Economic Commentaries

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This commentary is an extract from an article entitled "The Swedish Money Market Risk Premium – Experiences from the Crisis", published in the third issue of the Riksbank's journal "Economic Review" for this year. In addition to the breakdown of the risk premium into a part associated with credit risk and a liquidity driven part, the article analyses the systematic risk on the money market before and during the current crisis. The article also discusses the extent to which the Swedish risk premium was impacted by shocks from the US and European markets.

Which factor exerted the greatest influence upon the Swedish risk premium during the crisis?

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In order to undertake appropriate policy measures to influence financial markets, it is important to understand the structure of the market's risk premium and the manner in which its composition has been impacted by the crisis. The greater our understanding of the risk premium and the factors influencing it, the easier it becomes to implement relevant policy measures to reduce the risk premium. This is desirable as a high risk premium has effects on the real economy through such factors as the variable-rate loans linked to the premium (including mortgages).

Consequently, this economic commentary also investigates whether the risk premium on the short-term money market during the current financial crisis has been driven by credit risk or liquidity risk. The analysis indicates that the risk premium during the most acute phase of the crisis, around the collapse of Lehman Brothers in the autumn of 2008, was primarily driven by liquidity risk. However, during 2009, a change took place in which credit risk increased, while liquidity risk fell sharply. This rapid change emphasises how important it is, in times of crisis, that policymakers also conduct ongoing analyses of the factors exerting greatest influence on the risk premium.

The money market's risk premium – credit premium = liquidity premium[1]

The risk premium is defined as the difference between the interbank rate (Stibor) and the expected overnight rate (estimated using STINA swaps). By use of a simple model, the risk premium can then be broken down into one part linked to credit risk and another part linked to liquidity.[2] This method makes certain assumptions to derive a 'reasonable' credit risk-related premium for borrowing on the interbank market from the price of Credit Default Swaps (CDS).[3] The remaining interest rate difference between Stibor and OIS, following the deduction of the credit premium, is equivalent to the liquidity premium. This simple breakdown of the risk premium is conducted using the same method used by the Bank of England (2007). The period of time between January 2007 and August 2009 is analysed and, consequently, focus lies on the current financial crisis. An illustrative example of the breakdown of the risk premium is presented in the box concluding this commentary.

However, certain assumptions and limitations are associated with this method. Firstly, it is likely that the credit and liquidity premiums are not entirely independent of each other. Low liquidity and, consequently, decreased opportunities for banks to borrow on the interbank market may affect expected default frequency. Secondly, it is assumed that investors are risk-neutral. A risk-neutral investor demands no extra return for

1 The liquidity premium is calculated as a residual. Hence, it may contain other factors. However, the assumption is that the residual is dominated by liquidity risk, wich is also supported by the results.
2 The term liquidity here includes both market liquidity (which describes the ease with which assets can be bought and sold on the market) and bank-specific liquidity (that is, the ease with which a specific bank can finance its operations).
3 A CDS contract is a credit derivative product employed as insurance against credit risk. This takes place through a bilateral contract, through which the buyer pays a fixed premium to the seller for protection against credit risk during a specific period. In the event that a predefined credit event occurs, the seller pays compensation to the party purchasing the protection. This analysis utilises five-year CDS premiums.

the assumption of risk, but bases its decisions solely on the expected return (and not the risk). Neither is this a realistic assumption.

The CDS premiums utilised as an estimate of the credit premiums on the market reflect, in principle, the expected default frequency of a bank, the level of loss in the event of its failure and a certain level of compensation for the uncertainty inherent in these factors. In order to establish the credit premium of the model, we must make an assumption regarding the degree of recovery, meaning that we must determine how much of the invested capital the investor will be able to recover in the event that the bank enters bankruptcy. The Bank of England utilises a degree of recovery of 40 per cent, arguing that this is the figure used by sellers of protection against loan losses in their CDS premium calculations. The same degree of recovery is therefore used here.[4]

