RESEARCH STATEMENT

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My research studies how frictions in household and firm behavior shape macroeconomic outcomes. In particular, it falls into three strands. The first studies how bounded rationality affects household decisions, how beliefs depart from full-information rational expectations, and how these departures affect the strength of general equilibrium effects. The second studies the forms that firms' financial frictions take in practice and their macroeconomic implications. The third studies macroeconomic consequences in heterogeneous-agent settings, focusing on how non-Ricardian households affect the transmission and financing of fiscal policy and how the decisions of heterogeneous agents shape the causes and consequences of inflation. Across these projects, I combine theory, empirical analysis, quantitative analysis, purpose-built surveys, and experiments to identify frictions at the micro level and assess their aggregate implications.

Theme 1: Bounded rationality, expectation frictions, and macroeconomic implications. The first theme studies bounded rationality and expectation frictions in household decisions and beliefs. It starts by studying how bounded rationality affects household decisions that shape macroeconomic outcomes and the transmission of macroeconomic policies. In Lian, Ma, and Wang (2019), we study bounded rationality in investment decisions by asking how low interest rates affect risk taking. In randomized investment experiments that vary the safe interest rate while holding risk premia and risks fixed, we find that participants allocate significantly more to risky assets when interest rates are low, evidence that individuals reach for yield. The pattern is hard to explain with conventional portfolio choice theory or institutional frictions. Additional tests point to investor psychology, including reference dependence and salience. For example, under reference dependence, investors compare current safe returns with the returns they are used to, so a low interest rate creates a perceived loss that raises their willingness to bear risk in search of higher returns. The paper provides evidence for a behavioral risk-taking channel of monetary policy.

In Lian (2021), I develop a theory of narrow thinking for problems in which households make many linked decisions but have difficulty coordinating them. I conceptualize narrow thinking as a form of decision making in which different decisions are based on different, non-nested information. The narrow thinker therefore has imperfect knowledge of their own other decisions when making each individual decision and faces difficulty coordinating across them. I show that this makes the decision maker effectively care less about those other decisions when making each individual choice. They

narrowly bracket and effectively make each decision in isolation. As an application, the approach provides a smooth model of mental accounting without imposing explicit mental budgets, and it predicts how the strength of mental accounting depends on expenditure shares and cognitive limitations. The model has implications for how households respond to prices, income, and fiscal transfers, responses that provide the backbone of aggregate responses to macroeconomic shocks and policy.

In Lian (2023), I study a related intertemporal coordination problem in consumption: households may be unable to coordinate current saving with future consumption. I ask how this friction influences marginal propensities to consume (MPCs), which are central to monetary and fiscal transmission. Specifically, I show that future consumption mistakes in response to saving changes lead to a higher current MPC. These mistakes reduce the value of changing saving relative to changing current consumption, because additional saving will not be spent optimally. The result helps explain the empirical puzzle of high-liquidity consumers' high MPCs and holds across future consumption mistakes driven by inattention, present bias, diagnostic expectations, and near-rationality.

In related work on how behavioral forces shape consumption decisions, Sergeyev, Lian, and Gorodnichenko (2025) study the psychological costs of financial constraints and their consequences for household consumption and saving. A representative survey of U.S. households documents that financial stress is widespread and strongly related to measures of financial constraints. In a dynamic model of consumption and labor supply, financial stress, together with naivete about that stress, can generate a poverty-trap mechanism: naive households do not internalize how saving today reduces future stress, weakening their saving motive and making high-stress states persistent. This persistence in low-saving, high-stress states makes the stress channel relevant for wealth inequality. It also generates fiscal multipliers, because relieving stress frees cognitive resources for productive work.

Bounded rationality also affects belief formation. I also study frictions in macroeconomic beliefs, and how these belief biases shape aggregate outcomes. In Taubinsky et al. (2026), we link a large Danish survey of consumer expectations to administrative data on household-level events. Compared with actual inflation, people's inflation forecasts covary much more strongly, and negatively, with both realized and expected household income changes than a Bayesian rational expectations benchmark implies. Additional evidence points to affect-cued recall as the mechanism. For example, a decrease in household income is nearly uninformative about aggregate inflation, but it can make painful memories of large price increases more likely to come to mind. Those memories raise perceived past inflation and inflation forecasts.

