



Abschließender Sachstandsbericht
Leibniz-Wettbewerb

Titel: Relationship lenders and unorthodox monetary policy
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Projektleiter/in: Prof. Michael Koetter, PhD

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1. Achievement of goals milestones

The research project comprised five work packages (WP). The project started on 01.07.2016 and received funding from the Leibniz Association until 30.06.2020. The project was managed by Professor Michael Koetter, Ph.D. and (then) Junior Professor Dr. Felix Noth from IWH.

The first work package **WP 1** put the collection, preparation, and combination of various micro-economic data sources central, thereby forming the foundation for the subsequent pursuit of four content work packages. Each WP raised a research question about the interplay of (monetary) policymaking, financial and operational choices of firms, and financial institutions' responses. Combining proprietary security and lending data from the German and European Central Bank (BBK and ECB, respectively), plant and employment data from the Federal Employment Agency (BA), and information on financial accounts from commercial databases required us to overcome substantial legal and confidentiality agreement challenges. As such, this WP is somewhat consistent with the Leibniz Association's strategic objective to facilitate high-risk research projects that bear the potential for academic excellence and policy impact, two aspects reviewed in more detail in section 3 of this report. Given the substantial administrative hurdles, we completed the combination of crucial firm, bank, and security identifiers later than planned, namely by the end of 2017.

This delay did not hinder general progress though we also had to spend considerable time hiring adequate staff. Eventually, we used the financial funds to win one Ph.D. student who was already working at IWH to join us doing research on WP 2: Oliver Rehbein. This module concerned the response of firms and banks to macroeconomic shocks in the form of natural disasters. To that end, we sourced data from the German Insurance Association (GDV) on fine-gridded natural disaster data in Germany. Further, we managed to hire a great young scholar who started her Ph.D. project under the supervision of Felix Noth and myself in 2017, Talina Sondershaus.

Besides, two Ph.D. students – Matias Ossandon Busch and Thomas Krause – graduated during the starting phase of the project under the supervision of Professors Koetter and Noth. They also contributed with additional own research projects to this project's research theme as postdocs after their graduations in 2017 and 2018, respectively.

This core team led by Professors Koetter and Noth subsequently implemented all WP, which we describe in more detail in the next sections, according to the milestones initially indicated. The only exception was WP3, which was devoted to the study of credit constraints and stressed banks. Quickly after her start in September 2016, Talina Sondershaus spent considerable efforts towards the empirical measurement of credit constraints. Quickly it became clear that the recent literature on this issue concluded that so far employed measures derived from commercial databases on financial accounts delivered severely biased indicators when compared to experimental and proprietary tax authority evidence. Given the resulting limitations to publish any research along the initially planned lines in excellent outlets, we broadened this work package's scope. Specifically, Michael Koetter embarked together with other IWH researchers (Stefano Colonnello and Moritz Stieglitz) as well as colleagues from outside IWH (Professor Douglas Cumming from Florida Atlantic University and Daniel Blaseg, then a Ph.D. student at Goethe University) on research projects that approached the question from two adjacent, but different perspectives. The first angle utilized loan contracts offered by stressed banks, whereas the second one looked through the lens of crowd-equity funding as an alternative to bank loans for young (funding constrained) entrepreneurs. Talina Sondershaus focused instead on WP 5, the (ir)relevance of unconventional monetary policy shocks for the (hindering of) creative destruction among plants and firms in Germany.

2. Activities and obstacles

We briefly summarize activities and main obstacles per content work package, i.e., WP 2 – WP 5. Work package **WP 2** investigated the role of relationship lenders for small firms in dealing with macroeconomic shocks. This project was primarily managed by then Jun.-Prof.

Dr. Noth. One key input to WP 2 relied on insurance claim data for natural disasters provided by the GDV and prepared by Ph.D. student Oliver Rehbein. An important step was to combine bank and firm data from commercial databases based on record linkage techniques that were then amended by regional insurance claims. Based on these linked data, several research papers were written, some of which being already published in peer-reviewed journals. In contrast, others are still in the publication process (see section 3). Another strand of activities in this WP concerned the joint research of Jun.-Prof. Dr. Felix Noth with colleagues from DIW and Goethe University on the effects of natural disasters and shock relief policies on U.S. banks' behavior.

