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This newsletter describes the research activities and output of the Research Division at Sveriges Riksbank in 2025.

### Staff at the Research Division during 2025

*Niklas Amberg*, senior economist  
*Katja Arta*, research assistant  
*Per Åsberg-Sommar*, senior advisor  
*Christoph Bertsch*, senior economist  
*Roberto Billi*, advisor  
*Davide Vincenzo Bucci*, economist  
*Daria Finocchiaro*, advisor  
*Anna Grodecka-Messi*, senior economist  
*Björn Hagströmer*, advisor  
*Iida Häkkinen Skans*, senior advisor  
*Thomas Jansson*, advisor  
*Joachim Jungherr*, senior economist  
*Kristian Jönsson*, senior advisor  
*Mathias Klein*, senior economist  
*Jesper Lindé*, advisor (on leave)  
*Conny Olovsson*, advisor  
*Ettore Savoia*, economist  
*Valentin Schubert*, economist  
*Emanuel Skeppås*, research assistant  
*Ulf Söderström*, head of research  
*Lena Sundvall*, assistant  
*Andreas Westermark*, advisor  
*Xin Zhang*, advisor (on leave)

### Reflections by the Head of Research

2025 started at full speed at the Research Division, with the publication in January of an external review of the division. The review team, Elena Carletti (Bocconi University), Frank Smets (BIS) and Silvana Tenreyro (London School of Economics), had spent a few days at the Riksbank in October 2024 to interview staff at the division as well as managers in the Riksbank policy departments and the Executive Board. The review, which is published on the Riksbank website, concluded that the division has a marked focus on research and a strong publication record, and also an active presence in both academic and central bank research community, but that the interaction with policy departments could be improved and the incentives for researchers to engage in policy work could be strengthened. The review team also came with a number of recommendations that will help us improve further in our aim to conduct top-notch research and to contribute to the policy analysis at the Riksbank. We are very grateful to Elena, Frank and Silvana for their hard work on the review.

One concrete outcome of the review was the development of a Riksbank research agenda to better disseminate information about areas where research is being conducted and to facilitate collaboration between the Research Division and the policy departments. This was developed during the fall and will soon be published on the Riksbank website. This issue of the Research News also includes an interview with Riksbank Governor Erik Thedéen on how the research agenda can strengthen the connection between research and policy.

During 2025 we organized several external events, including a research conference on the interactions between monetary and fiscal policy and our annual PhD workshop. In addition, we organized a workshop together with the Sustainable Finance Lab aimed at connecting researchers, policymakers and private sector analysts to discuss the risks related to climate risk and commercial real estate. This was a new experience for many of us, and we hope it will improve collaboration across institutions and disciplines on this important topic.

Finally, we continued our track record of publishing papers in top economics and finance journals, with papers accepted in the *Journal of Monetary Economics* and the *Journal of Business and Economic Statistics*, among others.

We are now looking forward to another busy and productive year, and I wish you all a good read of our Research News!

*Ulf Söderström*

# Interview with Governor Erik Thedéen

## ***What do you see as the main purpose behind launching the Riksbank's new research agenda?***

The purpose of the agenda is to ensure that the Riksbank has a strong analytical foundation for making sound policy decisions. Research provides the tools and insights we need to understand complex developments in the economy and financial system. It helps us stay ahead of emerging issues and actively contribute to international policy discussions. By introducing a clear agenda, we aim to make research a visible and integral part of our work, highlighting its importance for shaping policy and maintaining credibility in a rapidly changing world. The agenda also links the research more directly to important policy areas.

## ***How do you hope this agenda will strengthen the connection between research and policy, and shape the Riksbank's decisions going forward?***

The agenda is an important step toward making research more visible and accessible across the bank. We want to encourage closer collaboration so that research insights can inform decisions in real time. This works best when policy teams actively engage with research – and vice versa – and see it as a natural part of their work. When that happens, decisions will be well-informed and proactive, ensuring we are prepared for challenges rather than caught off guard. Hopefully the research team will also be inspired by learning from more practical policy related work. However, this might not be easy. To improve the cooperation, we will need efforts from both researchers as well as people at the bank that are engaged in policy making; it basically needs two to tango.

## ***Why is it important for the Riksbank to remain at the forefront of research in today's rapidly evolving economic landscape?***

Staying at the forefront of research is essential for credibility and effectiveness. Economic and financial systems are evolving quickly, driven by technology, demographic shifts, and global interconnectedness. Being a leader in research allows the Riksbank to anticipate risks and opportunities rather than simply respond after the fact. It also positions us to contribute meaningfully to global policy debates and ensures that Swedish perspectives are part of shaping international standards and best practices. In short, strong research capability is a cornerstone of a modern, resilient central bank.

## Changes in the research staff

During 2025, **Joachim Jungherr** joined us as a senior economist, **Björn Hagströmer** joined us as an advisor for a year (on leave from the Stockholm Business School), and **Davide Bucci** joined as an economist for a year. **Anna Grodecka-Messi** returned to the Financial Stability Department, **Xin Zhang** has been on leave most of the year, and **Anna Rogantini Picco** left us for the ECB. In addition, we had three secondments from the policy departments, **Kristian Jönsson** from the Financial Stability Department, **Iida Häkkinen Skans** from the Monetary Policy Department and **Per Åberg-Sommar** from the Markets Department, and we got two new visiting scholars, **Adrien d'Avernas** from the Stockholm School of Economics and **Amalia Repele** from the Institute for International Economics Studies at Stockholm University.