This raises a broader question: which macroeconomic predictions change when decision makers depart from full-information rational expectations? Canonical macroeconomic models often impose Full Information Rational Expectations (FIRE). Under this assumption, economic agents not only know the underlying shocks and policies but also share common knowledge of how other agents will

respond to them. As a result, agents can coordinate perfectly in responding to macroeconomic shocks and policies. In many macro models, this common knowledge is what makes general equilibrium feedbacks powerful.

Several of my papers show that these general equilibrium feedbacks are fragile once realistic deviations from FIRE are incorporated. In Angeletos and Lian (2018), we ask how the economy responds to news about future monetary policy ("forward guidance") when that news is not common knowledge. Agents learn the policy news but remain uncertain about whether others know about it and how they will respond. Relaxing common knowledge attenuates the general equilibrium effects of news and generates aggregate myopia: news about more distant policy has weaker effects because its impact depends on higher-order beliefs about others' responses. The mechanism helps resolve the forward-guidance puzzle, gives a rationale for front-loaded fiscal stimulus, and illustrates the fragility of predictions that rest on long series of forward-looking feedback loops.

We develop this idea more broadly in Angeletos and Lian (2016) and Angeletos and Lian (2023a). These papers study how realistic frictions in information or rationality arrest general equilibrium feedbacks. This dampening of general equilibrium feedbacks can generate either underreaction or overreaction in aggregate outcomes, depending on whether the underlying feedbacks are positive or negative.

The same lessons can be applied to equilibrium selection and business-cycle propagation. In Angeletos and Lian (2023b), we address the classical equilibrium-selection problem in monetary economics that arises when the same path for the nominal interest rate is associated with multiple equilibrium paths for inflation and output. In the FIRE benchmark, this multiplicity rests on perfect intertemporal coordination: current and future consumers can coordinate on sunspot or backward-looking paths for aggregate spending because each cohort expects later cohorts to do the same. Small frictions in social memory break this infinite chain of expectations and remove the indeterminacy. The unique surviving equilibrium is the one selected by the Taylor principle, but it no longer relies on that principle for selection. In Angeletos and Lian (2022), we revisit why shifts in aggregate demand drive business cycles. Consumers and firms imperfectly distinguish aggregate demand shocks from idiosyncratic income or return shocks. When weak demand lowers current activity, consumers become too pessimistic about permanent income and firms become too pessimistic about future investment returns, further depressing spending and investment. This confidence multiplier amplifies demand-driven fluctuations, helps investment comove with consumption, and makes precise how front-loaded fiscal stimulus can boost confidence and crowd in private spending.

Theme 2: Earnings-based borrowing constraints and macroeconomic implications. A second theme studies firms' financial frictions, in particular the forms that firms' borrowing constraints

take and their macroeconomic implications. In Lian and Ma (2021), we document that most U.S. corporate debt is not tied to the liquidation value of physical assets, as standard models assume. Only about one fifth of nonfinancial corporate debt by value is such asset-based lending; the rest is predominantly cash-flow-based lending. A standard borrowing constraint limits total debt as a function of cash flows measured by operating earnings. These features shape firm outcomes on the margin: operating earnings can directly relax borrowing constraints, firms are less vulnerable to collateral damage from asset price declines, and fire-sale amplification may be mitigated. These facts provide an empirical basis for models in which borrowing constraints are based on operating earnings, not only on liquidation values of physical assets.

Building on this evidence, in Ebsim et al. (2026) we study the macroeconomic implications of sophisticated borrowing constraints designed to capture financial covenants that arise in practice when firms borrow against cash flows. Traditional macro-finance models impose hard borrowing constraints that require indiscriminate reductions of borrowing and investment when adverse shocks tighten these limits. In practice, covenants commonly set debt thresholds based on operating earnings, and violations transfer control rights to creditors rather than unconditionally forcing firms to reduce borrowing to maintain fixed ratios. Creditors then influence firms' decisions to maximize the value of their claims. A quantitative model with these features matches investment and earnings patterns around covenant violations and does not generate financial acceleration at the aggregate level, because constraint tightening and violations do not induce creditors to downscale firms mechanically.

Because cash-flow-based debt is backed by cash flows from continuing operations, default resolution becomes central when credit booms unwind. In Kornejew et al. (2025), we study how business bankruptcy institutions shape the aftermath of credit booms. Using cross-country data on bankruptcy efficiency and business credit, we document severe declines in output, investment, and consumption after credit booms in countries where bankruptcy systems function poorly, but only moderate changes where they function well. Efficient restructuring preserves viable firms and their operating cash flows, so higher leverage need not translate into the same macroeconomic contraction.

