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## Explaining the U-Shaped Pattern of Farm Size and Productivity

**S**mall farms are the norm in low-income countries, while large farms are more common in high-income countries. In China, India, and Indonesia, for example, 80 percent of farms are less than 10 acres in size. In the United States and Canada, in contrast, only 10 percent of farms are this small. Agricultural productivity in developing countries is generally lower at larger than at smaller farms, while the opposite is true in developed countries.

Andrew D. Foster and Mark R. Rosenzweig explore these productivity patterns in **Are There Too Many Farms in the World? Labor-Market Transaction Costs, Machine Capacities, and Optimal Farm Size** (NBER Working Paper No. 23909). They find that fixed transaction costs, in the form of wages paid to laborers, and economies of scale in the use of machinery can explain the observed relationships between productivity and farm size.

The researchers analyze village level survey data on farms in India from the International Crops Research Institute for the Semi-Arid Tropics, which feature a relatively balanced distribution of both small and large farms compared with what actually exists in India and most other low-income countries. Forty percent of the sample is comprised of landowners who own more than 10 acres, a rarity among farmers in India. They find a U-shaped distribution of farm yield and productivity:

both large and small farms are more productive than medium-size ones.

labor potential is exhausted. Intermediate-size farms, therefore, are the most likely to

In India, labor market practices and the fixed cost of acquiring capital goods combine to make medium-size farms less productive than smaller or larger counterparts.

About one-third of farm laborers in the sample work for less than eight hours per day. The researchers find that low-hour workers are paid 33 percent more than laborers who work eight hours a day, suggesting a fixed cost of daily labor. One explanation for this fixed cost is that workers are often hired on a daily basis, as farming can be dependent on the season and tasks cannot necessarily be accumulated until there is sufficient work for many days. There are also significant travel costs associated with hiring workers, as many live outside of the village in which they work.

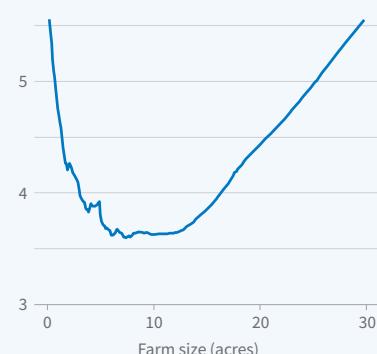
Small-plot farmers usually employ family members, only hiring the more expensive low-hour workers when family

employ low-hour workers. This explains why small farms are more productive than medium-size ones; they are less likely to employ expensive non-family labor. This phenomenon does not, however, explain the second part of the U-shaped distribution: the discovery that above some threshold, large farms are more productive than even the most productive small ones.

To understand this aspect, the researchers examine data on power sprayers used for spreading herbicide. They find that, consistent with economies of scale, average hours of per-acre sprayer use decline for farms larger than 12 acres. Owners of large farms use pricier, higher-capacity equipment and are

Average Profit per Acre on Indian Farms

Thousands of 1999 rupees



Source: Researchers' calculations using data from the India ICRISAT VLS panel survey, 2009–2014

able to spend less time spraying and weeding per acre for the same effect than owners of small farms. The findings are robust to controlling for differences in farmer wealth and multiple measures of plot quality; they also hold across plots for the same farmer, thus ruling out farmer ability differences as a major determinant of the U-shape.

The researchers calculate that equipment-related productivity in India does not rise once farms are larger than about 25 acres. Efficient production above this ceiling would require higher-capacity machinery, like that used in the United States and Brazil. Such machinery is currently unavailable in India because of the paucity

of very large farms. Furthermore, owners of small farms have little incentive to expand to large farms. Moving to a productive large-farm scenario would require a land-owner to buy many small plots simultaneously to avoid the productivity loss associated with intermediate-size farms.

— Morgan Foy

## Exploring the Rise in Corporate Cash Holdings

**T**he total amount of cash held by corporations has increased since 2000, and some prominent firms have amassed very large cash holdings, raising questions about why this cash is not being invested or distributed to shareholders. To put these trends in context, and to understand recent developments in corporate cash management policy, [John R. Graham](#) and [Mark T. Leary](#) analyze almost a century of firm-level data. They find that, viewed in historical perspective, corporate cash holdings today are not unusual.