## Research projects pursued in 2025

### **CREDIT AND BANKING**

#### **Central Bank Liquidity Support, Bank Lending, and the End of Currency Competition**

*Anna Grodecka-Messi and Xin Zhang*

Private money creation lies at the heart of currency competition due to seigniorage rents that are an important contributor to banks' franchise values. However, it undermines the role of central bank in money provision and has been historically a contentious issue. As shifting from private to public money may come at a cost of bank disintermediation and affect economic growth, such a swap should be well-planned to minimize its costs. In this paper, we study the transition from private to public money in a historical context. The 1897 banking law in Sweden granted the banknote monopoly to the Swedish central bank. To facilitate the shift, the central bank provided preferential liquidity support to formerly note-issuing private banks. Drawing on newly digitized monthly archival data, we show that this liquidity provision played a critical role in shaping private banks' performances during the transition. Once the

support started being withdrawn, affected banks experienced a 23% drop in profitability. No signs of bank disintermediation are found.

(Continuing project)

## Banking Without Branches

*Niklas Amberg and Bo Becker*

Banks' branch networks are contracting rapidly in many countries. We study the effects of these large-scale branch closures on firms' access to credit and real economic activity. Our empirical setting is Sweden, where two thirds of all bank branches have closed in the past two decades. Using a shift-share instrument and micro data comprising the near-universe of Swedish firms and bank branches, we document that corporate lending declines substantially following branch closures, mainly via reduced lending to small, collateral-poor, and less productive firms. The reduced credit supply in turn causes contractions in the real activity of incumbent firms, as well as lower entry of new firms. The disappearance of bank branches thus has far-reaching implications for the economy.

(Continuing project)

## Have We Got News For You: Firm-Level Evidence on the Optimal Choice of Expected Capacity Utilization

*Niklas Amberg, Richard Friborg and Chad Syverson*

Using quarterly micro data on capacity utilization among Swedish manufacturing firms, we show that idiosyncratic factors are more important than aggregate influences in explaining variation in capacity utilization across firms and over time. Idiosyncratic does not mean unpredictable, however. A newsvendor model of optimal capacity predicts that higher demand uncertainty lowers expected capacity utilization, especially for high-markup firms. We find support for these predictions in data containing firm-specific, forward-looking measures of uncertainty: firms facing high uncertainty on average have seven percentage points lower capacity utilization than firms facing low uncertainty; among high-markup firms, the difference is over 10 percentage points.

(Continuing project)

## Supply-Chain Finance: An Empirical Evaluation of Supplier Outcomes

*Niklas Amberg, Tor Jacobson and Yingjie Qi*

Buyers and suppliers have diverging interests about trade-credit maturities: buyers desire long payment periods as a source of cheap funding, while suppliers prefer swift payments to avoid locking up scarce liquidity in idle assets. A fast-growing financial product innovation – supply-chain finance (SCF) – offers to resolve these diverging interests, but its net effect on suppliers is *a priori* unclear. We study the effects of SCF programs on suppliers using unique invoice-level data from a large Swedish bank. We find that SCF programs relax suppliers' liquidity constraints and thereby enable them to grow their sales, employment, and investments.

(Continuing project)

## Dynamic Credit Constraints: Theory and Evidence from Credit Lines

*Niklas Amberg, Tor Jacobson, Vincenzo Quadrini and Anna Rogantini Picco*

We use a comprehensive Swedish credit register to document that firms across the size distribution have access to substantial borrowing capacity via credit lines. However, most firms choose not to use all available credit. The low utilization of credit is consistent with a theoretical model in which utilization rates decrease with both real and financial uncertainty. We estimate the model structurally at the firm level and find that *financial* uncertainty driven by shocks to future funding needs is much more important than *real* uncertainty driven by cash flow shocks for explaining the low utilization of credit.

(Continuing project)

## Severe Weather and Collateral Practices

*Cristina Cella and Valentin Schubert*

Physical climate risks significantly influence banks' collateral practices. Drawing on comprehensive loan-level data from Sweden, we find that adverse weather events increase both the likelihood and the amount of collateral required for

new loans. For existing loans, banks are less inclined to reappraise collateral following weather shocks; when reappraisals occur, collateral values are typically revised downward. Our analysis also highlights the mitigating role of geographic proximity between borrowers and lenders. Overall, our results indicate that while banks limit potential losses from physical climate risks by tightening collateral requirements, this practice may eventually exacerbate firms' financial constraints.

(Continuing project)

### Is Flood Risk Priced in Bank Returns?

*Valentin Schubert*

I develop a novel measure of bank-level flood risk exposure combining expected flood risk estimates and mortgage lending data. In the cross-section of stocks, using the implied cost of capital as a forward-looking measure of expected returns, I find a positive significant premium of 30 bps in the second half of the sample. However, when using realized returns, I find that banks with high flood risk exposure underperform by around 15 bps. The discrepancy between expected and realized returns is driven by a combination of unanticipated climate regulation and attention shocks rather than realized disasters.

(Continuing project)

### Recovery Lending after Natural Disasters

*Valentin Schubert*

This paper examines how banks' incentives to internalize the spillovers from natural disasters affect their credit lending. Using data on small business loans and damage estimates from natural disasters, I find that banks with a large lending share in a local market provide more credit to small firms during the recovery periods than other banks. This finding implies that banks recognize the benefits of alleviating liquidity constraints for distressed borrowers, which lowers their default risk and preserves future business opportunities. Furthermore, I document that disaster-affected local areas with high-lending-share banks experience a smaller employment contraction than other disaster-affected areas, highlighting the importance of bank lending in disaster recovery and resilience.

