NBER | NATIONAL BUREAU of ECONOMIC RESEARCH

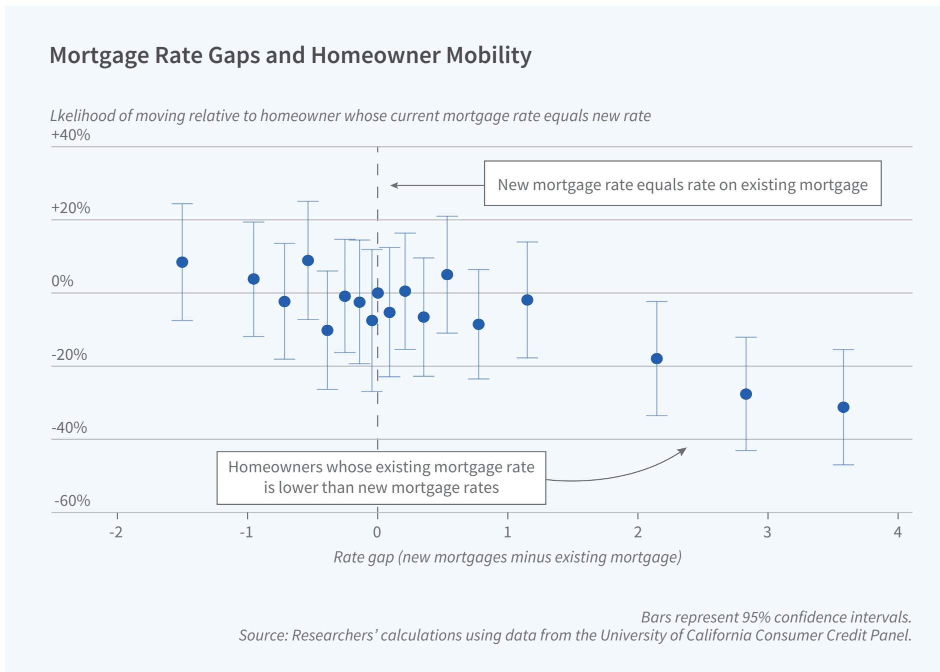
The Digest

November 2024

In This Issue

Quantifying "Mortgage Rate Lock" for US Homeowners

The traditional 30-year, fixed-rate, nonassumable mortgage used by most home buyers in the United States can create strong disincentives to move when interest rates rise. In Household Mobility and Mortgage Rate Lock (NBER Working Paper 32781), Jack Liebersohn and Jesse Rothstein find that rising rates in the last three years have discouraged mobility for homeowners with fixed-rate mortgages. Because rising interest rates have increased the costs of obtaining a new mortgage relative to keeping their existing one, homeowners face high costs of moving, and many have avoided otherwise desirable moves. Because recent mortgage rate increases were much greater than those of past decades, they provide a great deal of statistical power for measuring "mortgage rate lock."



Bars represent 95% confidence intervals.
Source: Researchers' calculations using data from the University of California Consumer Credit Panel.

The mobility of homeowners has fallen dramatically since 2021, particularly among those whose mortgage rates were set when rates were substantially lower than current levels.

The researchers model moving as a function of the gap between a homeowner's mortgage origination rate and the current market rate, as well as other household characteristics. They show that mobility rates of homeowners with mortgages have fallen dramatically since 2021 and that this decline has been concentrated among homeowners with mortgages that were originated when rates were substantially lower than those that have prevailed in the last three years.

They calculate that each percentage point increase in the currently prevailing mortgage rate above a borrower's origination rate is associated with a 7.7 percent decline in that borrower's quarterly probability of moving. This means that between the second quarter of 2022 and the third quarter of 2023, the period of the study, mortgage rate lock caused the between-ZIP code mobility rate for homeowners with mortgages to fall by about 1.2 percentage points, or 16 percent of the projected mobility rate of 7.5 percentage points had mortgage rates remained constant. This translates into 800,000 discouraged moves during that 15-month period.

Mortgage rate lock can reduce housing market transaction volume, as some current homeowners forego moves they might otherwise have made. It can also lead homeowners to forego moves that, in the absence of rate lock, they would have made, perhaps to take advantage of new employment opportunities, and that would have made them better off. This is a source of inefficiency. For lenders, mortgage rate lock can contribute to asymmetry in the effect of interest rate changes and the typical time to mortgage payoff, reducing payoffs at exactly the times when it is most costly to lenders to hold outstanding mortgages.

