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Government interventions and default risk: Does one size fit all?

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ABSTRACT

We examine the effectiveness of the financial sector rescue packages provided by the national governments during the 2008 financial crisis. This study questions the implicit assumption that government interventions have an uniform effect on the default risk of individual banks. After testing the results for sensitivity, our main findings suggest that there exists a significant negative relationship between the announcement of the financial sector rescue packages and the daily change of the credit default premium. However, quantile regressions show that the effectiveness of these packages differs across banks: most interventions do not decrease the risk of intermediate to low-risk banks, while they do reduce the risk of high-risk banks. Besides, we find that interventions aimed at specific financial institutions are more effective in restraining banking risk than broad interventions taken to stabilize the financial market as a whole.

1. Introduction

Since the failure of Lehman Brothers in September 2008, the landscape on the international financial markets has drastically changed. Banks with an established reputation of stability were suddenly threatened with insolvency as a result of their pre-crisis risk taking behaviour. The risk of widespread banking failures prompted the monetary and fiscal authorities around the world to intervene in the financial markets. The ultimate goals of these interventions were to help normalize credit conditions, avoid widespread bankruptcies of financial intermediaries and restore confidence in the financial system. In the period between 2008 and 2009 the fiscal and monetary authorities of 18 OECD countries have spent about 5 percent of their GDP on direct interventions, including recapitalizations, asset purchases, and the supply of liquidity to the interbank market. At the same time, governments have provided about 15 percent of GDP as liability and debt guarantees.

The empirical evidence on the effectiveness of these interventions is rather limited and ambiguous. One explanation of the inconclusive outcome is that most studies on explaining risk taking by individual banking institutions are based on pooled panel models in which it is assumed that there exists just one single effect of the government interventions. However, in view of the heterogeneity of the banks and countries included in those studies, this assumption may be questioned (Pesaran et al., 1996, 2005). According to King (2009) and IMF (2009) the reaction of the financial markets on the announcement of a government rescue package may vary considerably across banks and countries due to differences in the exposure to subprime-related risks. Neglecting this form of heterogeneity may lead to biased or even inconsistent estimation results (Hanson et al., 2008).[1]

The main contribution of this study is that we question the implicit assumption that government interventions have an uniform impact on all banks. We use a dynamic quantile regression model to estimate the relationship between the default risk of an individual bank and the announcement of the financial sector rescue packages during the 2008 financial crisis. This type of analysis, proposed by Koenker and Bassett (1978) and Koenker and Hallock (2001), allows us to derive different parameter estimates for various conditional quantiles of the risk distribution. In particular, the quantile regression permits estimating the tail behaviours of the risk distribution.

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[1] Another difference with the existing studies is that they either include a small sample of banks (cf. King, 2009) or identify only a small set of government interventions (cf. Fratianni and Marchionne, 2009).

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We use a set of more than 350 fiscal and monetary policy interventions in 15 OECD countries reported by Aït-Sahalia et al. (2012). Meanwhile, our dataset includes about 120 commercial banks between August 2007 and April 2009 using the credit default spread as our measure of the default risk of an individual bank. After testing for the sensitivity of the results, our main finding indicates that there exists a significant negative relationship between the announcements of the financial sector rescue packages and the daily change of the credit default premium. However, the effectiveness of these packages differs across banks: most interventions do not have a significant effect on low-risk banks, while they do affect high-risk banks. In particular, we find that interventions aimed at specific financial institutions are more effective in restraining banking risk than broad interventions taken to stabilize the financial markets as a whole.

The remainder of the paper is structured as follows. In the next section we give a short overview of the literature on the announcement of the financial sector rescue packages and banking risk. In Section 3 we discuss the various government interventions conducted during the 2008 financial crisis. Section 4 describes the data and methodology used, while Section 5 presents our results on the effectiveness of the government interventions on the default risk of individual banks. The final section discusses our results and concludes.

2. Rescue package announcements and financial risk: a literature review

Under the efficient market hypothesis, security prices are assumed to reflect all public information and to adjust swiftly to the arrival of new public information. Hence, the announcements of the government rescue packages during the financial sector in 2008–2009 are expected to affect the risk or stability of banks, if and only if, the announcement contains new information. When markets fully anticipate the event or an information leakage occurs, the risk measure will not react at all.