(Continuing project)

### How Local Market Share Drives Counter-Cyclical Bank Performance

*Valentin Schubert and Martin Waibel*

Bank profits are closely tied to a bank's local mortgage market share. We find that this link shifts over time and across business cycle. During crises, when house prices decline, and delinquencies rise, banks with higher market shares report higher profitability compared to their peers. Conversely, during expansion periods, characterized by rising house prices and lower delinquencies, this relationship is reversed. We provide evidence that a key driver is the incentive for high-market-share banks to internalize spillovers from fire sales, which have significant real effects: high-market-share banks originate higher loan volumes at more favourable terms and indirectly affect the performance of banks active in the same region. Further evidence confirms that this channel is different from alternative explanations based on market power, relationship effects, diversification, or informational benefits.

(Continuing project)

## FINANCIAL THEORY

### Bank Fragility and the Incentives to Manage Risk

*Toni Ahnert, Christoph Bertsch, Agnese Leonello and Robert Marquez*

Shocks to a bank's ability to raise liquidity at short notice can trigger depositor panics. Why don't banks take a more active role in managing these risks? We study contingent risk management (hedging) in a standard global-games model of a bank run. Banks fail to hedge precisely when the exposure to a shock is most severe, just when risk management would have the biggest impact. Higher bank capital and broader deposit-insurance coverage crowd out hedging, yet encourage more banks to establish risk management desks in the first place. The model also yields testable implications for hedging incentives and policy design

(Continuing project)

## Stablecoins: Adoption and Fragility

*Christoph Bertsch*

This paper develops a payment-centric model of stablecoin runs with endogenous consumer adoption and seller acceptance, making the issuer's liability composition an equilibrium outcome. Stablecoin fragility arises endogenously from shifts in the composition of the holder base as adoption expands across transactional environments. Broader adoption attracts users who derive lower transactional value from holding stablecoins, increasing the aggregate propensity to run and generating a destabilizing run externality that individual adoption decisions do not internalize. In addition, sellers' multi-homing choices create uninternalized network effects that erode the transaction value of bank deposits. By linking adoption dynamics to issuer fragility, the model provides theoretical foundations for regulatory concerns about excessive stablecoin adoption and delivers novel testable implications. The analysis further shows that seigniorage and congestion effects can mitigate run risk, whereas issuer moral hazard can amplify fragility, even in the presence of regulatory disclosure.

(Continuing project)

## Optimal Bank Leverage and Recapitalization in Crowded Markets

*Christoph Bertsch and Mike Mariathasan*

We study optimal bank leverage and recapitalization in general equilibrium when the supply of specialized investment capital is imperfectly elastic. Assuming incomplete insurance against capital shortfalls and segmented financial markets, ex-ante leverage is inefficiently high, leading to excessive insolvencies during systemic capital shortfall events. Recapitalizations by equity issuance are individually and socially optimal. Additional frictions can turn asset sales individually but not necessarily socially optimal. Our results hold for different bankruptcy protocols and we offer testable predictions for banks' capital structure management. Our model provides a rationale for macroprudential capital regulation that does not require moral hazard or informational asymmetries.

(Continuing project)

## FISCAL POLICY

### Monetary Policy with Partial Fiscal Backing

*Roberto Billi and Frank Smets*

The surge of inflation and government debt in recent years has renewed interest in the interaction between monetary and fiscal policy. Using a New Keynesian framework, this paper examines the welfare implications of partially unfunded government debt, defined as debt not fully backed by future budget surpluses. We find that such debt can improve social welfare, particularly in the presence of demand and technology shocks. Under a Taylor rule, the optimal share of shock absorption through unfunded debt is about one-third, and this share increases when nominal interest rates are constrained by the zero lower bound (ZLB). However, as monetary policy becomes more effective, for example, when a first-difference rule is used, the welfare benefits of unfunded debt diminish and may even become negative. Unfunded debt remains a useful tool for addressing price markup shocks, but may be undesirable in the case of wage markup shocks. These findings underscore the importance of flexible and coordinated policy frameworks in environments with high government debt and monetary constraints.

(New project)

## Inflation, Fiscal Rules and Cognitive Discounting

*Roberto Billi and Carl Walsh*

Using a stylized, calibrated New Keynesian model, we provide a welfare ranking of passive monetary and active fiscal (PM/AF) rules when contractionary aggregate-demand shocks occasionally drive the nominal interest rate to the ELB. When the shocks are calibrated to match the U.S. frequency of ELB episodes under a traditional active monetary, passive fiscal (AM/PF) regime, a PM/AF regime in which debt increases trigger *increases* in government purchases and/or *cuts* in taxes – what we call super-active fiscal policies – can so reduce the frequency of the ELB that they outperform an AM/PF regime *if expectations are formed rationally*. This last condition is crucial, as the welfare ranking of policy regimes depends critically on the way private sector agents form expectations. When agents display cognitive discounting, PM/AF regimes perform significantly worse. This result is robust to the government's long-run debt target and the presence of long-term debt. We also analyze fiscal rules calibrated to the U.S. response during the Great Recession and the COVID recession. Our paper is the first to analyze super-active fiscal policies and to evaluate the implications of cognitive discounting for the relative performance of AM/PF and PM/AF policy regimes.