— Lauri Scherer

Power Plant Acquisitions and Productivity

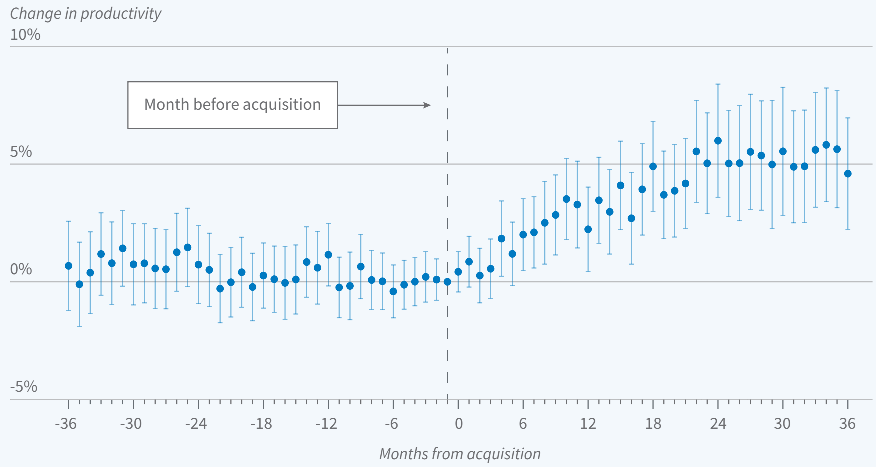
Finding empirical evidence on the productivity and competitive effects of firm mergers is a long-standing challenge. In Do Mergers and Acquisitions Improve Efficiency? Evidence from Power Plants (NBER Working Paper 32727), Mert Demirer and Ömer Karaduman find ownership changes for US electricity generators can increase efficiency by 2 to 5 percent, depending on the acquisition type. The efficiency increase begins around five months post-acquisition and stabilizes after 18 months.

With the deregulation of the US electric power industry in the 1990s, many states decoupled electricity generation from electricity transmission and distribution. Most electricity producers now receive market-based compensation rather than compensation based on regulated rate-of-return targets on capital investment and service costs. These generators are frequently bought and sold by the firms in the market, providing an opportunity to study efficiency changes after acquisitions.

Some key features of this industry allow researchers to overcome the well-known difficulties in the literature in quantifying merger efficiencies. The electricity industry has rich and high-frequency physical input-output data, making it possible to measure efficiency at extreme granularity. Moreover, electricity is a homogeneous product, eliminating potential quality changes that could confound the measurement of efficiency post-acquisition. Combining these characteristics with data on 505 transactions that involve 3,515 generator ownership changes provides an ideal environment to study the efficiency effects of mergers.

The researchers collect data from various sources for generators in the contiguous US in operation between January 2000 and March 2023. They combine hourly fuel input, electricity output, and various emissions data with important generator characteristics such as installation year and capacity. In addition, to understand the role of managers, they obtain information on plant managers' backgrounds and education using a US Environmental Protection Agency database of plant representatives and LinkedIn profiles. Data on fossil fuel generator acquisitions were developed from various sources, including news articles, press releases, and data from GMI, a commercial dataset covering the US electricity sector.

Power Plant Acquisitions and Productivity



Productivity is measured as the logarithm of the inverse weekly heat rate. Bars represent 95% confidence intervals.
Source: Researchers' calculations using data from multiple sources.

Ownership changes for US electricity generators can increase efficiency by up to 5 percent.

The analysis relies on comparing the efficiency trends of acquired generators to comparable generators that have never been acquired. This comparison reveals an efficiency increase of 5 percent, but only under direct ownership changes, with no significant change when only the parent ownership changes. When the researchers look at the underlying mechanisms that generate efficiencies, they find that three-quarters of the efficiency gains occur through operational improvements inside the plant rather than additional capital investment. This suggests that acquirers transfer some best practices to their newly acquired generators.

The firm characteristics in the transactions also support this evidence. Acquirers are 1.7 percent more productive than the targets, and assets sold by the target firms underperform their other assets by 3 percent. These findings suggest acquisitions allocate assets to firms with both relative and absolute advantages in utilizing those assets, providing evidence for the allocative efficiency effects of acquisitions.

