

Research Statement

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April 2020

What are good policies to reduce economic inequality and improve risk sharing among households? How does income and wealth inequality interact with macroeconomic performance and stabilisation policies? How do heterogeneous households form expectations about the future, and what does this imply for macroeconomic dynamics, asset prices and the effects of policies? These are three key questions that underlie my research. They share a common motivation: to understand the structure and sources of economic inequality and its interaction with macroeconomic phenomena, in order to find policies that improve the welfare of households.

My work often starts by documenting a puzzling new fact using micro-data sets, such as the over- and under-reaction of professional forecasters to news in *Forecaster (mis-) behavior* [13] or the countercyclical degree of consumption smoothing in the US in *Consumption Insurance* [9]. I then propose a new theory to explain the puzzle, and discuss its welfare and policy implications. An alternative approach I often use is to generalize a standard model along a particular dimension, such as endogenous group formation in *Village risk sharing* [15] or choice of information about the state of the economy in *Information Choice* [12]. I then derive observable implications that distinguish the more general theory from previous ones and compare them to data, and study how the more general model changes welfare implications and the effects of policy.

I use simple models to build intuition and identify economic mechanisms at work, but study richer, quantitative environments to quantify their importance, and to evaluate policies. I thus use partial equilibrium analysis to highlight specific mechanisms, such as the response of endogenous borrowing constraints to changes in risk in *Imbalances* [5]. At the same time I emphasize the general equilibrium effects where they are crucial to the phenomenon of interest (such as the real exchange rate movements that determine

the hedging properties of foreign assets in *Home bias* [3]) or overturn partial equilibrium intuition (such as through the labor supply response in the *New Keynesian Transmission Mechanism* [1], or the endogenous macroeconomic volatility that determines incentives for *Information choice* [12]).

My modelling of individual behavior is guided by my interpretation of the macro- and micro-evidence that economic decisions are typically driven by rational optimisation, but that departures from rationality and full information are crucial to understand some economic phenomena. For example, *Information Choice* [12] shows that many households may simply not have strong incentives to make the accurate predictions about the future implied by the rational expectations equilibrium benchmark. And *Forecaster (mis-) behavior* [13] finds that behavioral biases are a prime feature of expectation formation.

In the following, I provide more detail about published work and projects in progress, under three broad headings that roughly correspond to the three key questions that underlie my research.

1 Risk sharing in western economies and agricultural villages

My research on risk sharing is motivated by the observation that, in a variety of contexts, economic agents share the risks they are exposed to imperfectly, with often important negative welfare consequences. To understand the reasons behind this, we need to answer the question: What is a good model of consumption risk sharing? This question is particularly important because different frictions to risk sharing imply different policy conclusions. For example, public insurance policies or redistribution may be less powerful, or even counterproductive, in environments where risk sharing is constrained by limited commitment to contracts (where they make the off-equilibrium punishment of autarky more attractive, as in Attanasio and Ríos-Rull (2000) or Krueger and Perri (2011)).

“*Crowding out or crowding in?*” [7], published in the *Journal of Economic Theory*, points out that this simple policy conclusion, that public insurance is less beneficial in limited-commitment economies, does not always generalise to economies with capital, or realistic consequences of defaulting on contracts. This is because redistribution not only makes incomes less volatile, but also reduces high incomes. The first effect makes the outside option of financial autarky more attractive for everybody (and thus constrains

insurance more), but the second effect makes autarky less attractive for the income-rich (and thus relaxes their participation constraints, thereby improving insurance). This is important because, with a realistic degree of insurance and persistent incomes, participation constraints from limited commitment tend to only bind at high incomes (where transfers are made and outside options are attractive). The paper shows that in such environments there is often “crowding in” of private insurance through public insurance.

