

Research Statement: [Michael E. Waugh, New York University, Stern School of Business](#)

My research studies the sources of cross-country income inequality and how openness to trade factors into the equation. More specifically, my research has focused on answering two questions: (i) how elastic are trade/productivity/welfare with respect to changes in openness and (ii) what are the aggregate consequences of agriculture for economic development. I use theory and data to provide quantitative answers to these questions.

Quantitative Implications of Trade. This research originated in my dissertation and the paper [“International Trade and Income Differences”](#) (American Economic Review, 2010). The motivating question was: What are the consequences of trade frictions for the distribution of output per worker across countries? Using both trade and price data in a standard trade model, I showed that the trade frictions between rich and poor countries must be systematically asymmetric, with poor countries facing higher costs to export relative to rich countries. This result distinguishes itself because asymmetries had been ignored/undisciplinable, and it’s the new price implications of the model that I brought into the analysis which pins down this result. These asymmetries matter; removing them in the model (while keeping geography in place) reduced cross-country income inequality by nearly a third.

A key issue in this paper—and in any quantitative model of trade—is how elastic trade is with respect to changes in trade frictions. The parameter controlling this elasticity is *the* critical input to quantifying the welfare and productivity consequences of trade. In [“The Elasticity of Trade: Estimates and Evidence”](#) (Journal of International Economics, 2014) and [“Trade Models, Trade Elasticities, and the Gains from Trade,”](#) (R&R at The Journal of Political Economy) Ina Simonovska and I developed new methods to measure this elasticity using trade and micro-level price data. Ten years ago, Anderson and Van Wincoop (2004) summarized the existing evidence and found the trade elasticity was “likely between five and ten”—a wide range for such an important parameter. Today, our work has improved the measurement of this elasticity. Across a broad range of data sets and models, we’ve found that it lies somewhere between three and five with the most compelling evidence suggesting a value of four; in welfare terms, our improved measures doubled the welfare cost of autarky.

I continue to work on related questions. However, my recent work in international trade has moved toward answering these questions in dynamic, stochastic environments. Motivating this line of research is the premise that dynamics/uncertainty affect one’s inference about the gains from trade, how trade varies with output and prices, and the frictions underlying the pattern of trade.

In [“Equilibrium Technology Diffusion, Trade, and Growth”](#) with Jesse Perla and Chris Tonetti, we explore the growth consequences of opening to trade in a model of idea flows. In this model, a firm’s dynamic decision to adopt a new technology boils down to a comparison of the profits from continuing to operate its old technology versus the expected profits of adopting a new technology; and the larger this gap, the sooner a firm will adopt. Opening to trade increases this profit gap because import competition erodes the operating profits of the worst performing firms. This, in turn, incentivises the worst performing firms

to adopt new technologies/ideas and, thus, speed economic growth. An important aspect of this result is its empirical content—it provides a rationalization for the large body of empirical evidence that finds import competition results in within-firm productivity growth or gains in X-efficiency.

[“International Trade and Intertemporal Substitution”](#) with Fernando Leibovici, models the dynamic, time-intensive nature of international trade and we show that the variation in the rate at which agents are willing to substitute across time changes one’s inference about how trade will respond to changes in output and prices. Moreover, this economic mechanism exactly resembles the time-varying residuals or “wedges” emphasized in accounts of the collapse of trade during the 2008-2009 recession. When we discipline the variation in the intertemporal marginal rate of substitution using U.S. asset price data, we find that our model quantitatively accounts for properties of U.S. cyclical import fluctuations where traditional static models of trade fail.

Related to the question of dynamics is the role of information (or lack there of). Conventional wisdom suggests that information frictions impede trade, yet the literature lacks little theoretical evidence on the role information frictions in general equilibrium. [“Information Globalization, Risk Sharing, and International Trade”](#) with Issac Baley and Laura Veldkamp, studies information frictions in a simple two good, two country model of exchange in which countries receive noisy signals about each others endowment. Surprisingly, the conventional wisdom does not hold up; the more severe the information frictions are, countries trade *more*. Driving this result is the role of higher-order beliefs in shaping expectations about the terms-of-trade. The importance of this result is that it provides a start to empirically understand when and how information may impede trade flows or not.