In [The Evolution of Corporate Cash](#) (NBER Working Paper No. 23767), the researchers analyze the relationship between firm characteristics and cash management policies, as well as how aggregate corporate cash holdings have evolved over time. They use data drawn from the monthly stock files of the Center for Research in Security Prices, Standard & Poor's Compustat, Moody's Industrial Manuals, and Internal Revenue Service Statistics of Income data. Despite dramatic shifts in transaction costs and informational frictions over the past century, they conclude that basic cash management prac-

tices have remained relatively stable: for the most part, firms of similar type have managed their cash holdings in similar ways throughout the past century. They do discover a new pattern for some firms

Modest corporate investment relative to profitability and tax rules that discourage repatriation of foreign cash are key drivers of the recent increase in aggregate corporate cash.

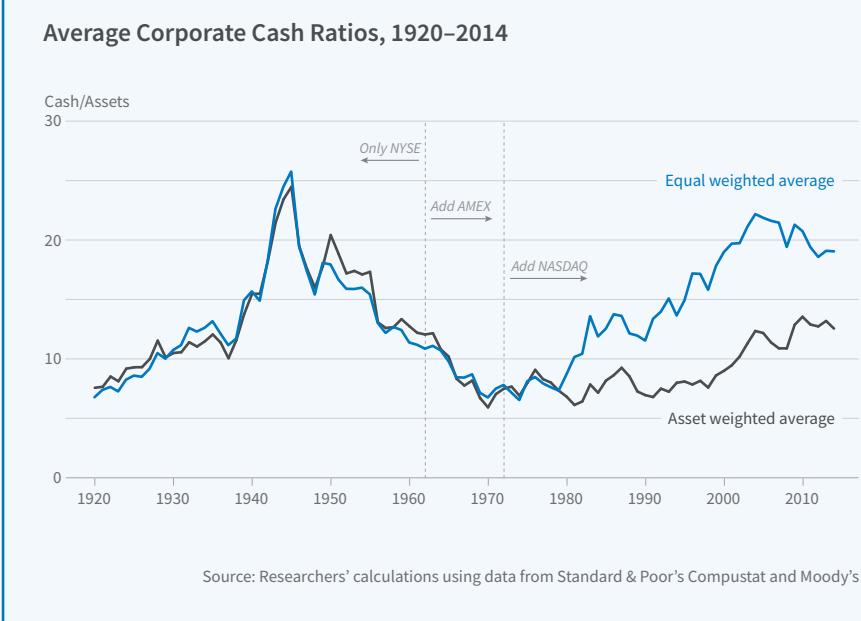
in the period after 1980.

What has changed since 1980, the researchers say, is that newly public small firms in the health care and technol-

pattern of similar cash holdings for small and large firms. These young firms draw down their cash in their first few years of operation, yet maintain relatively high cash ratios. While the emergence of these

young, high-cash firms has affected the equal-weighted cross-firm average ratio of cash to assets, it has not been a key factor in the recent rise in aggregate cash holdings. The latter is much more dependent on the cash management practices of large firms.

The researchers explore the possibility that the cash management practices of firms of different sizes or in different industries have remained stable over time, but the relative importance of firms of different types has shifted. Such compositional changes might explain changes in aggregate cash holdings without changes in the behavior of a given type of firm. They do not find any compositional changes that explain the post-2000 rise in cash holdings, and conclude that macroeconomic factors, rather than



ogy sectors report substantial cash holdings. The cash-to-assets ratios at these firms are often higher than those at much larger firms, a break from the historical

changes in firm attributes, are likely to explain recent developments. High corporate profits, modest investment spending, and, especially since 2000, tax incentives that discourage repatriation of earnings by large multinational firms appear to have contributed to increasing aggregate cash.

One lesson of the historical analysis is that aggregate corporate cash holdings, relative to corporate assets or other measures of the size of the corporate sector, were substantially higher during the 1940s and 1950s than they are today. The reason for the run-up at that time,

however, was different from the explanation of the recent rising trend. In the two decades following the Great Depression, precautionary savings appear to have been an important driver of increased cash holdings.