Motivated by the quest for a good model of consumption risk sharing, “*The wrong shape of insurance?*” [6], published in the *American Economic Journal: Macroeconomics*, shows that two standard models, self-insurance (as in Bewley (1986), Huggett (1993), or Aiyagari (1994)) and limited commitment to insurance contracts, have strongly contrasting joint distributions of income, consumption, and wealth even when they are specified to replicate the same measures of average insurance. In particular, limited commitment constraints in insurance contracts (which bind after positive income shocks, when transfers have to be made and outside options are attractive) imply strong non-linearities in both the conditional mean and variance of the joint income and consumption distribution that are not present in US micro-data. Self-insurance models, in contrast, have less counterfactual implications, particularly at high values of risk aversion. Models of self-insurance thus seem to better explain the key stylised properties of consumption-income comovement in US micro data.

Because models of self-insurance assume market incompleteness exogenously, however, they do not tell us anything about the underlying frictions that prevent better, state-contingent risk-sharing contracts from emerging. This is an important drawback because policies could, potentially, change or reduce the effect of frictions, and thus increase the degree of market incompleteness. “*Consumption risk sharing with private information and limited enforcement*” [4], with Marek Kapička and Paul Klein, published in the *Review of Economic Dynamics*, studies a richer model that combines two frictions to risk sharing, limited information about individual incomes *and* limited enforcement, in an environment with persistent incomes. In contrast to simple limited commitment models, the richer model has observable implications that are similar to those of self-insurance and therefore broadly consistent with empirical observations. Some policy interventions, however, have noticeably different effects in this environment compared to self-insurance. In particular, social insurance financed by income taxes strongly crowds out private insurance. This is because social insurance makes outside options more attractive, and truth-telling constraints make public and private insurance perfect substitutes whenever

income is unobserved both by the government and by insurance providers. Other policies, in contrast, such as an increase in consumption taxes, have effects more similar to those under self-insurance.

Ongoing work in this area further investigates the implications of limited-commitment frictions for risk sharing.

“*Risk sharing in village economies revisited*” [15], with Tessa Bold, conditionally accepted for publication in the *Journal of the European Economic Association*, is the first quantitative analysis of limited-commitment risk sharing where the option to deviate as coalitions makes the maximum size of insurance groups endogenous, as in Genicot and Ray (2003). When estimated for agricultural communities in rural India, the model predicts maximum group sizes that are substantially smaller than the village and captures key moments of consumption-income comovement substantially better than previous models. This is because strong insurance in small groups captures the *degree* of insurance as well as partial insurance at the village level, but eliminates the counterfactual *asymmetry* implied by the limited commitment friction (whereby consumption reacts more to positive income shocks that tighten participation constraints than to negative shocks that make them slack). This evidence should make us consider replacing the “village” in the analysis of risk sharing in small agricultural communities by smaller, endogenous insurance groups. This is important for policy makers, whose interventions to reduce poverty, for example, may affect the allocation along an additional dimension when group sizes are endogenous.

“*Consumption insurance over the business cycle*” ([9]), under submission, shows how consumption of individual US households reacts more to income changes in times when aggregate activity is above trend than in bad times of below-average activity. This countercyclical nature of consumption smoothing in US micro data contrasts with predictions from standard incomplete markets models with idiosyncratic and aggregate risk, which predict a lower sensitivity of consumption to individual income changes during times of high output. This motivates us to consider an alternative environment where financial frictions are endogenous and arise from lack of contract enforcement, whose business cycle properties have so far not been studied. The paper shows analytically that this model is consistent with a wide variety of cyclical patterns of insurance. In a quantitative application with unemployment risk, the response of individual consumption to job losses differs strongly between times of high and low output. We identify the conditions under which it is procyclical, as in the data. These results are important for policymakers concerned

about the cost of business cycles, which depend on the cyclicity of consumption smoothing. They should also be valuable for those who want to discriminate among mechanisms of risk-sharing, for whom the paper quantifies an additional moment both in US data and in two standard models.

A project I would like to focus on in the near future is “*Break-up of unions*” ([14], with Tessa Bold and Sebastian Koehne). We relax the standard assumption that risk-sharing groups are constant over time, to analyse equilibrium group formation and break-up in small risk-sharing schemes that suffer from limited enforcement. This could explain additional facts of village risk sharing, but also, potentially, the dynamics of international risk sharing, including why countries may leave cooperative groups (“Brexit”) or be forced out (“Grexit”).

