

Meissner, Chistopher M.

**Article**

## New perspectives on the first wave of globalization

NBER Reporter

**Provided in Cooperation with:**

National Bureau of Economic Research (NBER), Cambridge, Mass.

*Suggested Citation:* Meissner, Chistopher M. (2015) : New perspectives on the first wave of globalization, NBER Reporter, National Bureau of Economic Research (NBER), Cambridge, MA, Iss. 1, pp. 13-16

This Version is available at:

<https://hdl.handle.net/10419/113819>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

tional attainment of the 25–34 age cohort is little different than the 55–64 cohort. In all other industrialized countries attainment of the young is substantially greater. An additional issue that will subtract from future productivity growth is the poor quality of educational outcomes in high school. The OECD international Programme for International Student Assessment tests of 15-year-olds reveal that American scores in reading, math, and science rank in the bottom half of the nations tested.

The reduced pace of growth-enhancing innovation after 1970, as well as the demographic and education headwinds, result in projected growth of U.S. real output per person over the next 25 years of 0.9 percent per annum as compared to 2.1 percent per annum during 1890–2007. But this average rate of 0.9 percent does not apply to the great majority of American households because of the inexorable rise of inequality that has occurred since the late 1970s. The inequality data of Thomas Piketty and Emmanuel Saez can be used to calculate that for the 1993–2013 interval the growth rate of income for the bottom 99 percent of the income distribution lagged the overall average by 0.5 percentage points per annum. If this were to continue, it would reduce growth of real income per capita for the bottom 99 percent to 0.4 percent per year, 0.5 percentage points slower than the 0.9 percent average for all income earners. The forces leading to greater income inequality are many and differ for the top one percent and bottom 99 percent of the income distribution, and few of these forces are likely to lose relevance over the next few decades.<sup>5</sup>

The fourth headwind reflects CBO projections that the federal debt-GDP ratio will rise steadily after 2020 as a result of growth in entitlements, mainly Social Security and Medicare. To avoid an unsustainable increase in that ratio, some combination of benefit reductions and tax increases will need to

occur. This will reduce disposable income below the amount that otherwise would be available to fuel growth in per-capita real income.

### Output Growth in the Medium Run

When the U.S. unemployment rate fell below 6 percent in late 2014, attention began to shift from short-run demand factors that affected the labor market to longer-term considerations such as the economy's potential output-growth rate that would set a limit on the rate at which actual output could grow once the unemployment rate stabilized at a particular value. I proposed a simple method of calculating the growth rate of potential GDP based on estimates of each component of the "output identity," a definition linking output to productivity, hours per employee, the employment rate, the LFPR, and the size of the population. Based on alternative estimates of productivity growth and the change in the LFPR, I calculated a range of three values for the potential output growth rate. The central prediction of 1.6 percent per annum is much lower than the 2.2 percent annual growth rate currently assumed by the CBO, a difference that implies the CBO has overstated 2024 real GDP by \$2 trillion. Because slower future output growth implies less growth in tax revenues, I calculate that the CBO has understated the 2024 federal debt-GDP ratio by nine percentage points (78 vs. 87 percent).<sup>6</sup> Slower potential GDP growth adds to the bite of the federal debt headwind by requiring a greater future fiscal retrenchment than would otherwise be necessary.

My estimate of 1.6 percent for the current rate of potential real GDP growth is almost exactly equal to realized actual real GDP growth in 2004–14, implying "more of the same" rather than a radically new economic environment. The 1.6 percent potential growth rate is almost exactly half of the

realized growth rate of actual real GDP between 1972 and 2004; of this difference, roughly one-third is due to slower productivity growth and the other two-thirds to slower growth in aggregate hours of work.

<sup>1</sup> R. J. Gordon, "Interpreting the 'One Big Wave' in U.S. Long-term Productivity Growth," NBER Working Paper No. 7752, June 2000, and in Bart van Ark, Simon Kuipers, and Gerard Kuper, eds., *Productivity, Technology, and Economic Growth*, Boston, MA: Kluwer Publishers, 2000, pp. 19–65.

[Return to text.](#)

<sup>2</sup> R. J. Gordon, "Does the New Economy Measure Up to the Great Inventions of the Past?" NBER Working Paper No. 7833, August 2000, and *Journal of Economic Perspectives*, 14(4), 2000, pp. 49–74.