As indicated above, the thrust of **WP 3** required adaptations after literature research on the most recent developments and initial data explorations on the measurement of credit constraints. The original idea to measure credit constraints empirically based on financial accounts data from commercial vendors had to be abandoned given novel evidence on severe biases in previously used metrics. Therefore, Jun.-Prof. Dr. Noth collaborated instead with a Ph.D. student, Carola Müller, on the effect of banking market competition in the U.S. as an indirect indicator of heterogeneous access to credit exploiting granular and detailed mortgage loan data. Flanking activities pursued by Prof. Koetter were two research collaborations in- and outside IWH. The former hinged on unique and web scraped information on the use of equity crowdfunding by German start-ups and their failure rates. The latter was joint research based on detailed information about contract terms in syndicated loan markets combined with bank-level information regarding their capitalization.

The main activity in **WP 4** was devoted to the exact isolation of an unconventional monetary policy shock in the form of asset purchase programs of the ECB on the lending patterns of German banks using their granular security holdings and subsequent lending choices. This research was primarily managed by Prof. Koetter and his co-authors at the ECB. Close networks between researchers and policymakers across Bundesbank, ECB, and IWH were pivotal in realizing the combination of proprietary data sources on policy measures and prudential reporting data. These close ties also led to the investigation of whether and how election cycles as an alternative policy shock influenced banks' politically motivated lending choices. Thereby, this work package shed light on whether or not government-owned banks contribute to a misallocation of financial funds, evidently a policy-relevant question of first-order importance in times of unparalleled contemporary fiscal support. Thus, these research projects in WP 4 are closely in line with the Leibniz Association's strategic objective to contribute excellent research to actual policy debates.

The last work package **WP 5** also faced the critical challenge of data confidentiality rules that required a robust protocol to gain access and obtain permission to work with proprietary BA data. To investigate whether and to what extent asset purchase programs of the ECB to combat the sovereign debt crisis also entailed the misallocation of resources in the real economy, we combined banks' identities, an indicator of whether or not they were eligible to benefit from unconventional monetary policy, and detailed plant production and insolvency data from the BA. Close collaborations between involved IWH researchers, namely Professors Michael Koetter and Steffen Müller, and BA scientists allowed us to accomplish this objective.

3. Results and achievements

The project output is categorized as indicated in the guidelines for the final report.

3.1. Publications

Publications in *journals* are all peer-reviewed. According to the AJG (2018) ranking used at IWH, two publications are ranked A+, and five others are ranked A. Open access publications are labeled OA, project team members are typeset in **bold**. Working papers that are relevant output from the project and currently under review or invited as revise and resubmit are also listed. For each publication, the relevant working package is provided in parentheses.

- **Koetter, M., F. Noth, O. Rehbein** (2020). "Borrowers under Water! Rare Disasters, Regional Banks, and Recovery Lending", *Journal of Financial Intermediation*, 43 (**WP 2**).

- Schüwer, U., C. Lambert, **F. Noth** (2019). "How do banks react to increased asset risk: Evidence from Hurricane Katrina". *Review of Finance* 23, 75-116 (**WP 2**).
- **Noth, F. and O. Rehbein** (2019). "Badly Hurt? Natural Disasters and Direct Firm Effects" *Finance Research Letters* 28. 254-258 (**WP 2**).
- Lambert, C., **Noth, F.**, U. Schüwer (2017). "How do insured deposits affect bank stability? Evidence from the 2008 Emergency Economic Stabilization Act". *Journal of Financial Intermediation* 29, 81-102 (**WP 2**).
- Ongena, S. and **O. Rehbein** (2020). Flooded through the back door: The role of bank capital in local shock spillovers, Working Paper Bonn University (**WP 2, OA**).
- Blaseg, D., Cumming, D., **Koetter, M.** (2019). "Equity Crowdfunding: High- or Low-Quality Entrepreneurs?" *Entrepreneurship Theory and Practice*, forthcoming (**WP 3, OA**).
- Colonnello, S. **Koetter, M.**, Stieglitz, M. (2019). "Benign neglect of covenant violations: Blissful banking or ignorant monitoring?" *Economic Inquiry*, forthcoming (**WP 3, OA**).
- Müller, C. and **F. Noth** (2018). "Market power and risk: Evidence from the U.S. mortgage market", *Economics Letters* 169, 72-75 (**WP 3**).
- **Koetter, M.** and A. Popov (2020). "Political Cycles in Bank Lending to the Government". *Review of Financial Studies*, accepted (**WP 4**).
- **Koetter, M.** (2019). "Lending Effects of the ECB's Asset Purchases", *Journal of Monetary Economics*, forthcoming (**WP 4**).
- Antoni, M., M. Koetter; S. Müller, T. Sondershaus (2019). "Do Asset Purchase Programmes Shape Industry Dynamics? Evidence from the ECB's SMP on Plant Entries and Exits" *IWH Discussion Papers*, No. 12 (**WP 5, OA**).
- Sondershaus, T. (2019). "Spillovers of Asset Purchases within the Real Sector: Win-Win or Joy and Sorrow?" *IWH Discussion Papers*, No. 22 (**WP 5, OA**).