— Linda Gorman

Intergenerational Gains from Educating Girls

Programs that increase educational attainment in low-income countries can yield lifelong benefits for those who attend school and also pay dividends for future generations. In Intergenerational Impacts of Secondary Education: Experimental Evidence from Ghana (NBER Working Paper 32742), Esther Duflo, Pascaline Dupas, Elizabeth Spelke, and Mark P. Walsh find that in Ghana, the children of women who received scholarships to attend high school display better outcomes both physically and cognitively. The children of men who received similar scholarships do not display such positive outcomes, however.

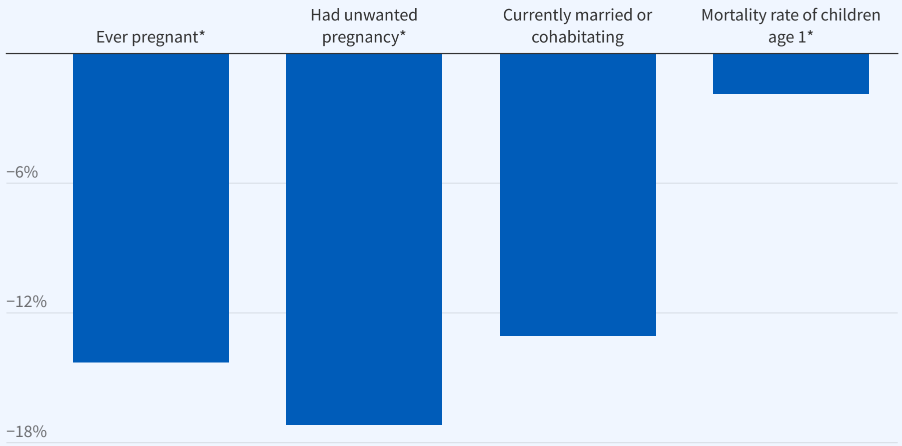
The researchers carried out their analysis by following up, over 15 years, on a scholarship program launched in 2008. The Ghana Education Service awarded four-year scholarships to 682 students randomly selected from a sample of 2,064 rural youth who had been admitted to a public high school but could not afford to attend.

As of 2013, female scholarship recipients were 14 percent less likely to have had a pregnancy. They also had 18 percent fewer children than women who did not receive scholarships. This was driven largely by their having had 17 percent fewer unwanted pregnancies. A decade later, recipients were as likely as nonrecipients to have children, although they had slightly fewer on average. Their current or most recent partner, who generally was the father of their children, was better educated than the partners of nonrecipients.

Children of recipients were nearly twice as likely to survive beyond the age of 3, with a mortality rate of 2.2 percent compared with 4 percent among nonrecipients' children. The researchers point out that the impact on child survival alone makes girls' scholarships a highly cost-effective investment, costing less than $16,000 per under-3 death averted.

Secondary School Scholarships and Outcomes for Ghanaian Women

Percentage change for young women awarded scholarships



*All estimates are statistically significant at the 90 percent level, with * indicating significance at the 95 percent level. Researchers' calculations using survey data collected from study participants between 2008 and 2023.*

The children of women who were randomly awarded high school scholarships in Ghana were more likely to survive to age 3 and scored higher on cognitive tests.

Over time, children of recipients increasingly outperformed those of nonrecipients on cognitive tests. Data were collected for children at intervals between 18 months and 7 years; the disparities were larger at older ages.

In contrast, the researchers found no evidence of improved outcomes among the offspring of men who received scholarships. The male recipients did not delay having children. The mortality rate of their children was no better than that of nonrecipients' children. At ages 5 and 7, their children scored, if anything, lower than the children of nonrecipients on cognitive tests.

Why the gender difference? The researchers note that a child's primary caregiver is, in the vast majority of cases, the mother. Male scholarship recipients were also less likely to live with their children than female recipients and less likely to have educated spouses.

Among women, scholarship recipients and nonrecipients invested similar levels of financial resources in their children, but the recipients were more attuned to preventive healthcare and more likely to engage with their children through play, singing, and basic math. The researchers conclude that "access to secondary education causes these caregivers to gain the skills to safeguard their children's health and stimulate their children's cognitive development."

— *Steven Maas*

In the Battle against Inflation, Commitment Matters

Since World War II, the Federal Reserve's most effective campaigns against inflation have been characterized by clear-cut goals, a willingness to accept higher unemployment, and a refusal to give up prematurely.