2 The interaction between aggregate fluctuations and inequality

My second area of interest is the interaction between household heterogeneity or imperfect risk sharing on the one hand, and the dynamic equilibrium of the macroeconomy on the other, as already in [9] mentioned above. I find this a particularly exciting area also for future research, with many interesting questions, partly linked to the Great Recession: How does the transmission of monetary and fiscal policy differ in a world of higher and more heterogeneous household indebtedness? How do cross-country differences in the structure of housing markets and in the distribution of mortgage debt matter for international business cycles, and, more particularly, economic policy in a monetary union? Importantly, the recent literature on Heterogeneous Agents New Keynesian (HANK) models gives us some new tools to find answers to these questions. I plan to concentrate more of my research effort in this area in the future, together with my co-authors on related topics Per Krusell and Erik Öberg.

“*The New Keynesian transmission mechanism*” ([1], with Niels-Jakob Harbo Hansen, Per Krusell, and Erik Öberg), published in the *Review of Economic Studies*, studies a HANK model that is tractable because of two assumptions: first, we assume a tight borrowing limit and a zero supply of government bonds, which makes the distribution of bond holdings degenerate. Second, in order to capture the extreme concentration of wealth in the US and other countries, we assume that firm profits are not redistributed

to all workers but to a small group of capitalists (who decide not to work). When prices are sticky and wages flexible, as in the textbook representative-agent version of the New Keynesian model, monetary policy affects the distribution of consumption in our model, but has no effect on output. This is because workers consume their income in equilibrium. With the preferences that are standard in macroeconomics (and capture key long-run facts of balanced growth, King et al. (1988)), they then choose not to change their hours worked in response to wage movements. This highlights an implausible transmission of monetary policy shocks in the textbook model: there profits are countercyclical and redistributed to the representative worker, which raises labor supply in booms through a negative wealth effect. Importantly, while the absence of asset trade in the equilibrium of our model greatly simplifies the analysis, richer HANK models that capture more fully the observed heterogeneity in asset holdings but maintain the assumption of flexible wages and active labor supply also predict output to be (essentially) unaffected by monetary policy shocks when profits are not redistributed to workers (Kaplan et al., 2018). When wages are rigid, in contrast, and workers are assumed to supply the hours demanded by firms in the labor market, our model exhibits plausible responses of output and hours worked to monetary policy shocks. Our analysis thus draws attention to the source of nominal rigidity as an important dimension in the analysis of monetary policy. In particular, we suggest to use our simple HANK model with wage rigidities for textbooks and simple policy analysis.

“*Domestic or global imbalances?*” [5], my job-market paper published in the *Journal of Monetary Economics*, proposes an additional explanation for the fall in the US net foreign asset position observed before the Great Recession. It argues that endogenous financial deepening may have reduced aggregate foreign assets in response to a rise in individual income risk, contrary to the precautionary-savings intuition. This is because, when default leads to exclusion from financial markets, the implied loss of consumption-smoothing opportunities is more costly when income volatility is high. A rise in income risk thus makes default less attractive, allowing creditors to relax borrowing limits.

“*The home bias of the poor*” [3] published in the *European Economic Review*, is another open-economy analysis of the interaction between macroeconomic and microeconomic phenomena (in this case, respectively, terms of trade fluctuations and heterogeneous portfolio shares). The paper first documents that not only portfolio shares of risky assets, but also those of foreign assets increase strongly along the distribution of financial wealth in the US (according to the Survey of Consumer Finances). The paper then shows how a simple two-country general equilibrium economy (with exogenously incomplete markets and spe-

cialised production of country-specific goods) can explain this fact because equilibrium movements of the terms of trade make home bonds a good hedge against fluctuations in non-financial income. This suggests that welfare costs of observed non-diversification in portfolios of poorer households may be smaller than what simpler analyses suggest. But since the model is stylised, more work is required to confirm this conclusion.¹

“*Fiscal multipliers: A heterogenous-agent perspective*” [11], under submission, with Per Krusell and Erik Öberg, looks at fiscal policy in the simple HANK model studied in [1]. We find that, with flexible wages, fiscal multipliers are actually smaller when goods prices are sticky than when they are flexible. With rigid wages, in contrast, the heterogenous agent economy again behaves similarly to the standard New Keynesian model. Importantly, however, with wage rigidity, fiscal multipliers are not amplified when monetary policy is constrained at the zero lower bound on interest rates relative to normal times of active policy. These results provide a new input to the discussion about the effectiveness of fiscal policy at the zero lower bound. They also suggest, again, that a good model of wage rigidities is important for discussing the transmission and effects of policies more generally.