3.2. Knowledge transfer

Insights from specific research papers completed during the project were presented in too many international conferences to be listed here. A more tacit transfer of knowledge took place via policy publications derived from these papers and invited feedback on policy evaluations:

- Gropp, R., Koetter, M., McShane (2020). "The Corona Recession and Bank Stress in Germany" *IWH Online* 4
- Gropp, R., Koetter, M., McShane (2020) "Transmitting Fiscal Covid-19 Counterstrikes Effectively: Mind the Banks!" *IWH Online* 2
- Grothe, S., Koetter, M., Krause, T., Tonzer, L. (2019) "What drives the staggered implementation of the European Banking Union?" *LSE Business Review*
- Freudenstein, B., Koetter, M., Noth, F. (2019) "Lokaler Schock trifft lokale Bank: Die Folgen der Hochwasser des Jahres 2013 für das deutsche Finanzsystem" *Wirtschaft im Wandel*.
- Koetter, M., Krause, T., Tonzer, L. (2018). "Welche Faktoren verzögern die Umsetzung der Bankenunion". *Wirtschaft im Wandel*, 24(1).
- Koetter, M., Tonzer, L.. (2018) "Comments on Consultation BCBS discussion paper on the regulatory treatment of sovereign exposures".
- Altgelt, F. Koetter, M. (2017). "Too connected to fail? Wie die Vernetzung der Banken staatliche Rettungsmaßnahmen vorhersagen kann". *Wirtschaft im Wandel*, 23(4), 75–78.
- Altgelt, F. Koetter, M. (2017). "Messbar, aber milde: Auswirkungen des SMP-Wertpapierankaufprogramms der EZB auf den regionalen Bankenwettbewerb in Deutschland". *Wirtschaft im Wandel*, 23(3), 53–57.
- Koetter, M. Krause, T. Tonzer, L. (2017). "Transposition frictions, Banking Union, and integrated financial markets in Europe", *T20 Policy Briefs: Financial Resilience*.
- Koetter, M., Rehbein, O. (2017) "Enabling the Wisdom of the Crowd: Transparency in Peer-to-Peer Finance", *T20 Policy Briefs: Financial Resilience*.
- Koetter, M., Krause, T., Tonzer, L. (2017). "Comments on the Proposed Framework for Post-Implementation Evaluation of the Effects of the G20 Financial Regulatory Reforms"

Also, Professor Koetter was appointed as an Academic Advisor to the Financial Stability Board to evaluate the effects of financial regulatory reforms on infrastructure finance in 2018.

3.3. Conferences and events

We (co-)organized 9 scientific conferences, hosting in total 16 renowned keynote speakers, featuring more than 100 papers presented and discussed by international scholars, and welcomed around 750 scientific guests to the following events:

- 2020: IWH Tagung "Europas Finanzmarkt: Zwangsehe oder lose Bekanntschaft?"
- 2020: Annual IBEFA Meeting at the ASSA
- 2019: 1st FINPRO – Finance and Productivity conference with CompNet, EBRD, IWH
- 2019: "Costs and benefits of financial regulation" with Norges Bank and IBEFA
- 2019: Bundesbank Herbstkonferenz "Financial Intermediation in a Globalized World" with IWH, ECON- tribute, CEPR
- 2018 Bundesbank Herbstkonferenz "Financial Cycles and Regulation"
- 2017: IBEFA Summer meetings Vancouver
- 2017: Bundesbank Herbstkonferenz "The Future of Banking"
- 2016-2020: Annual IWH-FIRE "Challenges to Financial Stability"

3.4. Academic career qualification

Dissertations conducted by staff that was (partly) funded by this research project are indicated as (DI) including the year if completed. Habilitations are indicated by (habil).