Earnings-based constraints also matter for misallocation because they interact with markups. In Li et al. (2025), we document that less constrained firms in an industry have higher markups. This connection lowers the TFP losses from markup dispersion, because looser borrowing constraints help higher-markup firms produce more and move their market shares closer to the efficient level. The relationship is stronger in industries where firms rely more on earnings to borrow. A Kimball demand model augmented with borrowing against assets and earnings explains these patterns and shows that the constraint-markup connection substantially lowers TFP losses from markup disper-

sion, especially when firms rely on earnings to borrow.

Theme 3: Macroeconomic implications with heterogeneous agents. The third theme studies macroeconomic implications with heterogeneous agents. One part of this work studies the causes and consequences of inflation when aggregate outcomes reflect the decisions of heterogeneous agents. In Guerreiro et al. (2026), we study the costs of inflation, asking why inflation remains costly for workers even when observed nominal wages catch up with prices. We argue that inflation imposes costs beyond its impact on the path of observed real wages. Workers must often take costly actions, or enter into conflict with employers, to make nominal wages catch up with prices. In fact, wage catch-up after inflation achieved through costly conflict does not raise worker welfare, because the conflict costs offset the benefits of higher wages. What matters for welfare is wage erosion: how much inflation would lower real wages if workers' conflict decisions did not respond. We design and field a novel survey that identifies key model parameters, including workers' conflict costs. The survey suggests that workers are willing to sacrifice around 1.75 percent of wages to avoid conflict, and a calibrated model implies substantially larger costs of inflation than a calculation based only on observed real wages.

The other part of this theme studies fiscal policy in heterogeneous-agent environments with nominal rigidities and non-Ricardian households, due to finite lives or liquidity constraints. It develops a tractable OLG-NK framework in which the effects of fiscal policy can be characterized analytically while preserving the key demand-side forces in quantitative HANK models. In this environment, households are non-Ricardian, so deficits affect aggregate demand through classical wealth or liquidity effects and thereby affect output and inflation.

In Angeletos, Lian, and Wolf (2024a), we ask how fiscal deficits are financed in such environments. Deficits can contribute to their own financing through two channels: a boom in real economic activity, which expands the tax base, and a surge in inflation, which erodes the real value of nominal government debt. We show that this mechanism becomes more potent as fiscal adjustment is delayed, leading to full self-financing in the limit when monetary policy does not lean too heavily against the stimulus. Quantitatively, a significant degree of self-financing is achievable when the theory is disciplined by evidence on MPCs, nominal rigidities, monetary policy, and the speed of fiscal adjustment.

In Angeletos, Lian, and Wolf (2024b), the focus shifts from financing to inflation. The Fiscal Theory of the Price Level (FTPL) predicts that a deficit not backed by future surpluses must be accompanied by enough inflation for debt erosion to replace the missing surpluses. We show that this prediction is fragile: the deficit's impact on inflation can be eliminated by a small, hard-to-test perturbation of policy in the far future. The source of the fragility is that the FTPL breaks Ricardian equivalence through equilibrium selection in an environment with Ricardian households. We show that HANK models,

by introducing non-Ricardian households, can replicate the FTPL's prediction about the impact of deficits on inflation while avoiding this fragility. Because households are non-Ricardian, deficits affect aggregate demand and inflation through classical wealth or liquidity effects. The main equivalence result is that this HANK mechanism nevertheless reproduces the FTPL's core empirical predictions about deficits and inflation, including the textbook case where unfunded deficits are financed entirely by inflation-induced debt erosion. In Angeletos et al. (2026b), we sharpen this contrast through a game-theoretic representation of the New Keynesian model: with Ricardian households, fiscal dominance works only through coordination on self-fulfilling spending paths, whereas with non-Ricardian households deficits are payoff-relevant and affect demand directly.

In Angeletos, Lian, and Wolf (2026a), we ask how the fiscal framework affects the central bank's ability to stabilize output and inflation. The textbook answer, based on Ricardian households, calls for fast fiscal adjustment to preserve monetary dominance. With non-Ricardian households, we show instead that the central bank may welcome slow, or even no, fiscal adjustment. On the demand side, slow adjustment stabilizes aggregate spending; on the supply side, it eases tax distortions and improves the output-inflation tradeoff. A quantitative exercise in the U.S. context finds that the central bank prefers slow fiscal adjustment over the business cycle. In Lian, Mukhin, and Wolf (2026), we focus on open economy implications, showing that foreign demand booms can be absorbed either through exchange-rate adjustment (prices) or through domestic activity (quantities). Non-Ricardian spending behavior pushes the adjustment toward quantities and therefore toward domestic output and inflation unless policy responds forcefully.