(Continuing project)

## Inflation Targeting or Fiscal Activism?

*Roberto Billi*

I study the welfare performance of a policy regime of *fiscal activism* in which fiscal policy acts as an automatic stabilizer and controls inflation, while monetary policy pegs the nominal interest rate. When evaluated through the lens of a standard New Keynesian model, accounting for price and wage rigidities and for a zero lower bound (ZLB) on the nominal interest rate, fiscal activism can substantially outperform inflation targeting in the face of both demand shocks and technology shocks. Fiscal activism can also eliminate the occurrence of ZLB episodes.

(Continuing project)

## The Fiscal Channel of Monetary Policy

*Max Breitenlechner, Martin Geiger and Mathias Klein*

This paper empirically quantifies the importance of fiscal policy in shaping the monetary policy transmission mechanism and derives implications for monetary-fiscal interactions. First, we document that a contractionary monetary policy shock, besides lowering output and prices, leads to a pronounced adjustment in fiscal measures and a significant increase in the fiscal deficit. We then construct different structural counterfactuals, in which we shut down the endogenous responses of fiscal measures following a monetary policy shock. The conduct of fiscal policy significantly shapes the monetary transmission mechanism: the impact of a monetary policy shock on prices is more than halved by the endogenous adjustment in public transfers, whereas the tax system significantly reduces the effect on output. We show that changes in the fiscal framework can enhance monetary policy effectiveness.

(Continuing project)

## Fiscal Multipliers and Political Fragmentation

*Ricardo Duque Gabriel, Mathias Klein and Marvin Nöller*

This paper provides novel empirical evidence on how political fragmentation shapes the fiscal transmission mechanism. Using data from 16 OECD countries (1978--2019) and narrative accounts to identify exogenous fiscal interventions, we show that when political fragmentation is high, the fiscal GDP multiplier is significantly lower. The multiplier is above unity and relatively stable over time when fragmentation is low, but generally well below unity when fragmentation is high. We show that interventions are comparable across states and argue that a conditional confidence channel helps explain our findings: only in low-fragmentation periods do fiscal interventions boost household and business confidence, translating into stronger consumption and investment responses.

(Continuing project)

## HOUSEHOLD FINANCE AND SAVINGS

### Business Education and Portfolio Returns

*Adam Altmejd, Thomas Jansson and Yigitcan Karabulut*

Using university admission cutoffs that generate exogenous variation in college-major choices, we provide causal evidence that enrolling in a business or economics program leads individuals to invest more in the stock market and

earn higher risk-adjusted portfolio returns compared to similar peers. The documented return effects are not primarily driven by differences in risk-taking, innate ability, labor market outcomes, or scale effects, but by the financial knowledge and skills acquired through business education, which lead to better investment choices. This ultimately results in higher wealth accumulation over time, highlighting how early investments in financial knowledge can shape life-cycle wealth trajectories.

(Continuing project)

### Wealth Inequality: Opportunity for Me or for Others?

*Michael Haliassos, Thomas Jansson and Yigitcan Karabulut*

We provide evidence for a new propagation mechanism of wealth inequality and mobility. Using unique administrative data and a quasi-field experiment of exogenous assignment, we find that educated entrants, faced with greater local wealth inequality and salient cases of wealth mobility, take financial, real, and self-employment risks and reach higher positions in the wealth distribution, while the less educated do not. This is driven by poorer communities with more salient cases of wealth mobility, consistent with peer exposure rather than supply-side effects. We find no evidence for other channels, such as obtaining higher-paying more secure jobs, relocating, or reducing debt.

(Continuing project)

### Individual Investor Behavior and Sustainability

*Thomas Jansson and Vicke Norén*

This paper investigates whether a change in a company's sustainability performance affects the propensity to hold stocks of the company. Using an administrative panel of individual investors in Sweden allows us to control for a rich set of socioeconomic and portfolio characteristics. We find that the average investor is more likely to offload stocks of companies that have worsened sustainability performance, especially if environmental issues are managed poorly. Investor reaction is particularly strong among less wealthy investors with a lower level of education, as well as for large firms and popular stocks. The findings are robust to plausible alternative hypotheses.

(Continuing project)

## LABOR MARKETS

### Outsider Unemployment, Insider Wages, and the Disappearance of the Swedish Wage Curve

*Mikael Carlsson, Iida Häkkinen Skans and Oskar Nordström Skans*

We document how the wage responsiveness to regional unemployment fluctuations – the Wage Curve – has changed in Sweden during a 25-year period characterized by stable wage-setting institutions but substantial compositional changes resulting from refugee migration and active labor supply policies targeting marginal workers. We show that the relationship between regional unemployment rates and industry demand shocks has weakened, while the proportion of unemployed individuals who are immigrants has increased from 25 to 60 percent. As a consequence, a previously stable Wage Curve has completely disappeared, even though regional wages continue to respond to industry demand shocks. The results suggest that wages respond more strongly to unemployment fluctuations that arise from the demand side than the supply side, and that the unemployment rate has become a less informative indicator of resource utilization and inflationary pressure.