A new project with Karl Harmenberg, Per Krusell and Erik Öberg, “*Wage Contracts in dynamic general equilibrium*” tries to provide such a model of wage rigidities. Specifically, we aim to identify frictions in the determination of nominal wages and salaries that explain key features of observed contracts (such as downward nominal rigidity, the staggered and synchronized nature of wage changes in ongoing employment relationships, etc.) but are tractable enough for a dynamic general equilibrium analysis.

In “*The curious incidence of shocks along the income distribution*” [10], in progress, with John Kramer and Kurt Mitman, we use German administrative data to quantify the heterogeneous impacts of aggregate shocks on workers. The advantage of our data is that it includes information on both employment transitions and the associated earnings changes at high frequency (in contrast, for example, to Guvenen et al. (2015), who only have data on total yearly earnings). First, we document facts related to short- and long-run income growth across percentiles of the income distribution. We decompose that earnings growth into the associated flows (stayers, job-to-job transitions, job losers, and job-finders), to understand the underlying forces driving income changes. These “steady-

¹In this context, it is interesting to note that Heathcote and Perri (2013), in a richer environment with capital but without heterogeneity, also find that endogenous fluctuations in international relative prices make domestic assets a good hedge against fluctuations in labor income risk.

state” results are useful both for both positive and normative analysis. On the positive side, they help guide the design of underlying models of the labor market that can generate the observed heterogeneity of flows and income risk across the distribution. Further, our estimated process for intensive- and extensive-margin earnings risk has potentially first-order implications for consumption and savings behavior in incomplete-markets models. On the normative side, understanding the heterogeneous burden of income risk helps inform the design of social insurance policies to mitigate that risk.

Next, we quantify how that income risk (and its decomposition) varies with the business cycle. We compute impulse responses to shocks using local projection methods. Workers at the bottom of the income distribution are more exposed to aggregate earnings risk in general and monetary policy shocks in particular. In the first income decile, a monetary tightening of a hundred basis points leads to a ten percent reduction in the probability of remaining employed one year later on average. At the same time, the top decile of the distribution is unaffected. Finally, we decompose cyclical income risk into extensive-margin risk (job-switching, job-finding, and job-losing) and intensive-margin risk (from variation in the income changes of job-stayers, job-switchers, etc.). Cyclical income risk at the bottom of the distribution is accounted for almost entirely by extensive-margin risk, as job-finding and job-switching are associated with significant income gains for the poor. At higher incomes, in contrast, where employment relationships last substantially longer, cyclical income risk is split equally into an intensive part (from cyclical movements in job stayers’ income growth) and an extensive part. Going forward, we plan to embed this risk process into a HANK model to study how the unequal incidence of risk leads to amplification or dampening of aggregate shocks.

My work on securitisation described further below has made me interested in the interaction of idiosyncratic and aggregate risk for the transmission of shocks through the financial system. “*Financial innovation and aggregate volatility*” [15], in progress, with Daria Finocchiaro and Claire Thürwächter, asks how innovation in general, and the increased use of securitisation in particular, may have changed this transmission by allowing banks to diversify idiosyncratic loan risk. Diversification relaxes explicit or implicit value-at-risk constraints, and thus allows individual banks to increase leverage. In general equilibrium, however, a more leveraged banking system reacts more strongly to aggregate shocks, which may result in increased volatility of lending rates and aggregate activity. Although our results so far are only suggestive, we think they might provide an important input to the debate on macro-prudential policies and the effect of financial innovation on

the stability of the financial system.