— Deborah Kreuze

## Shore Dwellers Perceive Less Risk from Flooding

**H**ow are the risks of storm damage, rising sea levels, and other weather-related events priced into shoreline properties? The answer depends on whether potential home buyers share similar beliefs about these risks. If some potential buyers are more optimistic than others about the cost of such risks, they will be prepared to pay more for coastal properties than their more pessimistic contemporaries.

Laura A. Bakkensen and Lint Barrage explore the effect of climate risk beliefs on coastal housing prices in **Flood Risk Belief Heterogeneity and Coastal Home Price Dynamics: Going Under Water?** (NBER Working Paper No. 23854). They survey individuals' perceptions of the likelihood of flooding in Rhode Island, and find that waterfront homeowners perceive less risk than others. Perhaps not surprisingly, these individuals also derive more value from living on the coast. Both factors contribute to explaining their decision to live near the ocean.

The researchers conducted a door-to-door survey in Rhode Island, contacting individuals who lived on the coast—defined as within 400 feet of water—and inland. Respondents were asked how worried they were about flooding. They also were asked what they thought the likelihood of flooding was in the next 10 years for coastal homes. To measure how much people valued living on the coast, the survey included a question asking whether coastal residents would move inland if they received a discount on their monthly housing payments. The survey also included questions regarding the probability of future flood risk,

previous flooding in one's own home, and intentions to sell one's home in the future.

Respondents' level of fear regarding flood risk varied systematically with the location of their homes. On average, those living close to the coast were less worried

Rhode Islanders who live on the coast are less concerned about the risk of flooding than their inland neighbors.

about coastal flooding than those living away from it. Forty percent of homeowners living in high-risk zones said they were “not at all” worried about flooding in the next 10 years; those living inland were more likely to say they would be “very worried” if they lived on the coast. The variance in flood risk perceptions was not

driven by different expectations of damages, post-flood government assistance, or insurance coverage.

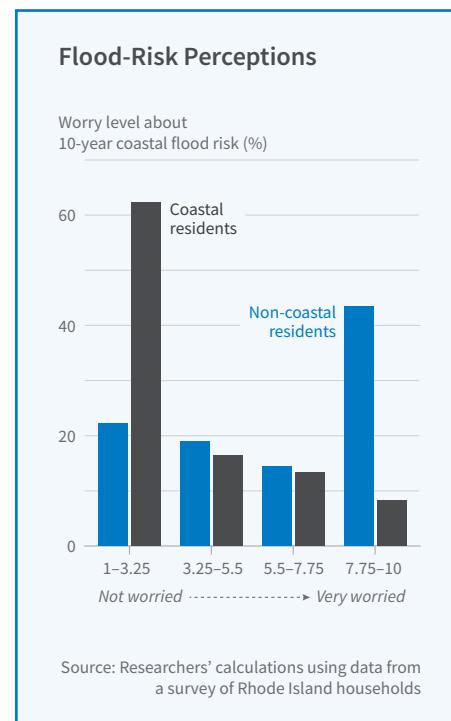
Individuals' risk perceptions were higher if they had previously experienced a flooded home. Coastal homeown-

ers who were very worried about flooding were more likely to report that they planned to sell their coastal property in the next five years. These findings generally suggest that individuals who perceive a greater risk of flooding tend to live away from the coast.

The researchers point out that it is difficult for households to obtain accurate and detailed information on local flood risks. The Federal Emergency Management Agency designates areas with an annual likelihood of flooding exceeding 1 percent as “high-risk” zones and maintains maps describing areas at high risk. But one in six of the maps is more than 20 years old, and the maps do not describe the relative risks of high-risk areas in detail.

Individuals who underestimate flood risk may out-bid potential buyers with higher risk perception when coastal properties are for sale. The researchers conclude that many current coastal dwellers appear to underestimate flood risks, and point out that if their risk perceptions adjust toward what appear to be the best estimates, then coastal home prices could decline to reflect underlying risk more accurately.

