

## Banks Fearing the Drought? Liquidity Hoarding as a Response to Idiosyncratic Interbank Funding Dry-Ups



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*This note summarizes the findings of a recent article analyzing the occurrence of liquidity hoarding in the banking sector in a context of bank-specific interbank funding shocks. Using data connecting bank headquarters with more than 4,000 bank branches in Brazilian municipalities, we explore whether bank-specific interbank funding shocks affecting banks' headquarters explain the transmission of liquidity risk within banking conglomerates, leading to liquidity hoarding and a subsequent cut in lending at the branch level. While shock-affected branches increase liquid assets and cut lending following large funding shocks, we find that this effect depends crucially on branches' reliance on internal funding. Moreover, branches that are relevant in generating profits from headquarters' perspective are shielded from the effect, highlighting a form of corporate protectionism. We discuss how these findings provide a novel understanding of how capital market imperfections create incentives for branches to accumulate liquid assets, impairing the effectiveness of unconventional monetary policy transmission in periods of funding stress.*

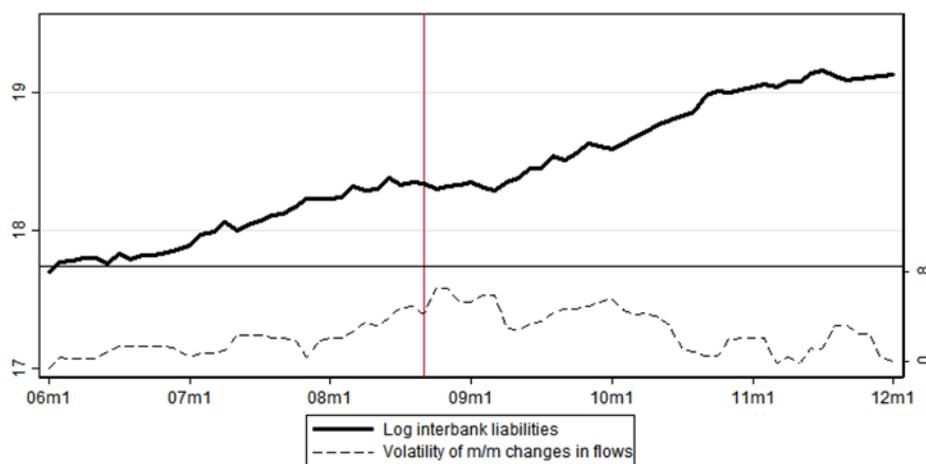
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Recent episodes of financial stress, including the shock triggered by the Covid-19 pandemic, have been characterized by a large and sudden accumulation of liquid assets by financial institutions. For example, in the period between March and Mai 2020 US banks increased their cash assets by 83.4%, while similar trends were observed in Europe and emerging market economies both during the Global Financial Crisis and the European Sovereign Debt crisis.

Should this liquidity hoarding reaction be a matter of policy concern? On a first sight, one can speculate that sudden increases in liquid assets reflect a natural reaction to funding stress, partially explained by banks being flooded with monetary injections. A wider availability of liquid assets can also be seen as a mechanism to improve banks' resilience and to cushion against the build-up of systemic risk. However, a precautionary accumulation of cash assets can come at the cost of weaker credit supply and an impaired capacity by central banks to steer aggregate credit.

**Figure 1: Aggregate interbank funding in Brazil and its volatility around the Global Financial Crisis**



Notes: This figure depicts the evolution of the log amounts outstanding (in millions of BRL) of aggregate interbank borrowing over time in Brazil. The dashed line in the bottom panel displays the underlying volatility of these volumes over the past 12 months on a rolling window. The vertical red line marks as a reference the month at which Lehman Brothers collapsed (September 2008). Source: own calculations based on regulatory call reports reported by the Brazilian Central Bank.