[Return to text.](#)

<sup>3</sup> R. J. Gordon, "The Demise of U.S. Economic Growth: Restatement, Rebuttal, and Reflections," NBER Working Paper No. 19895, February 2014.

[Return to text.](#)

<sup>4</sup> The headwinds were introduced in R. J. Gordon "Is U.S. Economic Growth over? Faltering Innovation Confronts the Six Headwinds," NBER Working Paper No. 18315, August 2012.

[Return to text.](#)

<sup>5</sup> R. J. Gordon and I. Dew-Becker, "Controversies about the Rise of American Inequality: A Survey," NBER Working Paper No. 13982, May 2008, and "Selected Issues in the Rise of Income Inequality," *Brookings Papers on Economic Activity*, 2, 2007, pp. 169–92.

[Return to text.](#)

<sup>6</sup> R. J. Gordon, "A New Method of Estimating Potential Real GDP Growth: Implications for the Labor Market and the Debt/GDP Ratio," NBER Working Paper No. 20423, September 2014. [Return to text.](#)

## New Perspectives on the First Wave of Globalization

Christopher M. Meissner

The first "Great Wave of Globalization," during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, witnessed a historically unprecedented rise in spatial economic integration. Between 1850 and 1913, transportation costs plummeted, information flows accelerated, tariffs fell, trade treaties such as free trade agreements with unconditional most-favored-nation clauses and treaty ports proliferated, and empires expanded. In addition, a set of global financial intermediaries flourished, migrants flowed to previously unsettled regions in unprecedented numbers, and economic and political stability was largely the norm.

Unsurprisingly, many commodity prices converged and the export share of total production increased dramatically, doubling or tripling in many small, open economies between 1850 and 1914. In addition, new markets opened up to international trade and previously unavailable varieties of goods became accessible. Patterns of specialization and production processes were transformed. All of these forces significantly affected the living standards of those participating. Modern economic growth, meaning sustained rises in the standard of living, became the new norm. Social and political transformations also accompanied this episode of great integration.

My research, in collaboration with Michael Huberman, David Jacks, Dan Liu, Dennis Novy, and Kim Oosterlinck, seeks to shed further light on the causes and consequences of the international trade boom between 1870 and 1914. How much did trade costs actually fall in this period of globalization? What fraction of the rise in trade flows can be explained by the decline in trade costs? What was the relative contribution of geography, policy, and technology in explaining the first wave of globalization? What impact did trade costs and trade integration have on welfare and then on institutional and policy outcomes

such as labor standards or the level of democracy?

To help answer these questions we have digitized and compiled a large amount of historical data from national data sources covering bilateral trade flows, GDP, gross production, and many other geographic and policy variables. Comprehensive bilateral trade data were recorded in the 19<sup>th</sup> century by national authorities and colonial powers, since a large fraction of government revenue came from taxes on international trade. Moreover, as I will detail below, not only can we make use of aggregate bilateral trade data, but economic historians are now able to rely on bilateral, product-level trade flows which provide greater granularity and deeper insight into the mechanics of the first wave of globalization. While research is only just beginning as regards the latter, these data will allow us to gain a greater understanding of forces driving globalization and its connections to economic growth, both in industrial leaders and their followers. Such questions potentially have great relevance today both to developing countries and to leading countries that are being strongly affected by globalization. This brief survey discusses what emerges when we combine these data sets and analyze them with the help of trade theory and modern empirical methods.

### Trade Costs and the Determinants of Globalization

Trade costs can be broadly defined as the resource costs of shipping and trading commodities across international borders. When such trade is costly, foreign demand for domestic goods is assumed to be lower than it would be in the absence of such costs. What role did these costs play in explaining the growth of international trade and the types of goods traded during the first globalization? Especially impor-



Christopher M. Meissner is a Research Associate in the NBER's Program on the Development of the American Economy and a professor in the department of economics at the University of California, Davis.

His research interests include measuring international trade integration, the determinants of international trade, and the impact of international trade on policies and institutions. Other research focuses on international capital flows in the first wave of globalization, the origins and consequences of foreign currency debt, and the determinants and consequences of financial crises.

Meissner received his A.B. in economics from Washington University in St. Louis in 1996 and his Ph.D. in economics from the University of California, Berkeley, in 2001. Before joining UC Davis, Meissner was a lecturer in economics at Cambridge University and a fellow of King's College, Cambridge.