3 Expectation formation and heterogeneous beliefs

My third and most recent field of interest concerns the process of expectation formation, the origins of heterogeneous expectations, and their consequences for the macroeconomy and financial markets.

A basic problem for testing theories of expectation formation is the lack of (good) data on the expectations of households or firms. “*Forecaster (mis-) behavior*” [13], under submission, with Alexandre Kohlhas, investigates how expectations react to news using, like previous contributions, an alternative data source: professional forecasts. While most existing studies have looked at the dynamics of average forecasts, we document how *individual* professional forecasts overrevise their macroeconomic expectations (as also shown in contemporaneous work by Bordalo et al. (2018)). In addition, we show that forecasts both over- and underreact to salient pieces of public information. While the first fact can be explained by behavioral and strategic models of forecaster behavior, the second presents a puzzle for existing theories of expectation formation, including that of Bordalo et al. (2018). To explain it, we propose a simple extension of noisy rational expectations that allows forecasters to be overconfident in their own information both relative to the truth, and relative to the information they perceive others to have. This relative dimension of overconfidence makes forecasters misinterpret the information content of endogenous public signals, and to over- and underreact to public information in a way that is consistent with the data.

More generally, our results point to two broader conclusions. First, behavioral biases may be important to explain observed expectations, even in the selected sample of professional forecasters. Second, because endogenous public signals are an equilibrium outcome, our results demonstrate the importance of individual perceptions of others’ information (which in full-information rational expectations equilibria are implicitly pinned down by a symmetry assumption). Since overconfidence has both an absolute and a relative dimension, it naturally restricts individual perceptions of others’ information to a subset of the parameter space.

In “*Forecast(er) Heterogeneity*” [16], in progress, also with Alexandre Kohlhas, we build on this work and document the heterogeneity in individual forecasters’ reactions

to private and public signals. Surprisingly, the degree of overreaction does not correlate with average forecast errors. We build a model of heterogeneous expectation formation that can capture this fact, and investigate its implications.

Can we explain heterogeneous expectations among individuals more generally, and identify what they imply for inequality, macroeconomic dynamics, and the effect of policies? “*Heterogeneous information choice in general equilibrium*” [12], with Alexandre Kohlhas, Kurt Mitman and Kathrin Schlafmann, argues that observed heterogeneity in macroeconomic expectations can be explained by differences in the benefits of information across households. And it shows that the introduction of information choice in an otherwise standard heterogeneous-agent economy amplifies aggregate fluctuations, increases inequality, and gives policies an additional transmission channel through their effects on the average information in the economy.

The paper first documents that in US micro-data from the Survey of Consumer Expectations (SCE), there is indeed strong heterogeneity in macroeconomic expectations. Importantly, this heterogeneity reflects more than just noise: apart from significant effects of gender, education and (to a lesser degree) labor market participation, we document a robust inverse U-shape of the average size of expectational errors in individual wealth. We contrast these features with those implied by a simple neoclassical two-period environment, where we can characterise the incentives to acquire information about the current state of the economy analytically. In particular, the losses from uninformed savings and consumption choices are low at the bottom of the wealth distribution (where savings are constrained) and in the middle (where household incomes are diversified across wages and financial returns). We also show that a higher share of informed households reduces the dispersion of economic outcomes around their mean (because informed savings are high / low when future capital is expected to be scarce / abundant). This implies that information acquisition choices are strategic substitutes and that a pure-strategy equilibrium may not exist at intermediate information costs.

These results motivate us to study information choice in a standard, quantitative neoclassical heterogeneous-agent model with idiosyncratic unemployment risk and incomplete markets (as in Krusell and Smith (1998)). We first show that in the standard Krusell and Smith (1998)-type equilibrium, where all households make informed choices, the cost of uninformed decisions is again heterogeneous, and small for constrained agents and in the middle of the wealth distribution. It is much higher, in contrast, when all households make uninformed decisions, which makes the economy, again, more volatile. So a

homogeneous-information equilibrium may also not exist in the quantitative economy. We then allow for dynamic heterogeneous information choice, and calibrate the model to capture the mean and dispersion of household unemployment expectations in the SCE. On average, households in our model update their information about the state of the economy every six quarters. Interestingly, the model replicates the (non-targeted) hump-shaped profile of expectational errors in household wealth well. Limited information acquisition substantially raises wealth and consumption inequality, and amplifies business cycle fluctuations. It also gives policies additional leverage through their effects on information acquisition. We show this with the example of a wealth tax, which reduces average information acquisition by reducing average wealth levels, thus increasing aggregate volatility and inequality measures.

