# 55th Konstanz Seminar on Monetary Theory and Policy 2024

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The 55th Konstanz Seminar on Monetary Theory and Policy was held from May 14th to May 16th 2024. This year's conference took place with 46 participants. The Konstanz Seminar provides an independent platform for intense discussion of recent developments in monetary theory and policy. Each year, the seminar brings leading senior academics, junior researchers, participants from the European Central Banks, Federal Reserve System, and international organizations, as well as practitioners from the private sector together. Founded by monetary economist Karl Brunner in 1970 and currently organized by a team of researchers, with Benjamin Born and Keith Kuester as the local organizers, the seminar looks back on a unique tradition. The venue traditionally is Strandhotel Löchnerhaus on the island of Reichenau on Lake Constance. The papers for all presentations and the subsequent discussions are briefly presented below.

On Tuesday evening, *Sarah Zubairy* (Texas A&M University) opened the seminar with her paper "Innovation During Challenging Times," co-authored with *Danilo Cascaldi-Garcia* (Federal Reserve Board) and *Marija Vukotić* (University of Warwick). While recessions are periods of depressed aggregate investment, for example, due to tighter financial constraints, they might also have desirable "cleansing effects" through redirection of investment toward particularly innovative and growth-enhancing technologies.

Using firm-level patent data, *Zubairy* and her co-authors find that news about future technological progress has a larger effect on investment during recessions than during booms. Consequently, investment in Research and Development (R&D) is countercyclical conditional on innovation news shocks. These results are based on an index that measures the perceived value of a patent through changes in the stock market valuation of the patent's beneficiary. While the positive effect of innovation news shocks on investment activity dominates, the authors also confirm that tighter financial constraints during recessions inhibit

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this response. Using firm-level data, they show that financially constrained firms are less responsive to these shocks.

In her discussion, *Brigitte Hochmuth* (University of Bonn) emphasized the importance of a deeper understanding of the channels that produce this result and of distinguishing between direct and indirect effects, the latter being incentives to smooth investment in anticipation of higher returns in the future. She also suggested that the type and composition of patents granted may change over the business cycle, possibly confounding the identification approach. The plenary discussion focused on the role of knowledge diffusion across national borders and the potential negative effects of patents on competition, as financially unconstrained firms might use patents to increase their market share.

The second day of the seminar began with a topic that has regained attention in light of rising interest rates and public debt service costs: Euro area fragmentation risk. To better understand the impact of these disturbances in the Euro area sovereign debt market, it is imperative to examine the reactions of market participants. *Georgios Georgiadis* (European Central Bank) presented his joint work with *Pablo Anaya Longaric, Katharina Cera*, and *Christoph Kaufmann* (all European Central Bank) on this topic titled "Non-Bank Financial Intermediaries and Euro Area Fragmentation."

*Georgiadis* and his co-authors use the differences in credit default swap (CDS) spreads between the Euro area's periphery and core to measure fragmentation risk. The authors narratively identify episodes in which increases in this measure coincide with periods of heightened fragmentation risk as perceived by financial market participants. They combine this measure of fragmentation risk with fund- and sector-level data on the composition of sovereign debt holdings. In particular, they find a flight from the periphery without a corresponding influx into the core among investment funds. Instead, securities are absorbed by banks, insurance companies, and households. This is evidence that the flight from the periphery is, at least partially, a result of redemption pressure by investors.

*David Elliot* (Bank of England) emphasized that the paper shows how looser liquidity regulation of investment funds relative to banks could exacerbate stress in sovereign debt markets. However, he pointed out that the reason why investment funds react by shedding assets of the periphery is not clear. Are they overreacting to the increase in fragmentation risk, or does this behavior reflect the desire of the funds' end investors to reduce their exposure to peripheral debt? More detailed data at the fund level, especially on the end investors, would be needed to answer these questions. The plenary discussion noted the importance of considering the role of fiscal and monetary policy, both in triggering episodes of increased fragmentation risk and in shaping the economy's response to them, as well as differences between fragmentation risk and sovereign risk.