— Morgan Foy



# Performance Ticket Auctions: Going, Going, Gone

**A**rtists, athletic teams, and other performers often underprice tickets for their performances, creating a large and very profitable market for ticket sales. In 2003, Ticketmaster introduced an auction system that was designed to direct more of the revenue toward the artists and less toward online resellers. In **Primary-Market Auctions for Event Tickets: Eliminating the Rents of ‘Bob the Broker?’** (NBER Working Paper No. 23770), researchers [Aditya Bhave](#) and [Eric Budish](#) analyze these auctions. They find that although the auctions sharply reduced the profits of secondary sellers, the event companies dropped them as a mechanism for ticket sales.

To measure the effects of Ticketmaster’s auctions, the researchers compare Ticketmaster prices for tickets in 759 auctions conducted in 2007 with the selling price in eBay auctions of tickets for the same concerts. The researchers are able to match proprietary Ticketmaster auction data with scraped eBay resale value data for the same event at the level of the concert, section, and row (for example, The Police, July 29, 2007, Fenway Park, Section A3, Row 2). They find that ticket prices in the primary market auctions (Ticketmaster) were, on average, very similar to prices on the secondary market (eBay). The mean resale profit was only \$6.07, just about 2 percent of ticket value. Both prices were substantially higher than the face values of these tickets: the average eBay price of a ticket was \$135.85 higher than the ticket’s face value, or about 94 percent of ticket value. By using an auction system to sell the tickets, rather than selling them at face value, Ticketmaster eliminated the scope for profitable resale, at least on average, and nearly doubled the revenue that it raised in selling these tickets: \$16.9 million versus \$8.5 million.

While on average the difference between the auction prices and the resale values was small, there was substantial variance. Some tickets fetched higher prices

on eBay than their auction price, but there were also large losses, where the eBay resale value was significantly less than the Ticketmaster auction price.

Although they reduced speculation and underpricing, event ticket auctions failed to catch on.

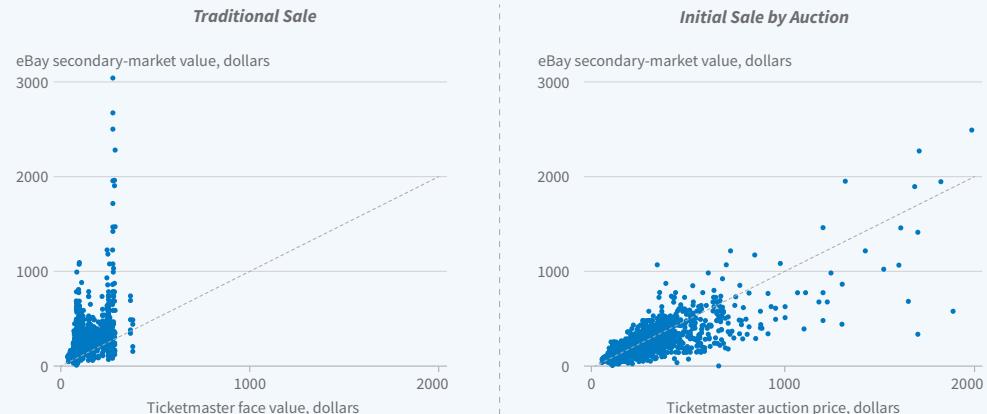
Thus, if professional resellers know which tickets to purchase or are better than ordinary consumers at strategically bidding for tickets, they may still find ways to turn a profit. The researchers compared the purchases of experienced bidders, defined as the winners of 10 or more Ticketmaster auctions, to those

experienced buyers were far more likely to bid substantially more than necessary to get the ticket. For top-quality tickets, such as first-row seats, 14 percent of buyers paid

25 percent or more in excess of what was necessary, given the other bids in the auction; one percent paid double or more. Overbidders were the most likely auction participants never to bid again.

“Our basic findings suggest that the auctions worked (as auctions should!): price discovery improved substantially;

Face Value, Auction Value, and Secondary-Market Prices for Event Tickets



Source: Researchers’ calculations using data from Ticketmaster and eBay

of less experienced bidders. They found that experienced bidders bought tickets that had resale profit potential averaging \$19.49, compared with \$2.47 for inexperienced bidders. The experienced group also was less likely to have overpaid by \$100 or more per ticket, relative to the eBay resale value, than their inexperienced counterparts. Despite this difference, the \$19.49 average profit from the auctions was far less than the \$135.85 profit that a reseller could have realized had they been able to buy the tickets at face value rather than at auction.