- O. Rehbein: "The Effects of Natural Catastrophes and Merger Events on Financial Markets and the Real Economy", (DI, 2018)
- T Sondershaus: "Unconventional Monetary Policy, Banks, and the Real Economy", (DI, ongoing)
- M. Ossandon-Busch: "Essays on Banking Globalization and Financial Stability in Emerging Countries" (DI, 2017)
- T. Krause "Financial Stability, Housing Markets and the Political Economy of Banking", (DI, 2018)
- F. Noth (habil, 2020): appointment as W2 professor at the Otto-von-Guerricke University

3.5. Third party funding: additional third party funding was neither sought nor won.

3.6. Equal opportunities and diversity: see below in separate section according to guidelines

3.7. Networks and cooperation: see below in separate section according to guidelines

3.8. Animal tests: no animal test were conducted for this. research

4. Equal opportunity and diversity

All appointments during this research followed the guidelines of the IWH on equal opportunities. Specifically, we put particular emphasis on appointing at least one of the two Ph.D. positions to a female candidate, Talina Sondershaus. To maximize her academic job market chances, we also sought a visiting research stay with the research department at Norges bank, the central bank of Norway, for her. The fact that she is currently on maternity leave bears testimony to the family-friendly environment that we pride ourselves on here at IWH.

5. Quality assurance

All scientific work conducted was subject to the IWH code of conduct regarding the adherence to good scientific practice and standards. Moreover, two peer-reviewed articles are published

under an open-access regime, as indicated above. All work is subject to scrutiny by peers in IWH internal and external seminars and conference presentations.

6. Additional own resources

In addition to the two Ph.D. students in the core team of this research project, Professors Felix Noth and Michael Koetter co-supervised and graduated another four Ph.D. during the lifetime of the project, all of whom contributed to various degrees to this research: Carola Müller, Kirsten Schmidt, Chris Becker, and Lisa Cycon. The IWH financed the two postdocs before and after the SAW project.

All scientific staff was prepared for the international job market using IWH resources, e.g., in terms of travel expenses for research stays in the USA, submission fees, and related activities. They also benefited from IT infrastructure and administrative support, which is hard to quantify. As a result, all graduates are placed with research affine jobs, such as the Latin American counterpart to the BIS, CEMLA, Deutsche Bundesbank, or the ECB.

7. Structural cooperations

Given the project's very nature, to combine various proprietary datasets, several liaisons emerged that turned out to be of a structural kind.

First, Michael Koetter was appointed as a member of the scientific advisory board to the Research Service Data Center early on in the project, which eased the way to establish necessary protocols to combine the needed proprietary data. This cooperation led, among a general exchange of thought, not only to the successful placement of IWH Ph.D. graduates with Deutsche Bundesbank as an employee but also to an ongoing research relationship on projects above and beyond the scope of this one funded by the SAW.

Second, Michael Koetter was invited in 2017 to join the International Banking Economics and Finance Association IBEFA as an executive and was elected president in 2019. In this capacity, he organized two large meetings. He established numerous ties to senior researchers and policymakers in the US financial system. These links prove extremely valuable to place junior researchers graduating from IWH in their first academic jobs.

Third, multiple formats to transmit research insights to a broader audience developed a permanent character. Most notably, the FIN-FIRE conference on "Challenges to Financial Stability" was delivered despite the Covid-19 challenges also in 2020 and marks by now a fixed event in the calendars of financial economists around the globe, attracting renowned scholars such as Martin Hellwig, Claudia Buch, Luigi Zingales, Antoinette Schoar, and others as keynote speakers. Likewise, both CompNet and the EBRD committed to continue the FINPROD conference series on the interaction between finance and productivity and turn it after an incredibly successful inaugural event into a standing brand on the economic conference circuit.

8. Outlook

This research project has shown that empirical micro evidence is needed to isolate causal mechanisms of whether and how policymaking affects the real economy via financial systems. Given the long-term challenges posed by climate change, which hinge on the allocation of scarce capital to risky innovations that transform technologies and economies, we believe that future research should be geared towards a positive and eventually normative assessment of finance's role for climate change and risk.