

# RESEARCH STATEMENT

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I am an applied theorist working in the areas of Macroeconomics and International Economics. Much of my work studies the macroeconomic consequences of various frictions—in the labor market, in the financial market, in the product market and in nominal price setting—in economies with micro-level heterogeneity. My work connects theory with detailed micro-level data in order to test and quantify theoretical mechanisms, often leveraging the structure of the model for theory-based identification. My interests extend to both positive and normative implications of the theoretical mechanisms that I study. My research interests span three broad areas at the intersection of International Economics and Macroeconomics. In what follows I describe my contributions in each area, as well as my current work.

## Globalization and labor market outcomes

I study how greater trade openness affects labor market outcomes, such as unemployment and income inequality, as well as how the cross-country differences in the labor market institutions shape the countries' comparative advantage, and whether labor market imperfections hinder the ability of countries to gain from freer international trade. I am also interested in the optimal government policy response to increasing globalization, in particular when it results in greater income inequality and unemployment.

1. In “Labour Market Rigidities, Trade and Unemployment” [6] (with Helpman; published in the *Review of Economic Studies* in 2010), we develop a framework that integrates a frictional labor market into the recent generation of trade models with heterogeneous firms to study the consequences of the different labor market institutions in countries linked by international trade. In particular, we show that a more flexible labor market allows countries to reap greater benefits from international trade, and a unilateral labor market liberalization may reduce welfare in the country's trading partners.
2. In “Trade Liberalization and Labor Market Dynamics with Heterogeneous Firms” [16] (with Helpman; 2016 working paper), we extend this framework to study the dynamics of the adjustment to trade liberalization in an economy with labor market frictions and heterogeneous firms. The interaction of a trade liberalization with firm heterogeneity results simultaneously in job creation and job destruction within sectors, and labor market frictions impede smooth reallocation of workers across firms necessary during the adjustment to a trade shock. We characterize the associated transition dynamics of aggregate productivity and trade flows, as well as the short-run welfare and distributional consequences of a trade shock when the labor market is imperfect.
3. In “Inequality and Unemployment in a Global Economy” [7] (with Helpman and Redding; published in *Econometrica* in 2010), we additionally introduce into the framework in [6]

unobserved worker heterogeneity and costly screening by firms to study the long-run effects of globalization on income inequality and the distribution of the welfare gains from trade. Our model captures the *firm-size* and *exporter* wage premia — two robust cross-sectional labor market patterns that larger firms and exporters tend to pay higher wages to their workers even after controlling for worker observable characteristics — and predicts a hump-shaped relationship between trade openness and wage inequality for all countries independently of their skill-abundance and technological comparative advantage. Hence, the model provides an alternative to the traditional neoclassical trade theory, which has difficulty explaining the observed sharp inequality increases in developing countries that followed trade liberalizations.

4. In “Trade and Inequality: From Theory to Estimation” [17] (with Helpman, Muendler and Redding; published in the *Review of Economic Studies* in 2017) we use Brazilian worker-firm matched data to show that much of the changes in wage inequality originate within sectors and occupations for workers with similar observable characteristics, and across rather than within firms, consistent with the predictions of our earlier theoretical model [7]. We then structurally estimate the extended theoretical model and show that both firm selection into exporting and firm international market access are important determinants of the distribution of worker wages, and that trade participation has a sizable effect on wage inequality through the mechanisms we emphasize. We extend this analysis to the Swedish data in the “Sources of Wage Inequality” [13].
5. In “Globalization, Inequality and Welfare” [18] (with Antràs and de Gortari; published in the *Journal of International Economics* in 2017) we study the welfare corrections to the measures of the gains from trade in an environment with trade-induced inequality and costly redistribution. This paper also extends my earlier work on the “Optimal Redistribution in an Open Economy” [3], which studies the implications of trade-induced inequality for the optimal design of the government redistributive taxation policies. Also, in “Trade and Labor Market Outcomes” [12] (with Helpman and Redding), we explore the optimal social security policy in an open economy subject to the labor market frictions.