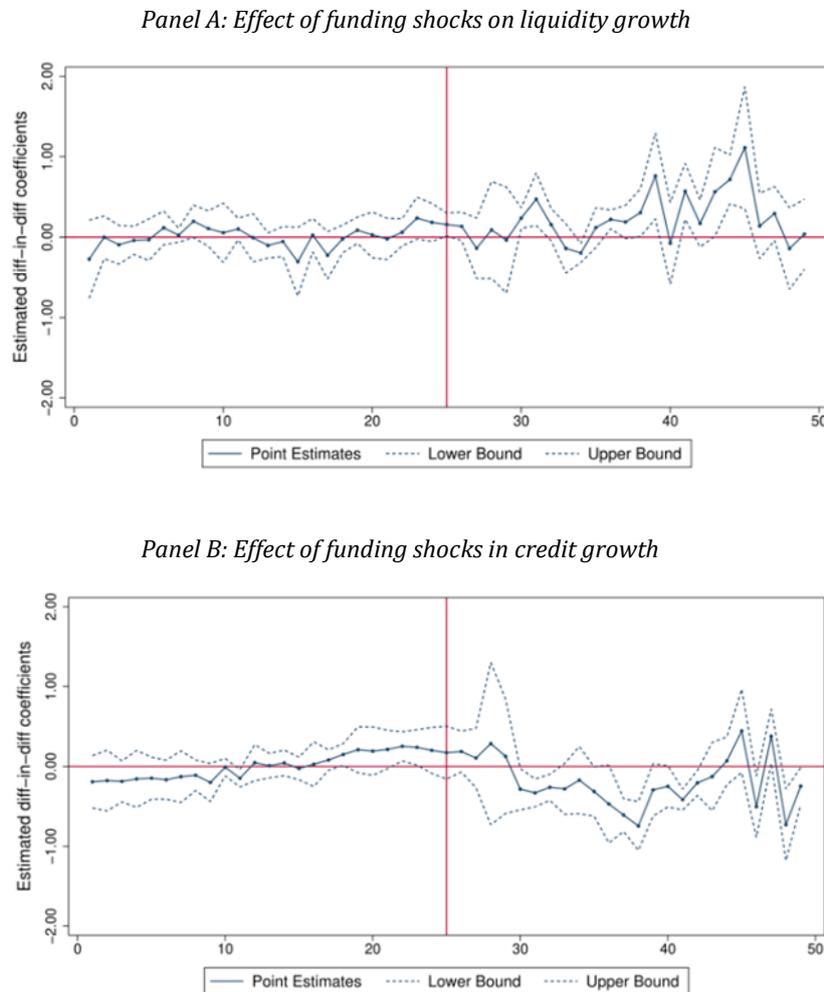
In new research<sup>2</sup>, we explore the implications of liquidity hoarding in the presence of capital market imperfections by looking at the entire population of banks and bank branches in Brazil. We find that despite competing views, liquidity hoarding harms financial intermediation, especially when financial market frictions limit the capacity of banks to offset negative funding shocks. We show that capital market imperfections help to spread liquidity risk in periods of funding stress within banks and across banks' regional branches, leading to a precautionary increase in liquid assets that crowds-out local credit supply at the municipal level in Brazil.

We draw these conclusions from an empirical analysis of Brazilian banks around the period of the 2008 Global Financial Crisis. Using regulatory data connecting banks' balance sheets with their individual branches in 1,628 Brazilian municipalities, we first identify banks that were affected by bank-specific interbank funding shocks in a context of an otherwise well-functioning and liquid interbank market (see Figure 1). We then evaluate the

<sup>2</sup> Littke, C.N. and Ossandon Busch, Matias. [Banks Fearing the Drought? Liquidity Hoarding as a Response to Idiosyncratic Interbank Funding Dry-ups](#). Discussion Paper Deutsche Bundesbank No 16/2021.

behavior of liquid assets and credit at the branch level, comparing municipal branches from shock-affected vs. non-affected banks in a difference-in-difference setting. This setting allows us to trace the occurrence of liquidity hoarding within banks while controlling for local credit demand and other macroeconomic trends at the municipal level to which both affected and non-affected branches are similarly exposed.<sup>3</sup>

**Figure 2: Time variant estimates of credit and liquid assets growth at the branch level**



Notes: This figure illustrates results from individual regressions estimating the effect of an interbank funding shock at the bank headquarters level on liquidity (Panel A) and credit (Panel B) growth at the bank branch level. Each point estimate (i.e., months) represents a separate regression comparing affected vs. non-affected branches in terms of the difference between the pre-shock period and each single month. The vertical red line marks a shock's begin. The whiskers represent the corresponding 95 percent confidence intervals of each point estimate. Source: own calculations based on regulatory call reports reported by the Brazilian Central Bank. This figure depicts a time-varying exercise that complements the main results reported in the full article.