Future directions. I intend to continue my research in all three strands and hope to draw on recent methodological advances from other fields of economics or from computer science. As an example, Chen et al. (2026), a work in progress, studies how to leverage microdata on disaggregated price-setting decisions to improve inflation forecasts. We develop machine learning methods that use high-dimensional price microdata for inflation forecasting, together with tests for whether micro-based forecasts outperform standard benchmarks in specific periods. Standard forecast-comparison tests instead evaluate average performance over the full sample. The results show that micro data on price changes adds predictive content when inflation is high and volatile. We also discuss how to adaptively combine micro, macro, and univariate forecasts to produce inflation forecasts that perform well both in stable periods and in periods when inflation is high and volatile. We finally discuss implications for models of price setting.

References

ANGELETOS, G.-M. AND C. LIAN (2016): "Incomplete information in macroeconomics: Accommodating frictions in coordination," in *Handbook of Macroeconomics*, Elsevier, vol. 2, 1065–1240.

——— (2018): "Forward guidance without common knowledge," *American Economic Review*, 108, 2477–2512.

——— (2022): "Confidence and the propagation of demand shocks," *Review of Economic Studies*, 89, 1085–1119.

——— (2023a): "Dampening general equilibrium: Incomplete information and bounded rationality," in *Handbook of Economic Expectations*, Elsevier, 613–645.

——— (2023b): "Determinacy without the Taylor principle," *Journal of Political Economy*, 131, 2125–2164.

ANGELETOS, G.-M., C. LIAN, AND C. WOLF (2024a): "Can deficits finance themselves?" *Econometrica*, 92, 1351–1390.

——— (2024b): "Deficits and inflation: HANK meets FTPL," *NBER Working Paper*.

——— (2026a): "Fiscal inaction as monetary support," *NBER Working Paper*.

ANGELETOS, G.-M., C. LIAN, C. WOLF, AND D. ZHANG (2026b): "Revisiting Monetary-Fiscal Interactions and Equilibrium (In)Determinacy," *Work in Progress*.

CHEN, C., C. GAO, J. HAZELL, L. LEI, AND C. LIAN (2026): "Forecasting inflation with microdata: An adaptive machine learning approach," *Work in Progress*.

EBSIM, M., C. LIAN, Y. MA, P. OTTONELLO, AND D. PEREZ (2026): "Sophisticated borrowing constraints and macroeconomic dynamics," *Working Paper*.

GUERREIRO, J., J. HAZELL, C. LIAN, AND C. PATTERSON (2026): "Why do workers dislike inflation? Wage erosion and conflict costs," *Econometrica*.

KORNEJEW, M., C. LIAN, Y. MA, P. OTTONELLO, AND D. PEREZ (2025): "Bankruptcy resolution and credit cycles," *NBER Macroeconomics Annual*, 39, 1–39.

LI, H., C. LIAN, Y. MA, AND E. MARTELL (2025): "Borrowing constraints, markups, and misallocation," *NBER Working Paper*.

LIAN, C. (2021): "A theory of narrow thinking," *Review of Economic Studies*, 88, 2344–2374.

——— (2023): "Mistakes in future consumption, high MPCs now," *American Economic Review: Insights*, 5, 563–581.

LIAN, C. AND Y. MA (2021): "Anatomy of corporate borrowing constraints," *Quarterly Journal of Economics*, 136, 229–291.

LIAN, C., Y. MA, AND C. WANG (2019): "Low interest rates and risk-taking: Evidence from individual investment decisions," *Review of Financial Studies*, 32, 2107–2148.

LIAN, C., D. MUKHIN, AND C. WOLF (2026): "Importing aggregate demand," *Work in Progress*.

SERGEYEV, D., C. LIAN, AND Y. GORODNICHENKO (2025): "The economics of financial stress," *Review of Economic Studies*, 92, 3403–3437.

TAUBINSKY, D., L. BUTERA, M. SACCAROLA, AND C. LIAN (2026): "Beliefs about the economy are excessively sensitive to household-level shocks: Evidence from linked survey and administrative data," *Quarterly Journal of Economics*.