## International relative prices and exchange rates

The second area of my research interests is the study of international relative prices, terms of trade and exchange rates. Understanding the forces that shape international relative prices is central for the design of macroeconomic policies in the open economy, and in particular for the management of the large global imbalances, as well as for the choice of the optimal exchange rate regime and the decision to join or form a currency union. Specifically, I study why firms make different choices regarding how often to adjust their domestic and international prices and which currency to set their export prices in. I also study why large exporters tend to adjust their export prices very differently from smaller firms, and what role the imports play in hedging the firms from exchange rate fluctuations. Finally, I explore the strategic interactions in price setting decisions across firms, and how they shape the competitive consequences of a trade liberalization or an exchange rate devaluation. At a more theoretical macro level, I study the determinants of the exchange rate fluctuations. On a more applied side, I have explored how the behavior

of import and export prices has contributed to the international trade collapse during the Great Recession of 2008–09.

1. In “Currency Choice and Exchange Rate Pass-through” [4] (with Gopinath and Rigobon; published in the *American Economic Review* in 2010), we show theoretically and confirm with the detailed micro-level data that in a world with sticky nominal prices a firm’s currency choice for international transactions — which is crucial in the aggregate for the direction of international policy spillovers and the desirability of a floating exchange rate regime — depends on the *medium-run* exchange rate pass-through, which measures the extent to which the firm wants to adjust its prices following an exchange rate shock.
2. In “Frequency of Price Adjustment and Pass-through” [5] (with Gopinath; published in the *Quarterly Journal of Economics* in 2010), we show, using micro-level data, that the firms with longer price durations also choose to pass-through a smaller fraction of the cost shocks into their prices when they adjust them — a pattern consistent with cross-firm heterogeneity in markup variability, and important for our understanding of the nature of nominal price rigidities. In “In Search of Real Rigidities” [9] (with Gopinath; published in the 2010 *NBER Macroeconomics Annual*), we use international price data to assess the magnitude of *real rigidities* (strategic complementarities in price setting) and their importance for the aggregate effects of monetary policy shocks.
3. In “Importers, Exporters and Exchange Rate Disconnect” [15] (with Amiti and Konings; published in the *American Economic Review* in 2014), we merge Belgian import and export data at the firm level to show that the largest exporters, which account for the majority of trade flows, choose to pass-through little of the exchange rate movements into their export prices both because they effectively hedge their costs by importing a large share of intermediate inputs and because they actively adjust their markups in response to cost shocks, while small exporters tend to have complete exchange rate pass-through.
4. In “International Shocks, Variable Markups and Domestic Prices” [21] (with Amiti and Konings; resubmitted to the *Review of Economic Studies* in 2018), we develop a general framework and an empirical identification strategy to estimate the elasticities of a firm’s price response to both its own cost shocks and to the price changes of its competitors, taking advantage of a new micro-level dataset for the Belgian manufacturing sector with detailed information on firm domestic prices, marginal costs, and competitor prices. We find strong evidence of strategic complementarities in price setting, with a considerable heterogeneity across firms, with large firms exhibiting stronger strategic complementarities. We also show how this pattern of heterogeneity in markup variability across firms is important for explaining the aggregate markup response to international shocks and the observed low exchange rate pass-through into domestic prices. These papers ([15] and [21]) compliments my earlier work with Gopinath ([4], [5] and [9]) to better understand what firm characteristics shape the pass-through and currency decisions of firms.
5. In “Trade Prices and the Global Trade Collapse of 2008–09” [10] (with Gopinath and Neiman; published in the *IMF Economic Review* in 2012), we document the behavior of import and

export prices during and after the Great Recession of 2008–09, and assess to what extent the adjustment in international prices has contributed to the global decline in trade flows, and what theoretical mechanisms are consistent with the observed empirical patterns. In “Price Dynamics for Durable Goods” [11] (with Fabinger and Gopinath; 2012 working paper), we develop a macroeconomic model of durable-good price setting to better understand the cyclical fluctuations in markups and sales of the durable goods which dominate international trade.

