

# Research Proposal

**Title:** *Natural Disasters and Relationship Banking*

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## Research Objective

Extant literature points out the role of relationship between bank and borrower during natural disaster (Berg and Schrader (2012) [1], Nguyen and Wilson (2020) [2], Chavaz (2016) [3]). Using Iran's novel setting, this paper attempts to understand whether and how retail banking relationships can affect household financing during adverse regional macro shocks.

## Motivation

As an emerging literature, banks' lending behavior after natural disasters has been subject of the debate. Some studies suggest that lending reduces after the shock (Noy (2009) [4], David (2011) [5], Berg and Schrader (2012)[1], Choudhary and Jain (2017) [6]; Schwer, Lambert, and Noth (2019)[7], Kaoru et al. (2012) [8]). This can be referred to damage on collateral, the local business processes, and the total performance of the affected region (ECLAC, (2003)[9]). On the other hand, some investigations suggest that banks increase lending during catastrophe (Corts and Strahan (2017) [10], Chavaz (2016) [3]).

Another strand of the literature tried to shed light on how prior relationships can mitigate credit access restriction during catastrophes. Degryse and Cayseele (2000) [11], Elsas (2005) [12] and Behr et al. (2013) [13] point out the important role of the banks' private information during the difficult time of their relationship clients. Using firm-level data, Berg and Schrader (2012) [1] show that during unpredictable aggregate shocks, bank-borrower relationships can lower lending restrictions. Nguyen and Wilson (2020) [2] find that more branches in affected areas can mitigate lending restrictions due to soft information collected previously.

While there were some investigations on how prior relationships can affect lending, most of them are based on bank or branch data, and little is known about how relationship works during natural disasters. As one of the first studies, Berg and Schrader (2012) [1] uses firm-level data to fill this gap. They use prior loan origination as the relationship measure. Following Puri et al. (2017) [14], we are the first individual-level study that uses different measures of relationship to investigate how prior relationships can help clients during natural catastrophes.

## Data

Cooperating with one of the biggest Iranian banks, we use proprietary information of about one million clients located in three flooded states. These clients have related to almost 150 branches. The set of variables include borrowers' characteristics like age and sex, loan terms and origination date, detailed information on the monthly balance of clients' different accounts, and different measures of the relationship like internal credit score, monthly profit of bank from multiple interactions with client and loan origination history. The time period of the data-set is from 2018 to 2020, including one years before and after the catastrophe.

## Methodology

The exogeneity of flood rush to counties and lands especially in agricultural sector, enables us to use difference-in-difference for causal inference. We therefore, divide branches into treatment and control groups, based on damage to the counties. We first point out whether branches in affected counties have a different lending behavior toward clients.

Second, we use panel regression in both groups to investigate whether there is a significant difference in access to credit for relationship clients between groups. Moreover, another hypothesis is that flooded clients who have relationship with a branch located out of damaged counties can use their relationship to receive facilities. In other words, using individual-level data, we are investigating whether out-of-flood branches lend more to their borrowers (Corts and Strahan (2017)[10], Koetter (2020) [15]). For this, we limit observations with multi-relation clients - clients with multiple branch relationships in all counties - and check whether there is a difference in loan origination probability between flood clients and others.

## Contribution

Recent studies shed light on the role of the banks during natural disasters. While some of them have focused on how lending is affected at the time of collateral damage

and uncertainty about the borrowers' repayment affordability (Noy (2009) [4], David (2011) [5], Berg and Schrader (2012) [1], Choudhary and Jain (2017) [6]; Schwer, Lambert, and Noth (2019) [7], Corts and Strahan (2017) [10], Chavaz (2016) [3]), others pointed out whether prior relationship with bank can play an important role in mitigating credit constraint (Berg and Schrader (2012) [1], Nguyen and Wilson (2020) [2] and Chavaz (2016) [3]). Using Iran's largest flood of the century as an exogenous shock, we are trying to shed light on the role of depositor-bank prior relationship on credit access during catastrophes. The paper closest to ours in this regard is Berg and Schrader (2012) [1] who uses the firm-level data to show the importance of the relationship during disasters. Additionally, unlike Corts and Strahan (2017) [10] who relates natural disasters to bank behavior focus on mortgage lending to households, we use loans that are dedicated to the agricultural sector, which includes over one billion peoples' jobs, especially in developing countries.

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