Meissner lives in Davis, California, with his wife and four children and also spends a good deal of time in the far north of France, near Lille. Science fiction, foreign films, eating and cooking spicy food, and endless home improvement projects keep him busy when time permits.



tant is understanding how much trade costs mattered relative to other determinants, such as economic growth and comparative advantage.

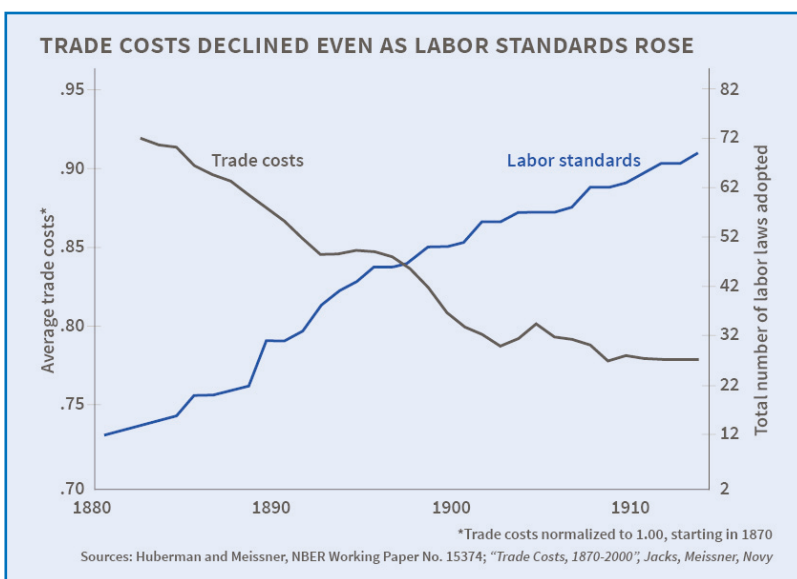
Previous work in economic history has emphasized the rapid decline in transportation costs and the fall in tariffs.<sup>1</sup> However, a number of other trade costs mattered over this period, and not all of them followed the same path as real transportation costs. My collaborators and I have built up a number of historical datasets that allow us to track the evolution and impact over time of trade costs other than transportation and tariffs. For instance, my research with J. Ernesto López-Córdova covering 28 countries between 1870 and 1910 uses a gravity model of bilateral trade flows.<sup>2</sup> We find that when two nations adopted the gold standard, trade was higher by 15 percent, on average, relative to non-adopters. Monetary unions, political alliances, language, and trade treaties also affected the direction of trade.

Many other factors determine trade costs, and very often these are unob-

servable or impossible to measure in any conventional sense. In this case, a structural approach to trade costs can be taken. Jacks, Novy, and I measure trade costs as the scaled difference between domestic and international trade flows.<sup>3</sup> The structural approach provides a measure of trade costs in terms of a tariff equivalent, and it is often referred to as the Head-Ries measure. This measure is quite general and is consistent with nearly all leading theoretical models of trade. Our data for the U.S., U.K., and France and their major trading partners between 1870 and 1913 show that trade costs fell at a rate of about 0.3 percent per year, which is significantly slower than the decline in average maritime freight rates of 2 percent per year. Our explanation for this is, first, that

our all-encompassing trade-cost measure captures many other frictions which were slower to decline than freight rates. These include border frictions, legal and cultural barriers to trade, and significant rises in tariffs during the period. Another crucial aspect to highlight is that international integration can only rise when the relative costs of engaging in international trade fall. During this period, the railroad and many other domestic infrastructure projects promoted internal as much as international integration.

We also studied the effects of the



decline in overall trade costs between specific pairs of countries. We analyzed 130 unique country pairs covering approximately 70 percent of global exports and 68 percent of world GDP in the period 1870 to 2000.<sup>4</sup> Using our methodology, we show how to decompose the growth in trade between two factors: trade-cost changes and economic growth. We find some differences across major countries like the U.S., France, and the U.K. and between different periods. For instance, while trade-cost declines explain about 60 percent of trade growth between 1870 and 1913, they only explain 30 percent in the period 1950–2000. In each period, the remainder of trade growth appears to be coming from economic growth. Thus, while we experienced roughly equal increases in global trade flows during the two waves of glo-

balization, the drivers of growth in overall trade in 1870–1913 and in 1950–2000 appear to have been quite different.