The empirical evidence on the effectiveness of the 2008 financial crisis interventions is inconclusive and can be divided in three strands. The first group of studies use the stock returns of financial institutions as their measure of risk. For instance, Fratianni and Marchionne (2009) and Tong and Wei (2011) find that government interventions are priced by the markets as cumulative abnormal rates of return over the window periods. Less optimistic are Panetta et al. (2009) which argue that government interventions are only marginal effective in reducing banking risk. Albeit banks' equities showed a statistical significant positive reaction after the announcement, the economic significance is rather small. Even more pessimistic is a study by the Bank of International Settlement which concludes that announcements of the comprehensive rescue packages do not seem to have any positive significant impact on banks' equity prices at all. Immediately after the announcements, bank stocks experience modest gains. However, banks' equity prices resume their pre-announcement downward trend just a few days after the announcements (Berndt et al., 2005; King, 2009).

The different outcomes between studies could be explained by a number of factors. First, the impact may vary across the different intervention instruments. Up so far, most studies do not distinguish between the various fiscal and monetary instruments.[2] For instance, the introduction of government guarantees may have a larger immediate effect on the interbank risk premium than asset purchases, because guarantees instantaneously transfer risks from banks' balance sheets to the government. Meanwhile bailouts and recapitalization operations may increase investors' concerns about the soundness of the overall financial system. That is, announcements of the rescue packages may raise uncertainty about counterparty risk and may cause contagion problems (Aït-Sahalia et al., 2012). Besides, system-wide interventions may be less effective because their impact is more difficult to assess (Aït-Sahalia et al., 2012). Second, countries are exposed differently to subprime-related risks. For example, countries with a large financial sector compared to their GDP, like Ireland or the United Kingdom, may benefit more from interventions than countries with a small banking sector.[3] Finally, due to substantial off-balance sheet activities and the well-known opaqueness of banks, equity market prices may be less informative and therefore not suitable to represent banking risk (Dullman and Sosinska, 2007).

To overcome the latter problem a second strand in the literature has been developed which uses the change in the credit default premium as their measure of banking risk. This credit default premium is determined by the likelihood of a default and therefore are the changes in the premium more directly related to the concept of financial risk than stock returns. For instance, King (2009), Xiao (2009) and IMF (2009) report that the announcement of system-wide rescue packages was followed by a fall in the premium paid. So, government interventions have been effective in reducing banks' default risk. In a similar vein, Aït-Sahalia et al. (2012) conclude that policy interventions during the 2008 financial crisis were associated with a reduction in interbank risk premia.

A third strand in the literature focuses on the contagion effect of the government announcements. For instance, Huerta et al. (2011) examine the spillover effect of bank bailouts on stock market volatility and investor fear. Using an event study they conclude that there is a significant decrease in stock market volatility on the day of a bailout, and the day after. Likewise, Aït-Sahalia et al. (2012) found that most policy interventions had international spillovers on interbank credit and liquidity risk premia during the recent crisis. In addition, Goldsmith-Pinkham and Yorulmazer (2010) analyse spillover effects of the bank run during the Northern Rock episode in 2007. The run had been contained by the government's announcement that it would guarantee all deposits in Northern Rock. The authors show that both the bank run and the subsequent bailout announcement had significant effects on the rest of the U.K. banking system, as measured by abnormal returns on the stock prices of banks. Finally, Greatrex and Rengifo (2010) examine to what extend the government interventions reduce the credit risk in the business sector. They find that the government measures reduce perceived credit risk across a broad cross-section of firms. In more detail, financial firms respond most favourably to financial sector policies and interest rate cuts, while non-financial firms react most favourably to conventional fiscal policy tools.

3. Government interventions during the 2008 financial crisis

With the collapse of Lehman Brothers the uncertainty in the financial markets skyrocketed. Banks realised that they did not know which of their competitors would be the next one to become insolvent. As a result the overnight interbank market came to a virtual halt which, consequently, made banks unable to refinance their short term debt.

[2] One exception is Aït-Sahalia et al. (2012).

[3] Ireland's aggregate bank assets between 2003 and 2006 were on average almost five times as large as its GDP.