Another difference is that inexperi-

artist revenues roughly doubled versus the fixed-price counterfactual; and, perhaps most importantly, the auctions eliminated or at least substantially reduced potential resale profits for speculators,” the researchers conclude.

In light of these outcomes, it is perhaps surprising that ticket auctions did not persist. The researchers note that “while auctions are no longer in use, what has at least partly taken off is using available data, including historical resale values, to set fixed prices in the primary market that more accurately approximate market clearing.”

—Laurent Belsie

# Fewer H-1B Visas Did Not Mean More Employment for Natives

In response to concerns that foreign workers were taking jobs from Americans, especially in high-technology fields, Congress declined to renew previous temporary increases, which reduced the annual quota on new H-1B visas from 195,000 to 65,000, beginning with fiscal year 2004. A study by [Anna Maria Mayda, Francesc Ortega, Giovanni Peri, Kevin Shih, and Chad Sparber](#), based on data for the fiscal years 2002–09, finds that the reduced cap did not increase the hiring of U.S. workers.

**In The Effect of the H-1B Quota on Employment and Selection of Foreign-Born Labor (NBER Working Paper No. 23902)**, the researchers examine data obtained through a Freedom of Information Act request to present the first assessment of the consequences of the cap reduction on various sectors of the skilled labor force.

The H-1B program, which was launched in 1990, has provided foreign-born, college-educated professionals their main entry point into the U.S. market. As much as half the growth in America's college-educated science, technology, engineering and mathematics workforce in subsequent decades can be attributed to H-1B workers.

Since the cap was tightened in 2004, firms hired between 20 and 50 percent fewer new H-1B workers than they might have hired had it remained at 195,000 visas per

year. The researchers find, however, that the reduced pool of foreign workers did not lead firms to hire more Americans, and conclude that this suggests "low substitutability between native-born and H-1B

been among the most talented and productive foreign individuals seeking U.S. employment." Yet these are just the workers who might have contributed technological advances benefiting the entire economy.

Changes in H-1B visa availability instituted beginning in 2004 resulted in a greater concentration of India-born workers in computer-related fields.

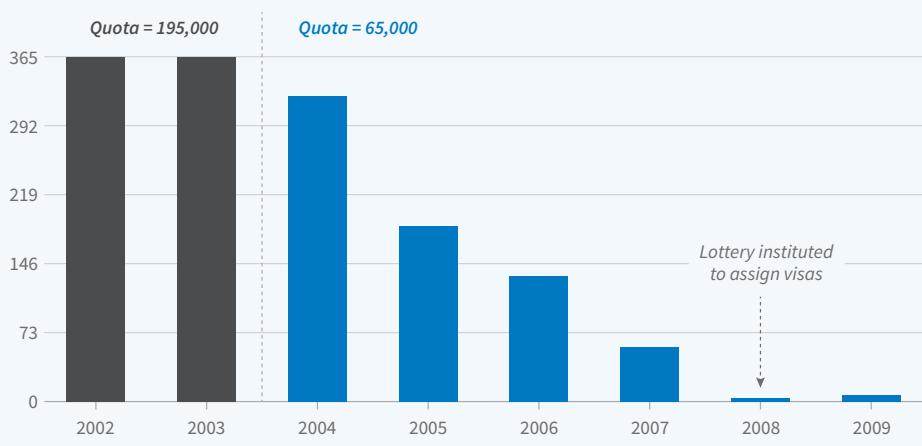
workers in the same skill groups." The cap only applies to for-profit companies, not to new employees of educational institutions or non-profit research institutions.

The researchers also find that the

The cap led to an increased concentration of Indian-born workers in computer-related fields. The paper posits that Indians had a leg up on other foreign workers because of long-established labor networks in the software and semiconductor industries.