Since the financial crisis of 2007-08, much research has focused on the potentially unpleasant side effects of a low interest rate environment, particularly on the risk-taking behavior of firms and financial intermediaries. In his paper "Risk-taking with Financing Constraints," *Wei Cui* (University College London), together with *Cong Xie* (Chinese University of Hong Kong, Shenzhen) and *Renbin Zhang* (Shandong University), shows that the relationship between firms' risk-taking and the level of interest rates can be hump-shaped due to the presence of financial constraints. Consequently, an interest rate cut reduces risk-taking in a low-interest rate environment and increases risk-taking in a high-interest rate environment.

In their model, the nonlinear relationship between risk-taking and interest rates is driven by the extensive margin of firms' risk-taking. This response can be decomposed into two opposing effects. First, lower interest rates ease financial constraints. Thereby, they increase the firm's valuation and reduce risk-taking. Second, lower interest rates imply that risky projects become relatively more profitable. In turn, this induces increased risk-taking. They can show that the former effect dominates the latter at low interest rates.

*Antoine Camous* (University of Mannheim) praised the paper for providing a framework for studying monetary policy and macro-prudential policy in tandem and suggested extending the framework to the intensive margin of firms' risk-taking. The plenary discussion also touched on broader applications of the model framework, such as education and the degree of endogeneity of financing constraints.

While each generation of central bankers faces similar challenges, such as demand shocks or financial crises, the economic environment and the policy institutions in which they operate change over time. This complicates any systematic evaluation of policy since any statement about optimality must take into account the constraints that policymakers have faced in the past. While researchers have traditionally relied on structural models to generate counterfactuals, an emerging literature uses estimated impulse response functions as sufficient statistics for policy evaluation. In their paper "Evaluating Policy Institutions – 150 Years of US Monetary Policy," *Geert Mesters* (University Pompeu Fabra) and his co-author *Regis Barnichon* (Federal Reserve Bank San Francisco) develop such a semi-structural methodology for evaluating past policy.

At its core is an identification result: For a generic class of linear models, knowledge of the impulse responses to non-policy and policy shocks is sufficient to construct optimal policy rules and to compute the component of a given loss for which the policymaker can be held accountable. They then use this method to evaluate four U.S. monetary policy regimes, starting with a pre-Fed era and ending with the post-Volcker era. They find that under the assumption that monetary policy aimed at low inflation and unemployment, its response

was close to optimal in the post-Volcker era. However, its policy response led to welfare losses in the preceding regimes through too mild responses.

In his discussion, *Michele Piffer* (King's College London) asked whether the analysis could be reformulated in familiar terms as a methodology for historical decompositions. Furthermore, while the method requires the econometrician to specify a loss function and the weighting of different policy objectives, he suggested finding the weighting that would make policy behavior optimal in hindsight to better understand the results. In the plenary discussion, participants noted the trade-off involved in estimating a large number of shock series rather than committing to a particular structural model. Other issues raised included the method's robustness to nonlinearities and potential biases associated with the assumption that equilibria are uniquely determined.

The final session on the second day of the seminar revisited the standard heterogeneous agent model with incomplete markets and uninsurable idiosyncratic risk. While this class of models has been enormously successful in informing researchers' and central bankers' understanding of the interaction between heterogeneity and aggregates, its normative implications are less well understood. In their paper "Optimal Long-Run Fiscal Policy with Heterogeneous Agents," *Ludwig Straub* (Harvard University) and his co-authors *Adrien Auclert* (Stanford University), *Michael Cai*, and *Matthew Rognlie* (both Northwestern University) address a narrow, but important issue in this line of research: characterizing the steady state of the optimal equilibrium allocation with labor taxation, the so-called Ramsey steady state.