### The Margins of Trade and the First Wave of Globalization

Recently my collaborators and I have begun to use disaggregated historical trade statistics to understand better the underlying dynamics of globalization and its impact on local economies. Using newly digitized bilateral, product-level trade data for Belgium, a typical industrializing, small,

open economy between 1870 and 1913, we illustrate that globalization in the 19<sup>th</sup> century had a very important “extensive margin.”<sup>5</sup> While the existing literature on pre-1914 globalization has emphasized a “great specialization,” this characterization fails to take into account that a significant fraction of the growth of trade was due to the export of new goods and the opening up of new markets. Significant amounts of the observed trade flows were also in fact already intra-industry. This observation leads us to believe that then, as now, firm-level heterogeneity and trade costs mattered.

We first decompose the growth of Belgian manufacturing exports into an intensive margin (old products and old countries) and an extensive margin (new goods and new countries). Between 1880 and 1910 about 58 percent of the growth in the value of exports was accounted for by the appearance and growth of exports of new goods. In this case, 45 percent of the growth is attributable to the intensive margin or products that were already being shipped in 1870. A small set of exports was discontinued, acting to reduce trade by about 3 percent less than would otherwise have been the case.

We are also able to track the evolu-

tion and impact of a number of trade costs, some of which acted as “fixed” costs to exporting, and some of which acted as “variable” trade costs. We find evidence that diplomatic representation, colonial ties with other leading nations, and absence of a common language acted to alter the fixed costs of trade, implying that these factors helped generate—or limited, in the case of trade with colonies of the great powers—export success in new goods, such as tramways and other high quality/high value-added manufactures.

We also find other evidence consistent with the idea that firm-level heterogeneity was important in the first period of globalization. Gravity regressions by product or industry reveal a range of elasticities with respect to observable trade costs that depend on the type of good and industry. This is consistent with the predictions of modern models of trade with heterogeneous firms. A final finding is that, as fixed costs fell and presumably as new firms found it profitable to enter export markets, many industries experienced relatively slow productivity growth as low-productivity entrants were now able to survive. This was especially true in older, more-established industries. Although Belgium experienced a rise in productivity, overall productivity growth between 1870 and 1910 was much slower than we would expect in the midst of such an unprecedented trade boom, and it was much lower than productivity growth in the new-goods sectors. Since the former made up for a greater share of total output than the latter, overall productivity growth was muted despite falling trade costs. We ascribe this finding to “negative” selection effects.

### The Impact of International Trade: Welfare, Institutions and Policies

Trade costs also directly affected welfare and institutional outcomes of interest in the first wave of globalization.<sup>6</sup> Market potential, essentially the global demand for a country’s output, is

limited by trade costs and hence by the level of integration. Many studies covering the past few decades have found that higher market potential is strongly related to higher income per person. In this context, Liu and I study the importance of market potential in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries.<sup>7</sup> This work addresses an important and long-running historical debate about how the U.S. overtook Great Britain in productivity leadership in the late 19<sup>th</sup> century.

The economic history and economic growth literature has often attributed this event to the outsized U.S. domestic market. We find however that theory-based empirical measures of market size (i.e., market potential) for the U.S. are not significantly larger than they were for Great Britain, France, or Germany circa 1900. To be sure, international borders greatly reduced the leading European nations’ trade, such that they faced an effective 60 percent ad valorem-equivalent tariff on their exports. At the same time, their domestic markets were dense and well-connected via water routes and extensive internal infrastructure, including roads, canals and railroads. We conduct a counterfactual simulation within a general equilibrium model of trade and find that had some of the smallest economies of the time (such as Belgium, Canada, Denmark, and Switzerland) been able to sell into global markets without facing international borders, their real per capita incomes could have risen to the levels attained by the U.S.

It is worth asking whether institutional and policy changes in the late 19<sup>th</sup> century were related to the first wave of globalization. First, observe that, from the middle of the 19<sup>th</sup> century, many countries dramatically extended the franchise, thereby increasing the level of ostensible democracy. A similar trend coincided with the more-recent wave of globalization, as the number and share of democracies in the world rose dramatically from the 1960s. Open-economy models of institutional change highlight that if trade induces a more-even distribution of income—say, as labor benefits from an increase in global

demand—then greater democracy could result.<sup>8</sup> We use an instrumental-variables strategy inspired by Jeffrey Frankel and David Romer to see whether, in the first wave of globalization in particular, exposure to trade flows, might have had a causal impact on democracy.<sup>9</sup> There is little evidence that it did.<sup>10</sup> However, in the late 20<sup>th</sup> century, we find that there was a statistically significant and positive relationship between these variables that was strengthened when the middle class benefitted from globalization, much as theory predicts.