(New project)

### Skill Loss, Job Mismatch and Slow Recovery from Large Recessions

*Karl Walentin and Andreas Westermark*

In this paper we ask to what degree i) human capital dynamics induced by skill loss during unemployment and ii) decrease in match quality contributed to the slow recovery from large recessions, in particular the low post-2009 growth in GDP, employment, labor productivity and real wages following the Great Recession. Match quality has decreased because of the sulling effect of the recession that follows from reduced hiring activity and the resulting collapse of the job ladder. We find that the increase in unemployment during the initial phase of the Great Recession had long-lasting effects through the skill loss it induced, mainly in terms of increased unemployment and reduced GDP. We also find that persistence is important for the results. An equally sized shock that is less persistent has substantially smaller effects on GDP and employment.

(Continuing project)

## Trade, Specialization and Inflation

*Andreas Westermark*

The project studies how optimal inflation, from an optimal taxation perspective, depends on the level of trade and interacts with the degree of specialization. When specialization is fixed, an increase in trade leads to an increase in inflation. If the specialization choice is endogenous, increases in inflation leads to a decrease in the quantity of goods traded and, in turn, leads to less specialization. In equilibrium, the policymaker then reduces inflation in response to an increase in trade, since this increases the tax base and hence tax revenues. From a historical perspective, low inflation currencies tended to be associated with a high level of trade. An empirical analysis of the mechanism is also undertaken.

(Continuing project)

## MACROECONOMICS

### Central Bank Losses and Inflation: 350 Years of Evidence

*Anna Grodecka-Messi, Martin Kliem and Gernot J. Müller*

Are central bank losses inflationary? We address this question at two levels. First, we revisit the theory and show that central bank losses constrain the conduct of monetary policy and are indeed inflationary provided the central bank is (a) not automatically recapitalized by the government and (b) concerned about its net worth. Second, we collect 350 years of data on the world's oldest central bank, the Sveriges Riksbank. We construct a time series for its return on assets and a narrative measure of profitability shocks. We find that inflation increases strongly and persistently in response to exogenous declines in central bank profits.

(New project)

### Pricing Dynamics Under Financial Stress

*Edvin Ahlander, Mathias Klein and Evi Pappa*

Using 20 years of monthly data on Swedish industrial firms, we estimate short- and medium-run supply elasticities using demand shocks as instruments. The supply curve is upward sloping but flattens under financial stress. In normal times firms price similarly. During stress, constrained firms raise prices and sales, while unconstrained firms lower prices and expand market share. A structural model with working capital constraints, inventories, and strategic competition for customer loyalty replicates these patterns: when demand rises under stress, constrained firms face tighter liquidity, prompting price hikes and inventory and loyalty investment cuts. Unconstrained firms exploit this to increase market share by cutting prices, muting aggregate price responses.

(Continuing project)

### The Inflationary Effects of Global Supply Chain Shocks: Evidence from Swedish Microdata

*David Finck, Mathias Klein and Peter Tillmann*

We compile a unique dataset linking micro price data underlying the official Swedish producer price index with administrative firm level data and provide new evidence on the inflationary effects of global supply chain shocks. For identification, we interact exogenous shocks to global supply chains, obtained through a VAR model, with firm-specific import shares. Shocks to global supply chains lead to a significant and persistent increase in producer prices with a peak response after two years. Importantly, average responses mask significant heterogeneity across firms. Relatively larger firms, firms with a high labour share and a higher market share raise prices more strongly.

(Continuing project)

### A Traffic-Jam Theory of Growth

*Daria Finocchiaro and Philippe Weil*

We investigate the growth – finance nexus in an endogenous growth model with search frictions and congestion effects in credit and innovation markets. The interaction between these two frictions generates a non-monotonic, inverted-U relationship between financial development and growth. Financial development exerts two opposing forces: a direct positive finance channel by easing access to funding and an indirect negative congestion channel, as greater financial activity draws more firms into R&D competition for scarce innovation resources. The resulting hump-shaped pattern implies that excessive financial development can slow technological progress. The mechanism remains robust when allowing for firm heterogeneity that can generate composition effects. In a calibration close to the U.S. economy, the

impact of finance on growth is negative but quantitatively small, consistent with the observation that, over the last century, most advanced economies have experienced financial expansion alongside nearly constant GDP growth rates.

(Continuing project)

### Climate Policy in the Wide World

*John Hassler, Per Krusell and Conny Olovsson*

We construct a dynamic integrated assessment model of climate and the economy with very high geographic resolution:  $1^\circ \times 1^\circ$  latitude-longitude cells, with each cell assigned to a country. Migration is free within, but not allowed across, countries. The model parameterization uses a wealth of data, including the distribution of output, population, energy use, and estimates of the local damages from climate change. It implies huge geographic dispersion in damages from warming. We then conduct three kinds of policy experiments. In one, we note that a modest, uniform carbon tax limits global warming and damages around the world substantially. In a second experiment we let the poorest countries not tax carbon, while the rest compensate by setting higher taxes; the efficiency losses are large. In a final experiment we find that fast green technology growth alone is a poor substitute for carbon taxes, whether globally available or not.

(Continuing project)

### Intertemporal Insurance and Excess Sensitivity of Affluent Households

*Ettore Savoia*

Standard consumption theory predicts that marginal propensities to consume (MPCs) decline with cash-on-hand. Introducing heterogeneity in the curvature of the consumption function and its covariance with income, I show that this pattern reflects only local heterogeneity: it holds within, but not necessarily across households whose consumption functions differ in concavity due to preferences or income risk. I first decompose the MPC into curvature and cash effects and show that when greater concavity (stronger desire or necessity to save) is associated with lower income levels (weaker ability to save), the curvature effect can dominate, reversing the standard cross-sectional MPC–cash monotonicity. I then derive a novel coefficient of intertemporal insurance ( $I$ ): lower  $I$  implies higher MPCs independently of cash-on-hand, because weaker precautionary motives permit stronger consumption front-loading, making households more responsive to transitory shocks. Numerical and empirical applications to income-risk heterogeneity show that high-cash, low-risk households can exhibit higher MPCs out of transitory shocks, generating new implications for the role of household heterogeneity in aggregate dynamics.