*Straub* and his co-authors derive a characterization of the Ramsey steady state: The optimal tax rate on labor supply must balance the liquidity benefit of greater debt, the cost of redistribution from workers to savers, and the distortionary effects on labor supply. The Ramsey steady state exhibits several surprising properties. First, if the social planner's discount factor equals the household's, the Ramsey steady state might not exist at all. Second, even if the steady state does exist for differing discount factors, it typically exhibits high taxes on labor income, in some economically plausible cases even close to 100 %. As it turns out, due to intertemporal substitution, higher taxes in the future induce workers to work more today, thus increasing the tax base. The resulting relaxation of the government's budget constraint allows the planner to increase the supply of liquidity in the economy, thereby mitigating the welfare loss from a too-low interest rate.

In light of these surprising results, *Sarolta Laczó* (Queen Mary University of London) wondered in her discussion whether they inform us about how actual policy should be conducted or whether they should be viewed as highlighting a deficiency of the underlying model. The plenary discussion focused on alternative assumptions that might lead to deviations from the immiseration result.

The final day of the seminar commenced with a session on international macroeconomics. Exchange rate regimes vary widely among the world's economies. Currency pegs and floating exchange rates are just two extreme examples. In contrast to the widespread use of intermediate regimes, which include instruments such as exchange rate interventions and capital controls, little is known about the theoretical optimality of such policies. *Dmitry Mukhin* (London School of Economics) addresses this issue in his joint work with *Oleg Itskhoki* (University of California, Los Angeles) entitled "Optimal Exchange Rate Policy."

They analyze optimal policy in their framework of a small open economy with segmented asset markets and currency demand shocks, a framework that reconciles theory with previously puzzling empirical evidence. The policymaker decides on foreign exchange interventions and monetary policy in an economy with nominal rigidities. It turns out that optimal policy is associated with different objectives for each instrument: While monetary policy is used to stabilize inflation and output, foreign exchange rate interventions are used to stabilize a natural exchange rate that closes deviations from the uncovered interest rate parity and is comparable to the natural interest rate in a closed economy.

*Martin Wolf* (University of St. Gallen) praised the paper's contribution to international macroeconomics by providing a laboratory consistent with important empirical findings. Since changes in the exchange rate regime tend to affect the volume of funds flowing between countries, he wondered whether the volume of capital flows could be made endogenous in the model. In the plenary discussion, the role of long-term debt in exchange rate interventions was raised, as well as the model's implications for the Backus-Smith puzzle.

At least since the 1970s and 1980s, the public has become aware of the impact of oil prices on the economy, as sudden price increases usually induce recessions in developed economies. As a result, oil prices have also become a primary concern for central banks. *Thuy Lan Nguyen* (Federal Reserve Bank San Francisco) analyzes the contribution of monetary policy to the effects of sudden oil price increases in her paper "How Oil Shocks Propagate: Evidence on the Monetary Policy Channel," written jointly with *Wataru Miyamoto* (Hong Kong University) and *Dmitriy Sergeyev* (Bocconi University).

In particular, the authors ask whether the propagation mechanism of oil price shocks depends on the central bank's ability to react, especially in periods when it is at the "Zero Lower Bound" (ZLB). Using a high-frequency approach to identify oil supply news shocks, the authors find evidence of state-dependent effects in the United States, the United Kingdom, and Japan: While economies contract in response to negative oil supply news shocks in normal times, there is no contraction or even expansion when policy rates are close to the ZLB. They argue that a basic New Keynesian model with energy shocks can explain

these results. Since oil shocks raise marginal costs and thereby inflation, if the central bank does not adjust nominal interest rates in response, there is a negative effect of oil shocks on the real interest rate, which could help explain the expansionary effects.