Like modern economists and policy makers, authorities in the late 19<sup>th</sup> century wondered whether the technological changes affecting the integration of global markets would lead to intense labor market competition and a race to the bottom in terms of social policy. Bismarck, amongst others in Europe and the U.S., worried that domestic producers would be negatively impacted by radical changes to the social welfare state—such as the child labor laws, limits on working hours, and other labor standards which they were instituting. Despite the pessimism, labor standards were implemented in many countries. Strikingly, the data clearly show that a number of leading countries heavily exposed to international trade vigorously and enthusiastically adopted new labor regulations. Our research shows that country pairs that traded extensively with one another were more likely to adopt the labor standards of their trading partners.<sup>11</sup> Evidently, trade can be used as a lever for better social protection, and globalization does not always promote a race to the bottom.

### Further Horizons

Recent research using new trade data and theory-based methodology has advanced our understanding of the causes and consequences of the first wave of globalization. Future work will provide new evidence based on recently digitized bilateral, product level trade for the United States, and this should shed further light on the industry-level

growth impact of the first wave of globalization in an important industrializer. Together with similar datasets that are currently being processed by researchers around the world for China, France, Germany, Italy, Japan, Switzerland, and the U.K., a new view, or at least a greatly enhanced vision, of 19<sup>th</sup> century globalization is sure to emerge. Countries did not compete and grow based only on their factor endowments. Like today, producers and consumers gained from access to new finished and intermediate goods and higher-quality varieties of already existing goods, such that the welfare gains from trade strongly contributed to rises in living standards during the first wave of globalization.

<sup>1</sup> J. Williamson, “Globalization, Convergence and History,” *The Journal of Economic History*, 56(2), 1996, pp. 277–306.

[Return to text.](#)

<sup>2</sup> J. E. López Córdova and C. M. Meissner, “Exchange Rate Regimes and International Trade: Evidence from the Classical Gold Standard Era, 1870–1913,” *American Economic Review*, 93(1), 2003, pp. 344–53.

[Return to text.](#)

<sup>3</sup> D. S. Jacks, C. M. Meissner, and D. Novy “Trade Costs in the First

Wave of Globalization,” *NBER Working Paper No. 12602*, October 2006, and *Explorations in Economic History*, 47(2), 2010, pp. 127–41.

[Return to text.](#)

<sup>4</sup> D. S. Jacks, C. M. Meissner, and D. Novy “Trade Booms, Trade Busts and Trade Costs,” *NBER Working Paper No. 15267*, August 2009, and *the Journal of International Economics*, 83(2), 2011, pp. 185–201.

[Return to text.](#)

<sup>5</sup> M. Huberman, C. M. Meissner, and K. Oosterlinck, “Technology and Geography in the Second Industrial Revolution: New Evidence from the Margins of Trade,” *NBER Working Paper No. 20851*, January 2015.

[Return to text.](#)

<sup>6</sup> For a comprehensive survey of the historical literature on globalization and growth see: C.M. Meissner, “Growth from Globalization? A View from the Very Long-Run,” in P. Aghion and S. N. Durlauf, eds., *Handbook of Economic Growth*, vol. 2B, Oxford, United Kingdom: Elsevier Press, 2014, pp. 1033–69.

[Return to text.](#)

<sup>7</sup> D. Liu and C.M. Meissner, “Market Potential and the Rise of US Productivity Leadership” *NBER Working Paper No. 18819*, February

[Return to text.](#)

2013, and *the Journal of International Economics*, forthcoming.

<sup>8</sup> D. Acemoglu and J. A. Robinson, *Economic Origins of Dictatorship and Democracy*, Cambridge, United Kingdom: Cambridge University Press, 2009.

[Return to text.](#)

<sup>9</sup> J. A. Frankel and D. Romer, “Does Trade Cause Growth?” *American Economic Review*, 89(3), 1999, pp. 379–99, and “Trade and Growth: An Empirical Investigation,” *NBER Working Paper No. 5476*, March 1996.

