I am a macroeconomist with interests in development, growth and economic history. My research employs quantitative methods, microdata and historical sources to deepen our understanding of the development process. My current research focuses on the interactions between technological change and human capital accumulation patterns within households and firms. In my Job Market Paper, I study the role of new market work opportunities and human capital in explaining the response of female labor force participation to a prominent technology: electricity. In my other work, I study the process of human capital accumulation within firms, and the effects of life experiences of economic growth on risk preferences.

**Electrification and Female Employment**

In my Job Market Paper, “Human Capital, Female Employment, and Electricity: Evidence from the Early 20th Century United State” I present theoretical and empirical evidence supporting a new channel linking electrification and female labor force participation that highlights the role of electricity in boosting skilled work tasks that favor women, and the importance of complementary human capital investments. This focus on job opportunities and market productivity contrasts with other arguments proposed for the link between electricity and female labor force participation in the literature, and particularly that of Greenwood, Seshadri and Yorukoglu (2005), who study the role of housework time savings stemming from electrification and appliance use. I build an overlapping generations model where electricity raises the productivity of skilled labor, which is less brawn intensive than unskilled labor, and thus more favorable towards women employment. This encourages female labor force participation, enabling half of the population to use their talents for market purposes. However, complementary human capital investments are required to take advantage of these returns. In particular, these productive gains can only be capitalized by women with a high level of schooling since they involve work in skilled tasks. Given that schooling investments are put forward early in life, young households experience a unique advantage relative to older households as they can coordinate human capital decisions to maximize the benefits from electrification. This generational divide, in turn, causes the effects of electrification on female labor force participation to accrue through generational change, as new generations replace old ones and human capital accumulates. I calibrate the model to the rollout of electricity in the United States from 1880 to 1960, and find that my mechanism explains approximately one-third of the rise in female labor force participation during this period. My channel also decouples the rise in female labor supply from a reduction in home production hours, which helps explain both the slow decline in female housework hours, and slow rise in female work hours documented for this era. Moreover my structure generates a series of testable predictions, which discipline my empirical analysis: the increases in female labor supply generated by electrification concentrate among young and skilled women; and subsequent generations of women increase their schooling.

Using data from the early electrification of the United States, I then present evidence that supports
these theoretical predictions. I digitize a dataset of the universe of US central generating stations in 1911 and 1919 from historical sources to generate county-level measures of electrification during the 1910’s. I link this electrification with a panel of individuals constructed using the 1910–1940 full-count censuses using matching algorithms, and use a difference-in-difference strategy to study the effects of electrification across different cohorts. In line with my model’s predictions, I find that (1) higher levels of educational attainment increased the response of young women’s employment to electrification, particularly for those with post-secondary education, and (2) electrification raised the overall educational attainment of subsequent generations of women.

In future research, I plan on using the electrification dataset I constructed in order to study the effects of electrification on men’s and women’s wages, occupations and the sectoral composition of employment. This can shed further light on the skill-bias of electricity, and the specific industries and occupations that favored women’s employment in response to electrification.

**Human Capital Accumulation Within Firms**

Most literature on the differences in human capital levels across countries has focused on understanding the factors contributing to human capital accumulation in school. Much less work has been devoted to understanding human capital accumulation and learning patterns at work. The second stream of my research agenda contributes in this direction by studying the process of human capital accumulation within firms. In our paper “Human Capital Investment and Firm Size: The Role of On-the-Job Training and the Labor Share” (joint with Xiao Ma and Alejandro Nakab) we study how on-the-job training patterns contribute to cross-country income differences. Using data from 140 countries, we show that richer countries have a higher percentage of workers who receive on-the-job training. This stems both from the higher employment shares in agriculture and self-employment, and the larger concentration of employment in small firms prevalent in the developing world. We reconcile these facts using a general equilibrium model featuring traditional and modern sectors. We show that training incentives are distorted in the modern sector, due to the existence of a hold-up problem, where the firm-level return of training is moderated by the improvement of the bargaining position of workers. This distortion is especially marked in small firms, where the share of worker’s compensation in profits (labor share) is higher as a consequence of more productive firms being shielded from wage competition, and thus the surplus from investments in worker skills is lower.

In other research, we further explore human capital accumulation patterns within firms by focusing on peer learning. Our insight, is that when firms have a highly specialized workforce, the tasks performed by different workers are similar, promoting worker collaboration, information flows, and productivity growth. To formalize this intuition we build a model where workers and managers
form teams, and task specialization patterns shape the flow of information within these. We then show that detailed worker qualification data from Germany supports the theoretical predictions: (1) larger firms exhibit higher levels of specialization, and (2) workers in smaller firms report having learned the necessary skills for the job by learning by doing or self learning more frequently than by learning from peers or training.

Risk Taking and Economic Growth

The final stream of my research agenda focuses on studying how experiences of macroeconomic change shape individual’s risk taking behaviors and outcomes, with a specific focus on developing economies. This contrasts with previous studies, which have focused overwhelmingly on developed countries, and is particularly interesting since the most dramatic experiences of economic growth and volatility in recent decades have occurred in emerging and developing economies. In our paper “Adaptive Risk-Taking: Theory and Evidence from Developing Countries” (joint with Remy Levin), we show that individual risk preferences adapt to cumulative lifetime experiences of macroeconomic volatility using data from Indonesia and Mexico. To do this, we link panel data containing experimental measures of risk aversion for the same subjects several years apart to sub-national growth statistics capturing their lifetime macroeconomic experiences. We find that individuals who live through periods of increasing volatility themselves become more risk averse. We also find a positive correlation between the recency of the effects of volatility and the age-heterogeneity of its effects in both samples. To better understand the mechanisms underlying our empirical results we build a model of risk aversion adaptation over the life course. In our model an agent who is exposed to exogenous background risk containing structural uncertainty learns from realizations of the risk over their lifetime about that uncertainty, which in turn affects their endogenous risky choice. In addition to matching our empirical results, our model predicts that large negative shocks will increase individual risk aversion more than commensurate positive shocks, which we confirm in our data. Our findings contribute to the understanding of how risk aversion changes over the life cycle and have implications for macroprudential policy.