<sup>3</sup> Note that this setting also reduces concerns of interbank funding shocks being driven by pre-existent branch characteristics. Since each branch represents only a marginal share of its conglomerate's assets, funding shocks at the headquarters level can be arguably seen as exogenous events from the perspective of a regional individual branch.

Our baseline results are summarized in Figure 2. We find that branches from headquarters affected by interbank funding shocks increase liquid assets on average by 13 percentage points more than non-affected branches following a shock (Panel A). During the post-shock period, credit growth decreases on average by 27 percentage points more in affected branches (Panel B). These economically sizable results imply that even in the absence of an aggregate interbank market freeze, bank-specific disruptions in available interbank funding can transmit liquidity risk downstream in banks' corporate and regional structures, creating incentives to accumulate cash assets with detrimental consequences for credit supply.<sup>4</sup>

The focus on a large emerging market economy like Brazil allows us to unveil the role of financial market frictions in explaining the mechanics of our findings. We depart from the notion that regional bank branches are affected by a form of **deposit market fragmentation**, as they fund a large share of their assets with local deposits. Since branches are restricted to raise deposits only within their business areas, internal capital markets remain the only mechanism through which they can access funds from other liquidity-surplus regions. This market fragmentation can be seen as a friction that subjects internally-exposed branches to the occurrence of funding shocks upstream in banks' corporate structures. We see this friction as a problem of **market incompleteness**, in which jurisdictional and organizational barriers prevent a free allocation of liquidity across regions.<sup>5</sup>

Our findings suggest that geographically fragmented deposit markets have at least **three key implications** for the emergence of liquidity hoarding.

- First, we find that the increase in liquid assets following a funding shock is much stronger for **internal-funding-exposed branches**, which suffer the most from the cut in internal funds following an interbank funding shock.
- Second, the negative effect of the shocks on credit for internally-exposed branches only emerges once "relevant branches" --- i.e, larger branches that represent a sizable share of their banks' profits --- are excluded from the sample. We show how this result implies that **relevant branches are being shielded from internal funding cuts**, reflecting some form of corporate protectionism.
- Finally, the capital market friction explaining our findings has relevant implications for the transmission of unconventional monetary injections. We find that significant shares of **monetary injections during the period of analysis ended up accumulated as cash** in banks' balance sheets, highlighting a limitation in the pass-through of monetary interventions.

The full article provides a complete account of how these conclusions can be drawn despite the presence of several identification challenges. For instance, we confirm that the results cannot be explained by pre-shock trends or by bank characteristics different than being affected by an interbank funding shock during the period of analysis. Moreover, any randomization of the shock-affected categorization leads to non-significant results.

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<sup>4</sup> This result complements previous analyses of the liquidity hoarding phenomenon in banking. Cornett et al. (2011) and Acharya and Merrouche (2013) provide evidence of how this reaction emerges once market-wide disruptions in interbank markets occur. We extend these findings by showing that capital market frictions in the form of deposit fragmentation within countries can trigger a liquidity hoarding effect even in scenarios of bank-specific cuts in interbank funds.

<sup>5</sup> Other studies have also explored the role of bank branches in affecting the transmission of liquidity risk in different settings. For example, Gilje et al. (2016) or Cortés and Strahan (2017) show that branches' dependence on regional deposit funding creates a mechanism that transmit liquidity risk. We use more detail internal-funding data to unravel the role of internal capital markets in shaping a portfolio reallocation towards liquid assets by branches affected by a sudden disruption in their available funding.

The empirical evidence we provide suggests that banks' changing preferences towards liquid assets, together with institutionally constrained deposit markets, can explain the transmission of idiosyncratic funding shocks to lending via precautionary increases in liquid assets.<sup>6</sup> The presence of relevant market frictions can therefore lead to liquidity hoarding even in the absence of a market-wide funding freeze. These findings have important implications for policymakers concerned with the stability of credit in periods of financial turmoil. Financial inclusion and financial development policies can, for instance, mitigate market frictions by widening the deposit base in regional banking markets. Also, well-regulated derivatives markets can help to break the link between internal funding access and local credit, especially in emerging market economies. ■

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<sup>6</sup> The relevancy of this finding is also highlighted by the documented capacity of idiosyncratic bank shocks to affect the real economy (see, e.g., Gabaix, 2011 or Amiti and Weinstein, 2018).

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