In another line of work I take heterogeneity in expectations as a primitive and study the consequences for asset prices.

“*Securitisation bubbles: structured finance with disagreement about default risk*” [2] published in the *Journal of Financial Economics*, identifies an additional reason for the structured finance boom of the 2000s: disagreement about default risk of collateral assets. When risk-neutral investors disagree about *average* default probabilities, structuring collateral cash flow raises prices by concentrating optimists’ demand on risky tranches. With disagreement about default *correlation*, in contrast, low-correlation investors believe in diversification and pay high prices for senior tranches they deem riskless. High-correlation investors value junior tranches they expect to pay whenever aggregate conditions are good. Risk aversion and short selling through credit default swaps reduce the prices of both pass-through and structured securitizations but may increase the return to tranching. Apart from providing another reason for the securitization boom before the Great Recession, these results suggest an additional source of financial instability, which may arise when investors that specialise in particular securitization tranches make unexpected losses, and go bankrupt or abruptly update their beliefs about underlying loan risk.

We are currently revising another paper on investor disagreement, “*Collateralised lending and asset price bubbles when investors disagree about risk*” [14], with Afroditi Kero, for resubmission at the *Journal of Banking and Finance*. The paper is motivated by the observation that disagreement about return risk (in investor surveys) and macroeconomic volatility (in surveys of professional forecasters and households) is strong and seems to have increased since the 1980s. We show how this may have contributed to higher asset prices through increased use of collateralized debt products, which allow investors with

different risk perceptions to realize perceived gains from trade. A quantitative application shows how this self-selection may have contributed significantly to the boom in structured securitisations.

As already in “*Forecast(er) Heterogeneity*” or “*Heterogeneous Information Choice*”, in future work I want to combine these two lines of enquiry into, respectively, the origins and consequences of heterogeneous expectations. In particular, I would like to investigate whether heterogeneity and time-variation in the benefits of forming accurate expectations and / or in behavioral biases (such as diagnostic expectations, overconfidence, etc) may help explain puzzles relating to macro-phenomena (such as the asymmetric nature of business cycles), to cross-sectional investment patterns (such as limited asset market participation) or to the dynamics of asset prices (including the joint presence of momentum and excess volatility in stock prices).

4 List of publications, working papers and work in progress

Articles in Refereed Journals

1. “*The New Keynesian transmission mechanism: a heterogeneous agent perspective*”, with Niels-Jakob Harbo Hansen, Per Krusell, and Erik Öberg, *Review of Economic Studies*, Volume 87, Issue 1, 2020, 77-101.
2. “*Securitisations bubbles: structured finance with disagreement about default risk*”, *Journal of Financial Economics*, Volume 127, Issue 3, March 2018, 505-518.
3. “*The home bias of the poor: foreign asset portfolios across the wealth distribution*”, *European Economic Review*, Volume 92, February 2017, 74-91.
4. “*Consumption risk sharing with private information and limited enforcement*”, with Marek Kapička and Paul Klein, *Review of Economic Dynamics*, Volume 23, January 2017, 170-190.
5. “*Domestic or global imbalances? Rising inequality and the fall in the US current account*”, *Journal of Monetary Economics*, Volume 64, May 2014, 47-67.
6. “*The wrong shape of insurance? What cross-sectional distributions tell us about models of consumption smoothing*”, *American Economic Journal: Macroeconomics*, 54, 2013, 107-40.

7. “*Crowding out and crowding in: When does redistribution improve risk sharing in limited commitment economies?*”, *Journal of Economic Theory*, Volume 146, No. 3, May 2011, 957-975.
8. “*Emerging market lending: is moral hazard endogenous?*”, *Journal of Economic Development* Vol. 32, No. 2, December 2007, 41-67.