The Macroeconomics of Agriculture Productivity. Any attempt to understand why some countries are rich and others poor is incomplete without a discussion of agriculture. In collaboration with David Lagakos, we’ve contributed to this discussion by focusing on both measurement and theory. In [“The Agricultural Productivity Gap”](#) (The Quarterly Journal of Economics, 2014) with David and Doug Gollin, we compiled new, cross-country micro evidence to better measure the gap between value added per worker in agriculture relative to non-agriculture (which is evidence of the misallocation of labor across sectors). This gap matters because there are very large cross-country productivity differences in agriculture and, thus, the reallocation of workers out of agriculture in developing countries can yield huge productivity gains. [“Agricultural Productivity Differences Across Countries”](#) (American Economic Review P&P, 2014) provides evidence from micro-level data that these cross-country productivity differences are real.

In [“Selection, Agriculture, and Cross-Country Productivity Differences”](#) (American Economic Review, 2013) Lagakos and I provide an explanation for these productivity gaps across sectors and across countries. The idea is selection; subsistence food requirements induce workers that are relatively unproductive at agricultural work to nonetheless select into the agriculture sector in poor countries. This mechanism can reconcile why cross-country productivity differences in agriculture are much larger than in aggregate *and* why value added per worker across sectors may not be equalized. Subsequent research by Young (2013) found strong evidence that selection is at work in his study urban-rural inequality.

More broadly, this paper has influenced a growing group of papers focusing on the aggregate, quantitative effects of labor market selection. In addition to Young (2013), Young (2014) uses this idea as an alternative explanation for Baumol's Cost Disease; Hsieh, Hurst, Jones, and Klenow (2013) study selection's contribution to US aggregate growth; Burstein, Morales, and Vogel (2015) use similar ideas to measure changes in between-group inequality. Galle, Rodriguez-Clare, and Yi (2015) introduce the labor market selection channel into a multi-country Ricardian model of international trade to study the aggregate and distributional effects from trade.

Lagakos and I continue to work on related questions. The key outstanding question regards the relative importance of various mechanisms behind these agriculture/non-agriculture or rural/urban wage gaps and the limited mobility of people across sectors/regions seen in poor countries. In addition to the selection channel discussed above, wage gaps may reflect a risk premium per the ideas of Harris and Todaro (1970), or different preferences for amenities across locations, etc. This question is important because understanding which mechanisms are more important is critical to understand the role that policy can (or can not play) in facilitating an economy's structural transformation.

In "Selection, Risk, and Rural-Urban Migration" (along with Mushfiq Mobarak) we are working on answering this question. An innovative aspect of this project is our approach. We are using field experiment results from Musfiq's earlier work in Bangladesh which provided monetary incentives for workers to seasonally migrate, new survey evidence on preferences for amenities from Bangladesh (currently being collected), and a dynamic model of migration to account for these different mechanisms. The idea is that the experiment and survey evidence will allow us compellingly discipline these channels rather than just backing them out of the model residually. Moreover, the structural model allows us to speak to aggregate and general equilibrium effects that field experiments or survey evidence are silent on. Preliminary results are promising.

Summary. How elastic are trade/productivity/ welfare with respect to changes in openness? What are the aggregate consequences of agriculture for economic development? At the heart of both questions are common themes—is the allocation of goods or factors across space (e.g. countries or sectors/regions) efficient, what are the frictions preventing reallocation, and how large are the welfare gains from reallocation? And much of this work starts from careful measurement and the theoretical perspective that comparative advantage (in either goods or labor markets) drives the allocations of resources across space. Moving forward, the path is to continue and focus on these themes in dynamic environments and combine theory with micro-data to quantitatively answer aggregate questions.

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