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Market discipline during crisis: Evidence from bank depositors in transition countries

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ABSTRACT

The Central European banking industry is dominated by foreign-owned banks. During the recent crisis, for the first time since the transition, foreign parent companies were frequently in a worse financial condition than their subsidiaries. This situation created a unique opportunity to study new aspects of market discipline exercised by non-financial depositors. Using a comprehensive data set, we find that the recent crisis did not change the sensitivity of deposit growth rates to accounting risk measures. We establish that depositors' actions were more strongly influenced by negative press rumors concerning parent companies than by fundamentals. The impact of rumors was especially perceptible when rumors turned out *ex post* to be founded. Additionally, we document that public aid announcements were primarily interpreted by depositors as confirmation of a parent company's financial distress. Our results indicate that depositors react rationally to sources of information other than financial statements; this discovery has policy implications, as depositor discipline is usually the only viable and universal source of market discipline for banks in emerging economies.

1. Introduction

Banking systems in Central European (CE) countries are dominated by foreign-owned entities. As a result, during the recent financial crisis, which originated in developed economies, financial instability was largely imported into the CE banking industry from abroad. This phenomenon, unprecedented in the history of Central Europe since the fall of Communism, created a unique opportunity to study new aspects of market discipline exercised by non-financial depositors. More specifically, we were able to address important research questions in the described context: whether depositors react flexibly to changing sources of risk; whether depositors base decisions on fundamentals or on rumors; whether depositors can assess the informational content of rumors; and whether depositors' decisions are affected by public aid received by foreign parent companies.

Our study uses a large data set comprising commercial banks operating in 11 CE countries and their parent companies during the 1994–2011 period. This data set includes not only financial statements for each bank, but also information about parent companies, mass-media rumors, capital injections, bad-loan removals, and emergency loans. The estimation of dynamic panel models of deposit growth rates leads us to several interesting conclusions. In particular, we find that the recent crisis did not alter the sensitivity of deposit growth rates to accounting risk measures. We observe that depositors' decisions were more strongly influenced by press rumors regarding a parent company's condition than by fundamentals and that the effects of rumors on deposit growth rates were economically significant. We demonstrate that depositors' reactions to negative rumors were surprisingly rational, as the outflow of deposits was concentrated in banks for which negative rumors turned out *ex post* to be founded, and we also show that depositors were not misled by the fact that subsidiaries and their parent companies may have different names. The depositors' reaction to rumors was, however, asymmetric, with the influence of positive rumors weaker than that of negative rumors. Significant inflows of deposits during the recent crisis were recorded only by subsidiaries controlled only by the most highly praised parent companies. In addition, we document that public aid to banks was principally interpreted by depositors as confirmation of the financial distress of parent companies. More generally, our study

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provides some support for the view that depositors monitor the conditions of banks and respond to changes in the economic environment, and we also show that media rumors may convey relevant information during crises.

This article complements the existing empirical research on market discipline in banking in four ways. First, it provides one of the most comprehensive analyses of depositor discipline in emerging economies to appear in the literature. Second, the article extends the traditional test of the existence of market discipline to direct verification of whether deposit growth rates are affected by factors associated with parent companies. Third, it provides a novel assessment, in the context of developing economies, of the effects of certain variables, such as negative and positive market rumors, parent company fundamentals, brand similarities, and public aid received by parent companies, on depositors' decisions. Fourth, it reflects on the role of market discipline in maintaining the stability of the banking system, as it suggests that even during crisis periods, depositors' reactions are rational. Although the evidence presented here is derived from CE experience, we conjecture that our results are relevant to other emerging economies with similar ownership and competitive banking structures.

The remainder of the paper is organized as follows. Section 2 reviews the literature, with a specific focus on market discipline in emerging markets. Section 3 presents our hypotheses and econometric models. Section 4 describes the data set and other sources of information utilized in this study. Section 5 describes and discusses the empirical results. Section 6 provides some robustness checks. Finally, Section 7 presents concluding remarks.