Liquidity and credit premiums on the Swedish market

The breakdown of the risk premium on the Swedish money market into a credit premium and a liquidity premium is illustrated in the diagram. Both the liquidity and the credit premium were at relatively low and stable levels until August 2007. The credit premium subsequently rose slightly during August 2007, although the greatest increase in the total risk premium was due to the increase in the liquidity premium. In addition, the largest increase in the total risk premium during the period of time directly before and directly after the collapse of Lehman Brothers in mid-September 2008 came from the liquidity premium. Directly after Lehman Brothers filed for bankruptcy, the total risk premium rose from approximately 20 basis points to 130 basis points, an increase of over 500 per cent. According to Heider et al (2008), the interbank markets in Europe and the United States broke down after Lehman Brothers' collapse as counterparty risk increased and lenders consequently started hoarding liquidity on a large scale.

However, at the start of 2009, the relationship between the two components of the risk premium changed. In 2009, credit risk rose, while the liquidity premium fell rapidly. The consequence of this development was that, during the first six months of 2009, credit risk answered for the major part of the total risk premium on the market. This indicates that the crisis rapidly developed from having been a liquidity crisis to impacting the real economy and thus causing credit risk to rise.

Risk factors of importance to policy measures

It is important to understand the factors driving the risk premium in order to be able to undertake appropriate policy measures. When the risk premium is primarily being influenced by the liquidity risk, policy measures should be directed towards increasing liquidity in the financial system. On the other hand, when it is mostly being influenced by the credit risk, policy measures should be directed towards increasing banks' capital buffers and the availability of credits in the economy. The result of the analysis also indicates that, during a crisis, the factor exerting greatest influence on the risk premium may change. This emphasises the importance of the ongoing analysis of the factors underlying the risk premium by policymakers. Even if the model and analysis are somewhat simplified, they present a clear image of general trends in risk factors and can thus be used as support for policy decisions.

4 These conclusions are not dependent upon the degree of recovery utilised.

Decomposing the risk premium

A bank's expected default frequency can be derived from its CDS premium. This assumes that the CDS premium correctly reflects the expected default frequency. The method can be illustrated by a simple example:

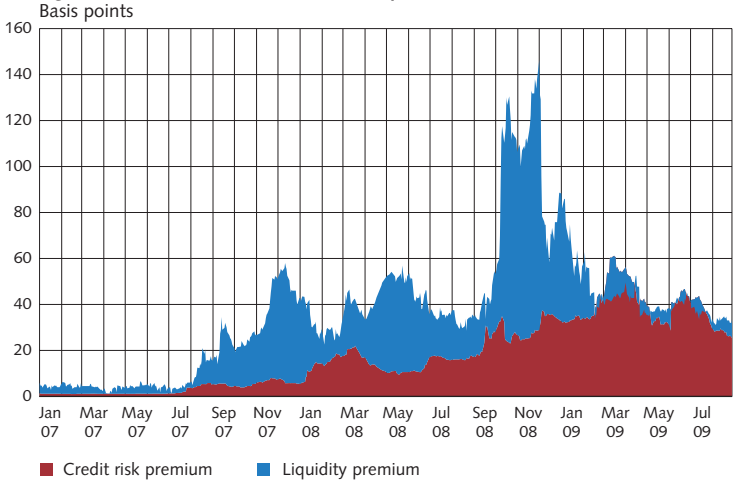
Consider a one-year CDS contract on a certain bank and assume that the total CDS premium (*p*) is paid up front. Let the expected default frequency be *pd* and the degree of recovery be *rr*. If the investor purchases protection, she pays the premium *p* and her expected return is *(1-rr)*pd*. When entering the contract, the CDS premium is set so that the expected value of the transaction is zero, that is

$$p=(1-rr)*pd$$

Given a certain degree of recovery, it is thus possible to estimate the expected default frequency. This expected default frequency can be employed to estimate the credit spread (above the risk-free interest rate) such that a risk-neutral investor is equally willing to invest money in a risk-free bond as in a bank account entailing a certain credit risk.

Figure

Figure 1. Indicative breakdown of the risk premium
Basis points



Source: The Riksbank.

Note: The diagram presents an indicative breakdown of the Swedish risk premium into a credit premium (red) and a liquidity premium (blue) during the period January 2007–August 2009.

References

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