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# Bank liquidity creation following regulatory interventions and capital support



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#### ABSTRACT

We study the effects of regulatory interventions and capital support (bailouts) on banks' liquidity creation. We rely on instrumental variables to deal with possible endogeneity concerns. Our key findings, which are based on a unique supervisory German dataset, are that regulatory interventions robustly trigger decreases in liquidity creation, while capital support does not affect liquidity creation. Additional results include the effects of these actions on different components of liquidity creation, lending, and risk taking. Our findings provide new and important insights into the debates about the design of regulatory interventions and bailouts.

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#### 1. Introduction

Debates about the optimal design of bank safety nets and the consequences of regulatory interventions into and bailouts of distressed banks feature prominently in recent years. When banks are troubled, authorities often take actions aimed at reducing bank risk taking to limit failures, minimize

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losses to the deposit insurer and taxpayers, and avoid disruptions to the economy.<sup>1</sup> These actions typically involve regulatory interventions (intrusions by regulators such as instructions to: dismiss executives, pay fines, change processes, or restrict some activities), and/or bailouts in the form of capital support. A growing literature examines how such actions affect bank performance with a particular focus on risk taking (e.g., Dam and Koetter, 2012; Delis et al., 2013).

However, little is known about how these actions affect banks' ability to create liquidity for their customers, a core function of banks which supports the macroeconomy.<sup>2</sup> We know of no empirical work on the effects of regulatory interventions on liquidity creation, and only a few studies on the effects of capital support on one element of liquidity creation, lending.<sup>3</sup> There is, however, related theory on these issues. One theory predicts that regulatory interventions trigger reductions in portfolio risk (Mailath and Mester, 1994), and since the portfolio adjustments may involve reductions in risky lending activities, bank liquidity creation may decline as well. The theories on the role of capital, which is increased by capital support, yield conflicting predictions about how capital affects liquidity creation as we explain in detail in Section 4.2.<sup>4</sup> Interestingly, authorities often cite higher lending (a key component of bank liquidity creation) as an explicit goal of capital support (e.g., Philippon and Schnabl, 2013; Duchin and Sosyura, 2014).

Empirical investigation of these topics is challenging for four reasons. First, information about regulatory interventions and capital support is usually confidential. We overcome this challenge by exploiting unique supervisory data from the Deutsche Bundesbank (henceforth Bundesbank) that include information on all actions taken by authorities in Germany from 1999 to 2009. The authorities include government agencies (which engage in regulatory interventions and some capital support) and bankers associations' insurance schemes (which provide most of the capital support).

A second challenge is that even when authorities' actions are made public, such actions are typically only observed during crises, potentially confounding the effects of the actions with those of the crisis. An advantage of our sample is that it spans crisis as well as non-crisis years, and regulatory interventions and capital support occur frequently during both time periods.

A third challenge is that researchers typically have information only on subsets of the actions by authorities (e.g., they may have data on capital support but not on regulatory interventions). They may thus inadvertently ascribe the effects of the missing actions to the observed actions. We do not face this challenge as we have data on all such actions in Germany.

A final challenge is an identification problem that arises from the non-randomness of these actions. Naïvely regressing changes in liquidity creation on regulatory interventions and capital support may fail to identify causal effects. Even in the absence of these actions, banks may recognize problems and adjust liquidity creation. For example, being troubled may diminish banks' ability to offer long-term loans and loan commitments, reducing liquidity creation, while at the same time also triggering actions by authorities. We deal with this issue using instrumental variable (IV) analysis, employing three instruments for regulatory interventions and capital support.

The first instrument is the vote share of political parties with pro-business orientation in federal state elections, where timing follows an exogenously imposed rule. This instrument reflects a crucial feature of the German institutional framework in which politicians appoint regulators. As shown in Dam and Koetter (2012) and described in detail below, this instrument allows us to isolate plausibly exogenous variation in interventions arising from the political situation on the federal state level. Moreover, this approach is also in line with a growing literature which stresses the role of

<sup>&</sup>lt;sup>1</sup> James (1991) shows that bank failures can cause large losses to the deposit insurer, and Samolyk (1994) documents that bank failures are prime factors for transmission of shocks from the banking sector to the real economy.

<sup>&</sup>lt;sup>2</sup> Banks create liquidity on the balance sheet by transforming illiquid assets such as loans into liquid liabilities such as transactions deposits; they also create liquidity off the balance sheet through loan commitments and similar claims to liquid funds (see Berger and Bouwman, 2009; Donaldson et al., 2015 for summaries).

<sup>&</sup>lt;sup>3</sup> In related literature, there are studies on the effects of changes in capital requirements on lending, a key component of liquidity creation (e.g., Berger and Udell, 1994; Peek and Rosengren, 1995; Thakor, 1996), as well as studies of changes in supervisory toughness on lending (e.g., Bizer, 1993; Berger et al., 2001; Kiser et al., 2012).

<sup>&</sup>lt;sup>4</sup> Capital support and higher capital also often enhance the bank's probability of survival, particularly during financial crises (Kick et al., 2010; Berger and Bouwman, 2013).

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