2. Literature review

The vast majority of studies on depositor discipline address this topic in the context of mature economies. These studies can be divided into two main categories. The first includes research that explores the relationships between bank risk and either deposit interest rates or interest costs. Hannan and Hanweck (1988), Cargill (1989), Ellis and Flannery (1992), Kutner (1992), Brewer and Mondschean (1994), Hess and Feng (2007), and Uchida and Satake (2009) all establish that deposit interest rates and interest costs are associated in the expected manner with measures of bank risk or manifestations of risk in banking activities. In particular, they document that deposit interest rates increase as the capital base of banks worsens, the standard deviation of bank performance increases, and the interest rate risk of assets rises. Additionally, they observe that banks with lower credit ratings and higher shares of speculative financial instruments among their assets incur higher interest rate costs. The second category of depositor discipline studies analyzes the disciplinary effect of reduced deposit availability. Billett et al. (1998), Park and Peristiani (1998), Jordan (2000), Jagtiani and Lemieux (2000), Goldberg and Hudgins (2002), Maechler and McDill (2006), and Shimizu (2009) demonstrate that banks in danger of bankruptcy do not attract uninsured deposits and that weak banks actively substitute insured deposits for lost uninsured liabilities. Moreover, these studies find evidence that signals generated by uninsured depositors pertaining to the critical financial condition of certain banks could occur as early as 2 years prior to the actual failure of these banks.

Although the aforementioned research is certainly important, studies that use data from emerging markets are more relevant to the current investigation. Hosono (2005) demonstrates that a solid capital base and high profitability lowers deposit interest costs paid by South Korean, Indonesian, Malaysian, and Thai banks. Somewhat surprising, however, is the fact that the same independent variables were found to be insignificant in regression models of the growth of deposit volumes. Hadad et al. (2011) also find evidence of market discipline in Indonesia, where higher deposit rates have been associated with higher default and liquidity risk. The mechanism of depositor discipline in Latin American countries has been studied by several authors. Barajas and Steiner (2000), in contrast to Hosono (2005), establish that Columbian banks have been disciplined by alterations in real deposit growth rates but not by interest costs. In addition, they observe that banks recording low deposit inflows have improved their capital base and augmented their loan loss provisions in the next period. This last observation can be interpreted as an indication of the effectiveness of depositor discipline. In a study of Argentina, Chile, and Mexico, Peria and Schmukler (2001) demonstrate that deposit volumes are negatively correlated and deposit interest costs are positively correlated with accounting measures of bank risk. Interestingly, in these countries, disciplining signals have been generated by both uninsured and insured depositors. This phenomenon can be explained by the limited credibility of the safety nets in these nations. Calomiris and Powell (2001) confirm that depositors have monitored the risk-taking activities of private banks in Argentina during the last years of the 20th century.

The evidence with regard to the effects of the implementation of deposit insurance systems in emerging economies is ambiguous. Ioannidou and Penas (2010) establish that the introduction of *explicit* deposit insurance in Bolivia has diminished the market discipline exercised by large depositors. Prior to the introduction of this system, banks with higher shares of large deposits took on less risk, whereas after the introduction, this effect had vanished. In agreement with the conclusions of Ioannidou and Penas (2010), Mondschean and Opiela (1999), Peresetsky (2008) and Karas et al. (2013) observe that the introduction of an *explicit* deposit insurance system weakened depositor discipline in Poland and in Russia. In contrast, Kouassi et al. (2011) find that market discipline is effective only in the presence of *explicit* deposit insurance.

Jackowicz (2004) shows that banks in Poland have been disciplined mainly by deposit interest costs, a conclusion similar to findings in Hosono (2005). Kraft and Galac (2007) provide evidence that banks in Croatia were able to increase deposit growth by raising interest rates in the period immediately preceding the 1998–1999 crisis. Additionally, they show that Croatian depositors were relatively slow to link high deposit rates to increased portfolio risk. Önder and Özyildirim (2008) found that depositors in Turkey reacted negatively to bank risk, even after the introduction of full coverage in 1994. Moreover, they document that depositor discipline did not discourage Turkish banks from engaging in activities fraught with moral hazard. The observation of Önder and Özyildirim (2008) and Peria and Schmukler (2001) that deposit insurance systems in developing countries are frequently seen as not fully credible is further confirmed by Prean and Stix (2011), who, in an analysis of survey data, conclude that Croatian depositors perceived the safety of their deposits to be relatively weak during the 2007–2009 period.

Another distinct group of studies investigates whether crisis and crisis experience influence depositor behavior. Opiela (2004) demonstrates that in the 18-month period directly preceding the 1997 crisis in Thailand, depositors monitored banks and finance companies more closely. Levy-Yeyati et al. (2004) establishes that during crisis periods in Argentina and Uruguay, depositors' sensitivities to macroeconomic risks increased. At the same time, however, depositors' sensitivities to bank-specific factors diminished. Kraft and Galac (2007) demonstrate that during the 1998–1999 crisis in Croatia, the interest-rate elasticity of deposits completely vanished, and a flight to quality occurred. Oliveira et al. (2011) find that during the recent crisis, banks in Brazil were viewed as systemically important components of the financial system and recorded a substantial increase in uninsured deposits, whereas other Brazilian banks lost uninsured deposits. Using a large sample of banks from developed and emerging economies, Forssbæck