(Continuing project)

## MONETARY POLICY AND THEORY

### Do Capacity Constraints Affect the Pass-Through of Monetary Policy to Prices?

*Edvin Ahlander, Niklas Amberg and Mathias Klein*

We use granular Swedish data at the product and firm level to study how capacity constraints affect the transmission of monetary policy shocks to prices. An expansionary monetary policy shock, identified using high-frequency interest rate changes around Riksbank policy announcements, leads to a significant increase in producer prices. However, this average response masks important differences between constrained and unconstrained firms. We show that constrained firms increase prices more significantly relative to unconstrained firms. Furthermore, we find that this difference in responses is crucially determined by strategic complementarities. We extend a standard sticky price model with capacity constraints and a Kimball price aggregator to rationalize the empirical findings and discuss implications for the steepness of the aggregate Phillips curve.

(New project)

### Prices and Monetary Policy: The Role of Financial Constraints

*Michael Bauer, Alexander Czarnota and Mathias Klein*

The response of prices and inflation to changes in monetary policy is a crucial channel of monetary transmission. In this paper, we study this channel using microdata on producer prices and firm fundamentals for Swedish firms. A contractionary monetary policy shock, identified using high-frequency interest rate changes around Riksbank policy announcements, leads to a significant and large decline in producer prices, with a response of product-level prices that matches the aggregate response of the Producer Price Index. Firm size arises as a source of heterogeneity in the price response: Small firms adjust prices significantly less in response to changes in monetary policy. Consistent with size being a proxy for financial constraints, we find that small firms have a higher share of debt to credit institutes and adjust

debt significantly more in response to changes in monetary policy. In contrast, their marginal cost is not less responsive. Our results, which can be rationalized with models of customer markets and financial frictions, provide new insights into the transmission of monetary policy to firm-level pricing decisions and inflation.

(Continuing project)

#### Four Facts about International Central Bank Communication

*Christoph Bertsch, Isaiah Hull, Robin L. Lumsdaine and Xin Zhang*

This paper introduces a novel database of text features extracted from the speeches of 53 central banks from 1996 to 2023 using state-of-the-art NLP methods. We establish four facts: (1) central banks with floating and pegged exchange rates communicate differently, and these differences are particularly pronounced in discussions about exchange rates and the dollar, (2) communication spillovers from the Federal Reserve are prominent in exchange rate and dollar-related topics for dollar peggers and in hawkish sentiment for others, (3) central banks engage in FX intervention guidance, and (4) more transparent institutions are less responsive to political pressure in their communication.

(Continuing project)

#### Liquidity, Capital Pledgeability and Inflation Redistribution

*Paola Boel, Julian Diaz and Daria Finocchiaro*

The post-pandemic inflation surge has revived debates on its costs, with no clear consensus on whether it disproportionately impacts poor households. We contribute to this debate by focusing on the redistribution between borrowers and lenders, investigating the redistributive effects of expected inflation induced by collateralized debt in a microfounded monetary model with heterogeneous discount factors. In equilibrium, this heterogeneity leads to borrowing, lending and a tractable distribution of money and capital holdings. In this environment, inflation acts as a progressive tax, affecting lenders' welfare more. It also reduces capital accumulation, limiting borrowing and redistributing wealth. At any given level of inflation, collateralization reduces wealth inequality, but when loan-to-value ratios are high, inflation can increase inequality.

(Continuing project)

#### Financial Flows and Exchange Rate Dynamics: Evidence from Sweden

*Katja Artta, Marianne Nessén, Ettore Savoia and Anders Vredin*

We examine how central bank foreign exchange (FX) operations affect nominal exchange rates by exploiting two large operations by Sveriges Riksbank: foreign currency purchases during 2021–2022 and domestic Swedish krona (SEK) purchases—that is, FX forward sales—during 2023–2024. Using daily data and local projections, we identify unanticipated operation shocks to the SEK against the euro (EUR) and the US dollar (USD). On average, we observe sign consistency—depreciation during FX purchases and appreciation during SEK purchases. Three main results emerge:(i) effects unfold gradually but fade quickly, becoming statistically insignificant after about ten trading days;(ii) they are regime dependent, with FX purchases inducing larger depreciations and domestic currency purchase yielding smaller, delayed appreciations; and (iii) FX purchases generate long-run (11–60 days) currency-specific effects, with a stronger SEK depreciation against the EUR relative to the USD. However, results are more uniform across currencies in the short run (1–10 days) and throughout the domestic currency purchase period.

(New project)

#### HANK Comes of Age: Monetary Policy with Heterogeneous Overlapping Generations

*Bence Bardóczy, Ettore Savoia and Mateo Velásquez-Giraldo*

We study the transmission and distributional effects of monetary policy in an environment where consumption-saving choices reflect both precautionary motives and life-cycle considerations. Age emerges as a key state variable that links multiple dimensions of heterogeneity: young households tend to have low wealth, high marginal propensities to consume, and strongly procyclical hours. In our quantitative model that matches these facts, monetary policy operates primarily by stimulating investment, boosting labor demand for young workers who consume most of their additional income. Wealthy retirees are affected by the repricing of financial assets and persistently low future returns. However, the effect on the consumption and welfare of most retirees is small because they hold little financial wealth.