[Return to text.](#)

<sup>10</sup> J.E. López Córdova and C.M. Meissner, “The Globalization of Trade and Democracy, 1870–2000,” *NBER Working Paper No. 11117*, February 2005, and *World Politics*, 60(4), 2008, pp. 539–75.

[Return to text.](#)

<sup>11</sup> M. Huberman and C. M. Meissner, “Riding the Wave of Trade: Explaining the Rise of Labor Regulation in the Golden Age of Globalization,” *NBER Working Paper No. 15374*, September 2009, and *the Journal of Economic History*, 70(3), 2010, pp. 657–85.

[Return to text.](#)

[Return to text.](#)

[Return to text.](#)

## Pricing and Marketing Household Financial Services in Developing Countries

Dean Karlan and Jonathan Zinman

Retail financial institutions worldwide are facing greater competition and regulatory scrutiny. This makes it increasingly important for them to understand the drivers of consumer demand for basic financial services if they are to maximize profits, improve social impacts, and address public policy concerns. Researchers also need to understand these drivers in order to calibrate, shape, and test models in fields ranging from contract theory to behavioral economics to macroeconomics to basic microeconomics. Likewise, policymakers need to understand these drivers in order to sift through a plethora of potentially relevant theories and set appropriate regulations. Much of our research seeks to identify the effects of pricing and marketing on demand for short-term loan and savings products in developing countries.

Pinning down causal effects of financial institutions’ pricing and marketing strategies is complicated by at least five issues. One is the classic social science problem: Relying on observational data is fraught with the risk that changes in price or marketing are correlated with other changes — in firm strategy, in the macroeconomy, in household budget constraints — that drive selection. This is a particular concern when estimating treatment effects from expanding access to financial products such as credit, savings, or insurance. A second issue, intimately related to the first, is low statistical power due to limited variation in key policy parameters. A firm making a single change to pricing, a product, or marketing is basically generating a single data point of variation. The effects of the single change are difficult to disentangle from other contemporaneous changes affecting the firm and its constituents. This is a particular concern for savings products, as compared to loans, since one-size-fits-all pricing is more common and direct marketing is less common

with savings products. These two issues are the primary motivation for employing experimental methods.

A third complicating issue is that most measures of demand sensitivity — for example, demand elasticities — are not fundamental or unchanging parameters. We expect demand sensitivities to change with factors like competition, labor market conditions, and search costs. A fourth issue is that a firm’s levers are rarely perfect representations of a single parameter. For example, variations in price, in particular, may be confounded by other factors changing simultaneously and may therefore lead to deceiving results if interpreted strictly as an estimate of demand sensitivity. A fifth issue is that strategy often requires an understanding of underlying mechanisms, while identifying mechanisms requires observing off-equilibrium behavior. For example, observing loan repayment and other borrower behaviors under atypical conditions can help test theories of asymmetric information or liquidity constraints.

We address these challenges using field experiments implemented by financial institutions in the course of their day-to-day operations. The partnering financial institutions randomly assign prices, communications, or access to products, generating variation that is uncorrelated with other factors that vary endogenously over time or people. This addresses Issue One above. The financial institutions randomize policies at the individual or neighborhood level in order to generate sufficient statistical power to identify causal effects. This addresses Issue Two. In some instances, the financial institutions’ randomized policies are implemented across sufficiently different people or markets, and are in place for long enough or with varying lengths of time, that we can examine under what conditions demand varies. This addresses Issue Three.<sup>1</sup> In another instance,



Dean Karlan is a professor of economics at Yale University and president of Innovations for Poverty Action, a nonprofit dedicated to discovering and promoting solutions to global poverty problems. He is on the Executive Committee of the Board of Directors and program chair for finance of the MIT Jameel Poverty Action Lab. At Innovations for Poverty Action, he is academic co-chair of the Global Financial Inclusion Initiative, the Small and Medium Enterprise Initiative, and the Ultra-Poor Safety Net Graduation Initiative.

As a social entrepreneur, Karlan is co-founder of stickK.com, a website that uses lessons from behavioral economics to help people reach personal goals. Karlan received a Presidential Early Career Award for Scientists and Engineers in 2007, and was named an Alfred P. Sloan Fellow the following year. In 2011 he co-authored *More Than Good Intentions: How a New Economics is Helping to Solve Global Poverty*. His education includes a Ph.D. in economics from MIT, an M.B.A. and an M.P.P. from the University of Chicago, and a B.A. in international affairs from the University of Virginia.