Working Papers [[CLICK HERE](#) for latest drafts on my webpage]

9. “*Consumption insurance over the business cycle*”, mimeo, IIES 2020. (Submitted to *Review of Economic Studies*.)
10. “*The curious incidence of shocks along the income distribution*”, with John Kramer and Kurt Mitman, mimeo, IIES 2020.
11. “*Fiscal multipliers: A heterogenous-agent perspective*”, with Per Krusell, and Erik Öberg, mimeo, IIES 2020. (Submitted to *AER: Insights*.)
12. “*Heterogeneous information choice in general equilibrium*”, with Alexandre Kohlhas, Kurt Mitman, and Kathrin Schlafmann, mimeo, IIES 2020.
13. “*Forecaster (mis-) behavior*”, with Alexandre Kohlhas, mimeo, IIES 2020. (Submitted to *Review of Economic Studies*.) Previous version as CEPR Discussion Paper 12898.
14. “*Collateralisation and asset price bubbles when investors disagree about risk*”, with Afroditi Kero. (R&R at the *Journal of Banking and Finance*.) Previous version as CEPR Discussion Paper 10148, September 2014.
15. “*Risk sharing in village economies revisited*”, with Tessa Bold. (Conditionally accepted at the *Journal of the European Economic Association*.) Previous version as CEPR Discussion Paper 11143, March 2016.

Work in Progress

14. “*Break-up of unions: risk sharing in dynamic groups*”, with Tessa Bold and Sebastian Koehne.
15. “*Financial innovation and aggregate volatility*”, with Daria Finocchiaro and Claire Thürwächter.

16. “*Forecast(er) Heterogeneity*”, with Alexandre Kohlhas.
17. “*Wage contracts in dynamic general equilibrium*”, with Karl Harmenberg, Per Krusell, and Erik Öberg.

References

- Aiyagari, S Rao. 1994. *Uninsured idiosyncratic risk and aggregate saving*, The Quarterly Journal of Economics **109**, no. 3, 659–84.
- Attanasio, Orazio and José-Víctor Ríos-Rull. 2000. *Consumption smoothing in island economies: Can public insurance reduce welfare?*, European Economic Review, 1225–1258.
- Bewley, Truman. 1986. *Stationary monetary equilibrium with a continuum of independently fluctuating consumers*, Contributions to mathematical economics in honor of Gérard Debreu **79**.
- Bordalo, Pedro, Nicola Gennaioli, Yueran Ma, and Andrei Shleifer. 2018. *Over-reaction in macroeconomic expectations*, National Bureau of Economic Research.
- Genicot, G. and D. Ray. 2003. *Group Formation in Risk-Sharing Arrangements*, Review of Economic Studies **70**, 87–113.
- Güvenen, Fatih, Fatih Karahan, Serdar Ozkan, and Jae Song. 2015. *What do data on millions of us workers reveal about life-cycle earnings risk?*, National Bureau of Economic Research.
- Heathcote, Jonathan and Fabrizio Perri. 2013. *The International Diversification Puzzle Is Not as Bad as You Think*, Journal of Political Economy **121**, no. 6, 1108–1159.
- Huggett, Mark. 1993. *The risk-free rate in heterogeneous-agent incomplete-insurance economies*, Journal of Economic Dynamics and Control **17**, no. 5-6, 953–969.
- Kaplan, Greg, Benjamin Moll, and Giovanni L Violante. 2018. *Monetary Policy According to HANK*, American Economic Review **108**, no. 3, 697–743.
- King, Robert G., Charles I. Plosser, and Sergio T. Rebelo. 1988. *Production, growth and business cycles*, Journal of Monetary Economics **21**, no. 2-3, 195–232.
- Krueger, Dirk and Fabrizio Perri. 2011. *Public versus private risk sharing*, Journal of Economic Theory **146**, no. 3, 920–956.
- Krusell, Per and Anthony Smith. 1998. *Income and Wealth Heterogeneity in the Macroeconomy.*, Journal of Political Economy **106**, no. 5.