Research Statement – Paymon Khorrami

My research aims to understand the consequences of financial frictions for asset pricing and macroeconomics, especially through intermediation. Like a lot of researchers my age, this interest blossomed out of the wreckage of the 2008 financial crisis. How did it happen, we all wondered. So far, I have worked in this area using both theoretical, quantitative, and empirical approaches.

A conventional view is that financial frictions are a source of amplification of fundamental shocks. In contrast, my PhD thesis *The Risk of Risk-Sharing* studies shocks to financial technology as the source of aggregate fluctuations. I argue theoretically that improvements to financial intermediary diversification generate macroeconomic dynamics consistent with several boom-bust episodes. Diversification improvements fuel an investment boom but also a build-up of intermediary leverage – what I call the "leverage effect." If diversification improvements are geared towards a particular sector, such as housing, that sector temporarily crowds out investment from other sectors – the "reallocation effect." Among some commonly-studied financial shocks, such as foreign-savings inflows or optimism shocks, none generate both reallocation and leverage in my model. In this sense, diversification shocks are unique.

Empirically, reallocation and leverage can help explain why many booms feature a sectoral bias, while the subsequent busts are broader. The 2000s US housing cycle is a good example of a diversification-fueled episode: according to my measurements, mortgage diversification grew from 60% in 1990 to over 90% in 2006, the height of the boom. More generally, financial innovations often precede investment booms, and the busts can occur without any grossly apparent negative shock. With only diversification improvements, and no subsequent reversal, my model still generates an endogenous bust.

I find it interesting to not only think about finance-specific alternatives to our standard macro shocks (e.g., TFP shocks), but to also delve into where these aggregate shocks come from. One possibility is that aggregate "shocks" emerge endogenously from the presence of idiosyncratic shocks and equilibrium interactions. I explore this possibility in *Financial Frictions and Aggregate Fluctuations*, using a macro model with a canonical moral-hazard problem but with a single novelty: shocks are correlated (yet still idiosyncratic). Aggregate output fluctuates stochastically even without exogenous aggregate shocks, due to generic non-aggregation. With perfect risk-sharing, this property disappears.

The wake of the financial crisis has seen a proliferation of theoretical models in this "intermediary asset pricing" tradition (e.g., He and Krishnamurthy 2013; Brunnermeier and Sannikov 2014), but with few attempts to synthesize the implications of that research. In *Comparative Valuation Dynamics in Models with Financial Frictions*, joint with Lars Hansen and Fabrice Tourre, we attempt such a synthesis. We construct a nesting framework to compare and contrast the macro-financial implications of a class of two-agent models with frictions. We uncover several commonalities – e.g., many two-agent models, with and without frictions, can be calibrated to have observationally-similar asset price dynamics – and several differences – e.g., depending on constraints, stochastic volatility may be embraced or feared by economic agents. We also provide robust computing tools for this class of highly nonlinear models.

Taking a step back, I was naturally led to wonder how costly financial frictions are for the economy. Let us suppose, as in many of our models, that only certain sophisticated agents like banks and hedge funds can intermediate capital to complex asset markets, and that this is the source of large and volatile risk premia. My paper *Entry and Slow-Moving Capital* characterizes theoretically the implied costs of such intermediation frictions, which I show must be quantitatively enormous for intermediary-based models to explain measured risk premia dynamics in crises.

Even if we do not have a fully satisfactory quantitative model of intermediation and crises, growing reduced-form empirical evidence suggests that banks matter for asset prices. We push the agenda further in *Commonality in Credit Spread Changes: Dealer Inventory and Intermediary*

Distress, joint with Zhiguo He and Zhaogong Song. We address the large common variation in corporate bond prices that cannot be explained by standard structural variables and has been considered a puzzle for two decades (since Collin-Dufresne, Goldstein, and Martin 2001). Two intermediary-based factors, an intermediary distress measure and a dealer corporate bond inventory measure, explain over half of this puzzling common variation. We explore several more patterns in the data, all of which are consistent with an economy in which margin-constrained dealers absorb asset supply from customers.

All of the research above, and most of the extant literature, treats the financial sector as relatively homogeneous and perfectly competitive. How does financial intermediary market structure affect allocative efficiency? In *Market Power as Skin-in-the-Game*, with Jung Sakong, we show that if agents have incorrect beliefs or incomplete information, while financiers are fully rational, efficiency can be decreasing in competition! Intuitively, market power acts as a substitute for "skin in the game," by incentivizing intermediaries to make optimal choices on behalf of their clients. We run several empirical tests in both finance and non-finance contexts, which lend support to the theory.

My plans for future research are guided by some of the open questions from the projects above. For example, my PhD thesis takes the view that a certain type of credit-supply shock is central to business cycle analysis. A large literature also finds support for credit-demand shocks like investor optimism. To me, the dynamics between credit supply and credit demand offer an intriguing unexplored area for research. This necessitates moving beyond the view that these are "shocks" and instead thinking about the process of belief formation, the incentives to produce financial innovations, and how these processes interact.

More generally, research on financial fragility typically abstracts from household distress, choosing instead to zoom in on the financial sector. This is often done for purposes of model tractability, rather than realism. Indeed, more and more evidence suggests that household balance sheets are crucial for understanding boom-bust cycles. A synthesis of the intermediary-centric and household-centric views offers an exciting pathway for future research.