6. In “Exchange Rate Disconnect in General Equilibrium” [22] (with Mukhin; under revision, 2018), we propose a dynamic general equilibrium model of exchange rate determination, which simultaneously accounts for all major puzzles associated with nominal and real exchange rates. We argue that a key driving force of the exchange rates must be shocks in the asset markets, e.g. international asset demand shocks, which allows otherwise conventional macroeconomic models to be quantitatively consistent with the moments describing the dynamic comovement between exchange rates and macro variables. Nominal rigidities improve on the margin the quantitative performance of the model, but are not necessary for exchange rate disconnect, as the driving force does not rely on the monetary (or productivity) shocks.

## Economic policy and other research

The third area of my research interests centers around the optimal design of macroeconomic and development policies, in particular in open economies. I explore how fiscal and macro-prudential policies can partially or fully substitute for the loss of monetary policy independence in a currency union — questions that have become particularly relevant with the recent crisis in the Euro Zone countries. I also study the optimal government interventions in the product and input markets during different phases of economic development in economies with an imperfect financial market, and whether these optimal interventions can justify the heterodox policies often advocated in the policy discourse, such as real exchange devaluation, import substitution, and export promotion.

1. In “Fiscal Devaluations” [14] (with Farhi and Gopinath; published in the *Review of Economic Studies* in 2014), we study the equivalence of certain simple fiscal policies with nominal exchange rate devaluations in a general dynamic environment with nominal frictions and fixed exchange rate. This work is instrumental for the design of an effective macroeconomic stabilization policy in currency unions, such as the Euro Zone.
2. In “The Macroeconomics of Border Taxes” [19] (with Barbiero, Farhi and Gopinath; forthcoming in the 2018 *NBER Macroeconomics Annual*), we extend this work to analyze the dynamic macroeconomic effects of border adjustment taxes, both when they are a feature of a corporate tax reform (BAT) and for the case of value added taxes (VAT). We show that BAT is unlikely to be neutral at the macroeconomic level, as the conditions required for neutrality are unrealistic; the basis for neutrality of VAT is even weaker. In response to the introduction of a 20% in the US the dollar appreciates strongly, by almost the size of the tax adjustment, U.S. exports and imports decline significantly, while the overall effect on output is small. Border taxes increase government revenues in periods of trade deficit.

3. In “Optimal Development Policies with Financial Frictions” [20] (with Moll; forthcoming in *Econometrica*) we study the Ramsey-optimal policies during different phases of economic development in economies with heterogeneous agents facing financial (collateral) constraints. We show that during the initial phases of development, when entrepreneurs are severely undercapitalized, the planner would choose pro-business (or output-enhancing) policies — even if she only cares about the welfare of workers — in order to speed up entrepreneurial wealth accumulation and make the financial constraints less binding. In a multi-sector environment, optimal policy subsidizes sectors with a latent comparative advantage and under certain circumstances involves a depreciated real exchange rate. Our results provide an efficiency rationale, but also identify caveats, for many of the development policies actively pursued by dynamic emerging economies.
4. In “Granular Comparative Advantage” [23] (with Gaubert; under review, 2018), we explore the implications of firm *granularity* at the sectoral-level for the patterns of cross-country comparative advantage. We find that granularity accounts for about 20% of the variation in realized export intensity across sectors, and is more pronounced in the most export-intensive sectors. In turn, idiosyncratic firm dynamics accounts for a large share of the evolution of a country’s comparative advantage over time. Governments face strong incentives to target trade policy at large individual foreign exporters, and to use lenient antitrust regulation at home to substitute for beggar-thy-neighbor trade policy.
5. In “Consumption-led Growth” [24] (with Brunnermeier and Gourinchas; working paper, 2018), we explore the relationship between current account openness and growth in the context of an endogenous growth model. Trade openness has two effects on the relative profitability of tradable projects: the foreign competition effect and the relative market size effect. We show that balanced trade ensures that the two effects exactly offset each other, while trade deficits unambiguously favor non-tradable innovation, and discourages the overall rate of innovation.

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