

Research Statement

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I am a macroeconomist specializing in firm dynamics, behavioral macroeconomics and monetary economics. My research combines theoretical and quantitative models with firm-level evidence, including managerial and survey expectations, to examine how organizational and informational frictions shape firms' investment, hiring, innovation, and pricing decisions. Specifically, my research spans over three topics: (i) how organizational and informational frictions within firms affect firm dynamics and aggregate productivity; (ii) how firms learn about technological opportunities and choose directions of innovation under information frictions; and (iii) how information costs in firms' price setting shape inflation dynamics and the transmission of monetary policy.

Organizational Frictions and Firm Dynamics The first theme of my research agenda studies the channels through which managerial and organizational frictions affect firm dynamics and aggregate productivity. In my job market paper, "Communication Frictions, Managerial Expectations, and Firm Dynamics," I study how the organization of firms' internal information flows shapes their input choices and aggregate allocative efficiency. I develop a dynamic team-production framework in which capital and labor managers share the firm's objective but make investment and hiring decisions using different information about the firm's productivity. The framework yields an empirical test that jointly identifies communication frictions and behavioral expectations from data of managerial expectations. Using managerial forecasts of U.S. public firms, I find that investment forecasts simultaneously overreact to news about investment and underreact to news about hiring, a pattern inconsistent with the model's common-information benchmark. Complementary evidence from the U.S. Census Bureau's Management and Organizational Practices Survey connects these forecast patterns to firms' internal organization: forecasts exhibit greater underreaction, or less overreaction, to the other manager's decisions when capital and labor decisions are made at different locations. These findings are difficult to reconcile with rational or behavioral models with common information and support a model of firm dynamics with communication frictions.

I show that communication frictions have quantitatively important consequences for resource allocation and aggregate productivity. By weakening the coordination of investment and

hiring, they distort firms’ capital–labor ratios and generate substantial dispersion in marginal revenue products. In the calibrated model, communication frictions alone imply an aggregate productivity loss of approximately 5% relative to the frictionless allocation. However, they also generate a negative covariance between the marginal revenue products of capital and labor, which moderates the productivity loss associated with communication frictions. This mechanism suggests that information technologies (IT) and artificial intelligence (AI) that improve internal information sharing may deliver smaller productivity gains than reductions in marginal-product dispersion alone would suggest.

In a related paper, “Narrow Framing and Business Cycle Dynamics,” I study how imperfect coordination between capital and labor managers affects the propagation of aggregate shocks. Each manager observes the price of their own input perfectly but receives a noisy signal about the other input’s price. In a real business cycle model, I show that this cross-decision uncertainty can amplify responses to productivity shocks by weakening stabilizing feedback through factor prices.

Endogenous Innovation under Information Frictions The second theme of my research agenda examines how firms make innovation decisions under information frictions. In “*Innovation under Uncertainty: Perspectives from Reinforcement Learning*”, I develop a reinforcement-learning (RL) framework to study firms’ choice of direction for innovation when they are uncertain about the distribution of returns across the technological space. In the model, firms use the outcome and market feedback from their existing innovation projects to infer the return of innovating in external fields. Favorable feedback raises the firms’ perceived values of technologically related opportunities, reinforcing them to pursue further research in nearby fields, while unfavorable feedback redirects exploration elsewhere. This mechanism generates path dependence beyond that arising from accumulated technological knowledge: firms that have accumulated more favorable market responses will have more concentrated innovation paths than those who haven’t. Using patent histories and stock market responses for U.S. public firms, I document that favorable stock market feedback to patents in a field predicts more subsequent innovation in the technologically related fields, while unfavorable feedback predicts more subsequent entry into technologically distant fields. These patterns support the model’s learning mechanism, which provides a channel through which market sentiment can shape the allocation of research across technologies and the direction of innovation.

Information Costs and Pricing Frictions The third theme of my research agenda examines how information frictions in firms’ price setting shape inflation dynamics and the transmission of monetary policy. In “Setting the Wrong Price for the Right Reason: Con-

sequences of Mispricing for Inflation and Monetary Policy,” (with Camilo Morales-Jiménez and Luminita Stevens), we study how information costs in price setting shape inflation dynamics and monetary policy. In our model, firms face information costs both in deciding when to change prices and in determining what price to set. Consequently, even firms that adjust may choose prices that deviate from their full-information optimum. This mechanism of mispricing reconciles the strong response of price-change frequency to inflation with substantial real effects of monetary policy in the U.S., which is hard to explain with random menu cost models. Additionally, the mispricing model better captures the responses of dispersion and kurtosis than other benchmark time-dependent and state-dependent pricing models. Comparing models with the same cumulative output response to a monetary shock, we show that the source of nominal rigidity also matters for the propagation of other shocks and the design of policy. In the model, increases in information costs generate cost-push disturbances, raising inflation while reducing output. Our analysis of optimal simple monetary policy rules indicates that repricing frictions call for less interest-rate smoothing in response to real shocks.

Future Directions I will continue to study the implications of within-firm organizational and informational frictions for firm dynamics. Building upon my job market paper, a follow-up paper uses U.S. Census data to study the communication frictions across establishments within multi-unit firms. Using establishment-level expectations from the Management and Organizational Practices Survey, I examine how these frictions vary with management practices, the delegation of decisions, information technology adoption, and firm size. Incorporating the organizational heterogeneity into the quantitative framework would allow me to assess its implications for firms’ resource allocation and aggregate productivity. Another related direction examines how firms choose their internal information structures. I study how firms choose what information to acquire and share when managers face limited attention and communication costs. This extension would provide a microfoundation for firms’ choice of internal information structures and establish the relationship between firm sizes and communication frictions. It would also provide a framework to quantify how AI would change organizational learning and communication as well as their aggregate consequences.

More generally, I intend to continue my research in firm dynamics and behavioral macroeconomics. A work in progress with Martin Leitão provides a quantitative anatomy of the sources of wage markdowns using administrative data in the U.S. and Portugal. I also plan to explore whether model-free reinforcement learning can explain the wedge between expectations and behaviors and the persistent use of suboptimal heuristics by households and firms.