*Hilde Bjørnland* (BI Norwegian Business School) liked the idea of identifying different monetary policy conditions and stressed the importance of state-dependent effects of oil supply shocks. However, she also discussed potential confounding conditions that may have changed in the ZLB periods, such as the United States becoming a net exporter of shale oil. In addition, nonlinearities due to large shocks in the 1970s or due to the ZLB may be at play. Bjørnland also mentioned the changing degree of oil price volatility as a challenge for identification. The plenary discussed other challenges, such as unconventional monetary policy in periods of the ZLB, and the role of fiscal policy.

After lunch, *Joachim Nagel*, President of the Deutsche Bundesbank, delivered the policy session of this year's seminar, titled "Reflections on the Eurosystem's new operational framework."

*Ryan Chahrour* (Cornell University) then presented his paper "The Forward Signaling Channel of Inflation," co-authored with *Gaetano Gaballo* (HEC Paris). Households and other market participants base their inflation expectations not only on current observables but also on contemporaneous information about future events, such as forward guidance from central banks. This implies that the optimal forecast of future inflation does not coincide with the least squares forecast of the underlying inflation process. *Chahrour* and his co-author use this idea to investigate the endogenous relationship between forward guidance and inflation.

In their model, agents are forward-looking and make optimal forecasts of inflation based on today's state and a signal they receive from the central bank. Together, these expectations determine the equilibrium inflation process without reference to any real part of the economy. Due to the feedback of forward guidance on inflation rates, the components of inflation exhibit endogenous persistence despite the absence of backward-looking behavior.

In her discussion, *Laura Gáti* (European Central Bank) linked the idea to a latent process of "perceived inflation" in the context of state-space models. She wondered what this latent variable might be in practice and whether it could be measured. She also pointed out that the paper showed an instance where communication policy differed from conventional monetary instruments, such as interest rate policy. The plenary discussed more general patterns of expectations found in empirical studies, such as overconfidence and underconfidence, and whether the model was able to capture these patterns. More general applications of the model to expectations other than inflation, such as those of firms, were also raised.

The conference concluded with the presentation by *Sarah Lein* (University of Basel) of her paper "The Granular Origins of Inflation," co-authored with *Santiago Alvarez-Blaser* (University of Basel), *Raphael Auer* (Bank for International Settlements), and *Andrei Levchenko* (University of Michigan). They examine whether firm-level shocks and frictions can explain aggregate inflation. This topic has been hotly debated during the recent inflation surge, especially with respect to firms' strategic pricing to increase profit margins.

Using a detailed dataset on prices and quantities of individual products purchased by households in supermarkets and drugstores in 14 countries, as well as product-level data on firms, retailers, and categories, the authors decompose price changes beyond the average price change into firm and category specific components. They further distinguish between idiosyncratic category or firm effects and latent aggregate effects that drive the firm or category components. In advanced, low-inflation economies, firm components explain about 40 %, with the top 10 firms alone accounting for 25 % of aggregate price variation. In emerging markets, where aggregate inflation is much higher, virtually all price variation is driven by the aggregate component and only 10 % by the firm components. This evidence can be interpreted as strong support for the "granular hypothesis" that firm-level shocks and frictions have sizeable aggregate effects on inflation.

*Erwan Gautier* (Banque de France) discussed the results against the background of product-specific price stickiness and the role of the extensive and intensive margins of price adjustments, the former describing the size of a conditional adjustment and the latter the frequency of price adjustments. These points may help to explain what lies behind firm-specific pricing behavior. Differences in competition and cost structure are only two of many possible explanations. In the open part of the discussion, the role of multinationals in global inflation was discussed, as well as the strategic behavior of firms depending on the degree of competition in the specific product market. The audience suggested using data on the quantity of products purchased to further investigate substitution patterns. The plenary agreed that interactions with monetary policy are an interesting avenue for future research.

The conference concluded with the traditional conference dinner. Next year's 56<sup>th</sup> Konstanz Seminar on Monetary Theory and Policy is scheduled to be held from June 3<sup>rd</sup> to 5<sup>th</sup>.