On the employer side, the lower cap favored larger firms with greater experience navigating the bureaucracy of the visa program and with in-house legal teams that could handle the paperwork. This proved especially advantageous in fiscal years 2008 and 2009, when

Days until Annual H-1B Quota Was Reached



Source: Researchers' calculations using data from a Freedom of Information Act request of I-129 forms

quota reduction resulted in changes to the composition of new visa holders and the companies that hired them. Employment losses were concentrated at the lowest and highest ends of the wage scale, leading H-1B workers to become more concentrated among workers with mid-level skills. "The binding H-1B cap reduced the number of workers who were likely to have

demand for visas was so high that the number of applications exceeded the quota level within the first week and the government resorted to a computerized random lottery system to allocate them. Smaller firms simply could not afford to spend money applying for visas when they were not sure whether they would obtain one.

—Steve Maas

# Housing Wealth Fluctuations Affect Seniors' Health Care Choices

The daunting costs of long-term health care pose a challenge for senior citizens. Half of adults who live to the age of 65 will require long-term care services at some point. For those who need such care, the average annual cost of these services rings in at \$133,700 in 2015 dollars. For a small subset of the population, 5 percent of men and 12 percent of women, the total lifetime cost of long-term care will exceed \$250,000. Medicaid covers about 35 percent of these costs; elderly individuals and their families bear about half the cost of long-term care.

**In Access to Long-Term Care After a Wealth Shock** (NBER Working Paper No. 23781), Joan Costa Font, Richard Frank, and Katherine Swartz look at how changes in wealth, specifically housing wealth, affect decision-making around the use of three types of long-term care services: paid home health care services, unpaid informal care, and nursing home care. Housing wealth is a particularly relevant metric for this question because it constitutes the largest source of savings for most Americans, particularly older Americans. Housing assets represent 67 percent of the median per capita net worth of adults over the age of 66, and home equity is the primary self-funding mechanism for those who require long-term care.

Using data from the Health and Retirement Study and the Federal Housing Finance Agency, the researchers analyze how varia-

bulent period in the housing market. Between 1998 and 2006, housing prices (and thus housing wealth) rose significantly. In subsequent years it

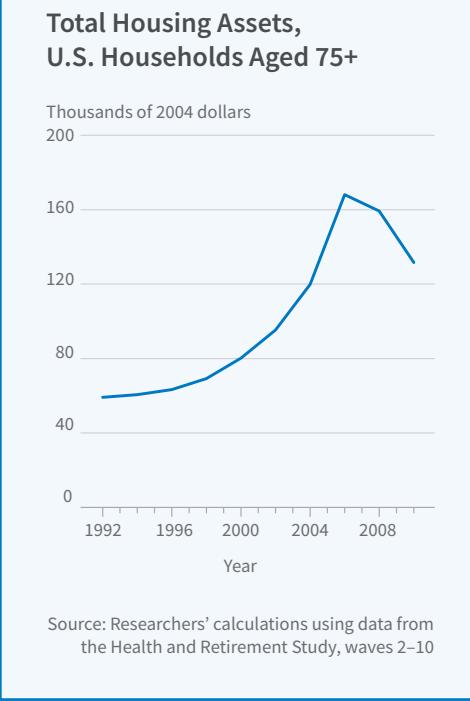
Home equity run-ups due to house price increases raise use of paid home health care and unpaid informal care, but don't affect utilization of nursing home care.

tions in housing prices from 1996 through 2010 affected utilization of long-term care services. The time period represents a particularly tur-

fell sharply, dropping by more than 20 percent on average between 2006 and 2010.

The researchers find that positive shocks to house prices significantly increase homeowners' use of both paid home health care and unpaid informal care. They do not find any effect on utilization of nursing home care. Specifically, a \$3,149 increase in wealth increases the probability that a homeowner will use paid home health care services by 0.25 percentage points. A positive wealth shock of this magnitude is also associated with a 3 to 4 percent increase in the probability that a homeowner will use unpaid, informal care. In contrast, renters in the researchers' sample did not change long-term care service usage patterns in response to changing local housing prices. This finding supports the researchers' hypothesis that housing wealth is tapped to finance long-term care services.

—Dwyer Gunn



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