denominations to identify the different effects (both the Tokyo Interbank Offered Rate (TIBOR) and the London Interbank Offered Rate (LIBOR) are quoted in Yen as well as in US dollars). He finds that counter party credit risk in a specific country affects the TIBOR-LIBOR interest rate differential across currency denominations, while liquidity conditions appear to be currency specific and affect dollar denominated interest rates (TIBOR and LIBOR) differently from corresponding interest rates denominated in Yen. Michaud and Upper (2008) document a long run relationship between credit risk and the interbank market risk premium in time series data, but find only insignificant effects on day to day movements in interbank spreads. They also investigate a cross section of LIBOR interbank rates for different banks and find that credit default swap prices for the borrowing banks are statistically unrelated to the risk premia paid by these banks. According to Angelini et al. (2011), two thirds of the soaring interbank spread during the 2008 financial crisis was due to increased risk aversion rather than credit risk or illiquidity.

The empirical results concerning the relative importance of market liquidity for the interbank market risk premium appear to be systematically related to the proxies used to capture the different effects. Credit risk is typically measured using data on bank credit default spreads (as in Taylor and Williams (2009), Fukuda (2011), Michaud and Upper (2008)). The main exception is Schwartz (2010), who calculates the spread between interbank rates paid by banks with high versus low credit ratings. Since the probability of default can be calculated using CDS prices, several studies