(New project)

## The Housing Channels of Monetary Policy

*Daria Finocchiaro, Ettore Savoia, Karl Walentin and Andreas Westermark*

Monetary policy influences household portfolios and redistributes wealth through multiple channels. We develop a two-sector New Keynesian heterogeneous agent model, in which housing serves a dual role as both a consumption and investment good and can be used as collateral. Our framework captures key transmission mechanisms—collateral, housing wealth, cash-flow, and housing supply channels—highlighting housing's crucial role in shaping the response of consumption and residential investment to monetary shocks. We find that monetary policy-induced house price changes account for over half of the transmission to consumption and can induce an asymmetric response to monetary policy shocks. In line with empirical evidence, our model implies that the consumption response to monetary policy shocks has a steep gradient in households' net interest rate exposure.

(Continuing project)

## Corporate Debt Maturity Matters for Monetary Policy

*Joachim Jung herr, Matthias Meier, Timo Reinelt and Immo Schott*

We provide novel empirical evidence that firms' investment is more responsive to monetary policy when a higher fraction of their debt matures. In a heterogeneous firm New Keynesian model with financial frictions and endogenous debt maturity, two channels explain this finding: (1.) Firms with more maturing debt have larger roll-over needs and are therefore more exposed to fluctuations in the real interest rate (*roll-over risk*). (2.) These firms also have higher default risk and therefore react more strongly to changes in the real burden of outstanding nominal debt (*debt overhang*). Unconventional monetary policy, which operates through long-term interest rates, has larger effects on debt maturity but smaller effects on output and inflation than conventional monetary policy.

(Continuing project)

## The Inflationary Effects of Quantitative Easing

*Mathias Klein and Xin Zhang*

We provide new evidence on the inflationary effects of Quantitative Easing (QE) using Swedish administrative data at the bank, firm, and product level. For identification, we rely on bank-firm lending relationships and the heterogeneous participation rates of banks in the government bond purchase program by the Swedish central bank. Our results show that the bond purchase program led to a significant and persistent increase in producer prices. Importantly, we find that the degree of financial frictions considerably influences firms' price response: low leverage firms do not change their prices, whereas high leverage firms raise their prices significantly. This divergent pricing behaviour can be rationalized by a significant increase in long-term borrowing and interest rate expenses among high leverage firms. The difference in price responses across high and low leverage firms is less pronounced for exogenous changes in the repo rate implying that the transmission mechanism of QE differs from the one of conventional interest rate policy.

(Continuing project)

## Refereed publications accepted in 2025

Anna Grodecka-Messi, Jieying Li and Xin Zhang, [Riding the Housing Wave: Home Equity Withdrawal and Consumer Debt Composition](#), Journal of Money, Credit and Banking

Ferre De Graeve and Andreas Westermark, [Long-Lag VARs](#), Journal of Monetary Economics

Enzo D'Innocenzo, André Lucas, Bernd Schwaab and Xin Zhang, Joint Extreme Value-at-Risk and Expected Shortfall Dynamics with a Single Integrated Tail Shape Parameter, Journal of Business and Economic Statistics

Sascha Keweloh, Mathias Klein and Jan Prüser, [Estimating Fiscal Multipliers by Combining Statistical Identification with Potentially Endogenous Proxies](#), The Econometrics Journal

Conny Olovsson and David Vestin, Greenflation, European Economic Review

Conny Olovsson, Karl Walentin and Andreas Westermark, [Dynamic Macroeconomic Implications of Migration](#), Journal of Monetary Economics

## Working papers

No. 446, Enzo D'Innocenzo, André Lucas, Bernd Schwaab and Xin Zhang, [Joint Extreme Value-at-Risk and Expected Shortfall Dynamics with a Single Integrated Tail Shape Parameter](#)

No. 447, Mathias Klein and Xin Zhang, [The Inflationary Effects of Quantitative Easing](#)

No. 448, Jieying Li and Samantha Myers, [Shadow Banks or Just not Banks? Growth of the Swedish Non-Bank Sector](#)

No. 449, Gustav Ingman, [Sveriges Riksbank's Foreign Exchange Reserve, 1823–2023](#)

No. 450, Marcin Kolasa, Stefan Laséen and Jesper Lindé, [Unconventional Monetary Policies in Small Open Economies](#)

No. 451, Ferre De Graeve and Andreas Westermark, [Long-Lag VARs](#)

No. 452, Anna Grodecka-Messi, Jieying Li and Xin Zhang, [Riding the Housing Wave: Home Equity Withdrawal and Consumer Debt Composition](#)

No. 453, Sofia Anyfantaki, Marianna Blix Grimaldi, Carlos Madeira, Simona Malovana and Georgios Papadopoulos, [Decoding Climate-Related Risks in Sovereign Bond Pricing: A Global Perspective](#)

No. 454, Anna Grodecka-Messi and Xin Zhang, [Central Bank Liquidity Support, Bank Lending, and the End of Currency Competition](#)

No. 455, Leonardo Melosi, Hiroshi Morita, Anna Rogantini Picco and Francesco Zanetti, [The Signaling Effects of Fiscal Announcements](#)

No. 456, Katja Artta, Marianne Nessén, Ettore Savoia and Anders Vredin, [Financial Flows and Exchange Rate Dynamics: Evidence from Sweden](#)

No. 457, Anna Grodecka-Messi, Martin Kliem and Gernot J. Müller, [Central Bank Losses and Inflation: 350 Years of Evidence](#)

No. 458, Anders Kärnä and Karin Östling Svensson, [Predicting Credit Deterioration: Internal Default Models versus Lending Rates](#)

## Non-refereed publications

Iida Häkkinen Skans and Andreas Westermark, [Wage-setting and development of the labour cost share in Sweden](#) (In Swedish), Sveriges Riksbank Staff Memo May 2025

Mathias Klein, Emanuel Skeppås and Ulf Söderström, [How is Swedish inflation affected by geopolitical risk?](#), Sveriges Riksbank Economic Commentary No. 3 2025

Roger Svensson and Andreas Westermark, [When Small Change was not a Big Problem](#), Proceedings of the XVI International Numismatic Congress, Vol. III: Medieval Numismatics

## Other research activities

### Conferences and Events

On 6-7 October, the Riksbank organized a conference on [New Challenges for Monetary-Fiscal Policy Interactions](#). The conference brought together prominent academics and central bank economists, to discuss how to design and coordinate monetary and fiscal policies in today's global economy. It included welcome remarks by Governor Erik Thedéen and a concluding policy panel with Roel Beetsma (University of Amsterdam), Eric M. Leeper (University of Virginia) and Deputy Governor Anna Seim.

The Riksbank hosted the [First WIRE \(Women in Research in the ESCB\) annual workshop](#) on 5 June, which included welcome remarks by Deputy Governor Anna Seim. [The Sustainable Finance Lab](#) and Riksbank organized a workshop on

[Climate Risk and Commercial Real Estate](#) on 19 November, which included welcome remarks by First Deputy Governor Aino Bunge.

Together with the [Center for Monetary Policy and Financial Stability](#) (CeMoF) at Stockholm University, the Research Division organized the [Fourth Workshop for PhD students in Money and Finance](#) on 29 April, which included a keynote speech by Ricardo Reis (London School of Economics and Political Science). The Research Division also organized the session “Market Competition, Financial Frictions, and Firm Pricing” at the annual meeting of the [Central Bank Research Association](#) (CEBRA) at Harvard Business School in Boston on 7-8 August.

### **Workshop in Financial Intermediation and Monetary Economics**

Together with Adrien d’Avernas (Swedish House of Finance, Stockholm School of Economics) and Roine Vestman (Stockholm University and CeMoF), the Research Division is organizing a workshop in Financial Intermediation and Monetary Economics. The workshop meets every two months and gathers faculty and PhD students to discuss recent research.

### **Internship Program**

The Research Division organizes an [internship program for PhD students](#) in Economics, Finance or Statistics enrolled at Swedish or foreign universities. The selected interns spend a period of two to three months at the Riksbank – either at the Research Division or at a policy department – during the periods April to June or August to December, and the application deadline is typically in January each year. This year, the Riksbank welcomed five PhD student interns: Chloé Castagnet (Stockholm University), Antonio Giribaldi (Universitat Pompeu Fabra), Suna Akis Gürümser (Uppsala University), Dario Luciani (Stockholm Business School, Stockholm University) and Carolin Spallek (KU Leuven).

### **Research Seminars**

The Research Division organizes weekly research seminars, mainly with international speakers. The seminars usually take place on Tuesdays, and attendance is open to Riksbank employees as well as to academics. The Riksbank webpage has a [complete list of both upcoming and past seminars](#).

### **Teaching and Advising**

Several staff members taught macroeconomics and monetary economics to PhD students and master students from Stockholm University and Uppsala University. Conny Olovsson taught the course “The Climate and the Economy” at Stockholm University, together with John Hassler (IIES, Stockholm University).

### **Miscellanea**

Thomas Jansson participated in the [Household Finance and Consumption Network](#) at the ESCB, Andreas Westermark participated in the [Central Bank Network on Historical Monetary and Financial Statistics](#) at the BIS, while Mathias Klein participated in the ESCB [Challenges for Monetary Policy Transmission in a Changing World Research Network](#). Joachim Jungberr was on the organizing committee of the [Fourth Workshop on Firm Heterogeneity and Macroeconomics](#) hosted by the University of Bonn. Christoph Bertsch and Ettore Savoia were on the scientific committee of the [Conference on Nontraditional Data, Machine Learning, and Natural Language Processing in Macroeconomics](#) hosted by the Bank of Canada.

## **Upcoming events in 2026**

During 2026 we are planning for the [Fifth PhD workshop in Money and Finance](#), jointly with CeMoF, and for the [NBER International Seminar on Macroeconomics](#). The Research Division will teach again a second-year PhD course on monetary economics, in cooperation with faculty from Stockholm University. The purpose of the course is to introduce students to modern New Keynesian models for monetary policy and business-cycle analysis.

*Correspondence to the editor:*

Roberto Billi  
Research Division  
Sveriges Riksbank  
SE-103 37 Stockholm  
Sweden  
Email: [roberto.billi@riksbank.se](mailto:roberto.billi@riksbank.se)

This newsletter, as well as other information about the Research Division at Sveriges Riksbank, is available online at <https://www.riksbank.se/en-gb/about-the-riksbank/the-tasks-of-the-riksbank/research/>