In Lessons from History for Successful Disinflation (NBER Working Paper 32666), Christina D. Romer and David H. Romer study nine attempts by the Federal Reserve between 1946 and 2016 to put the brakes on inflation. They investigate what made some efforts more successful than others.

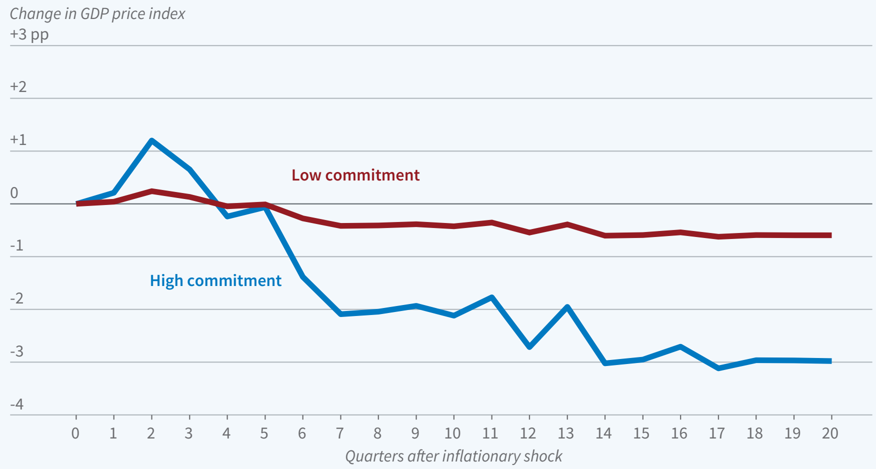
In all nine episodes, policymakers declared the current rate of inflation was unacceptably high and initiated contractionary policies that they acknowledged could dampen economic growth.

After five years, inflation had declined on average by 3 percentage points when policymakers were most committed to the fight and by only a half percentage point when they were least committed.

After combing through transcripts of Federal Open Market Committee (FOMC) meetings and public statements and testimony of Fed members, the researchers define periods of strong commitment as those when policymakers expressed willingness to accept steep costs in reduced economic output, clearly stated their objectives, displayed confidence in the singular importance of monetary policy in fighting inflation, and redoubled deflationary efforts when they had let up on the brakes too soon.

The researchers cite May 1981 as an episode that exemplified renewal of resolve. "Through the course of recent history at least, we've backed off and we've made a mistake each time," said one FOMC member according to transcripts of the FOMC meeting. Further, the Federal Reserve Board took a "whatever it takes" stance: "I think it's more likely that after a protracted period of these high real interest rate levels we will see a significant recession both here and abroad," said Anthony Solomon, vice chair of the FOMC. Federal Reserve Board Chair Paul Volcker stressed the board's "indispensable role" in fighting inflation: "To be effective, we must demonstrate that our own commitment is strong, visible, and sustained." The result was a drop in inflation as measured by the core Personal Consumption Expenditures price index, a measure that excludes food and energy, from around 9 percent in 1980 to around 4 percent in 1984. By comparison, a low-commitment episode in 1968 saw inflation remain at over 4 percent for the next three years.

Inflation and Federal Reserve Commitment



Commitment reflects policymakers' tolerance for output loss.
Source: Researchers' calculations using data from Federal Open Market Committee meetings.

Since 1946, inflation fell on average by 2.5 percentage points more when monetary policymakers were highly committed to restoring price stability than when they were less committed.

The researchers found that high or medium commitment was more likely to result in the complete achievement of goals, while inflation targets were abandoned in all low-commitment episodes.

As reasons for monetary policymakers prematurely curtailing their efforts, the researchers cite unacceptable economic costs, belief that monetary policy had done its part and it was up to others to do the rest, and fear that fiscal policymakers would counter their efforts and set the stage for higher inflation in the long run.

The latest disinflationary effort, launched in July 2022, is shaping up to be the tenth postwar deflationary episode. The researchers conclude that it reflects key traits of strong commitment. Federal Reserve Board Chair Jerome Powell has repeatedly expressed a goal of bringing inflation down to 2 percent and asserted that the Federal Reserve bears the ultimate responsibility for doing so. The researchers conclude, "…based on history, the most likely outcome of today's attempt at disinflation is that monetary policymakers will persevere in their disinflationary efforts until they have brought inflation down to, or very close to, their long-run target."

— *Steven Maas*

Rideshare Entry and Taxi Industry Employment

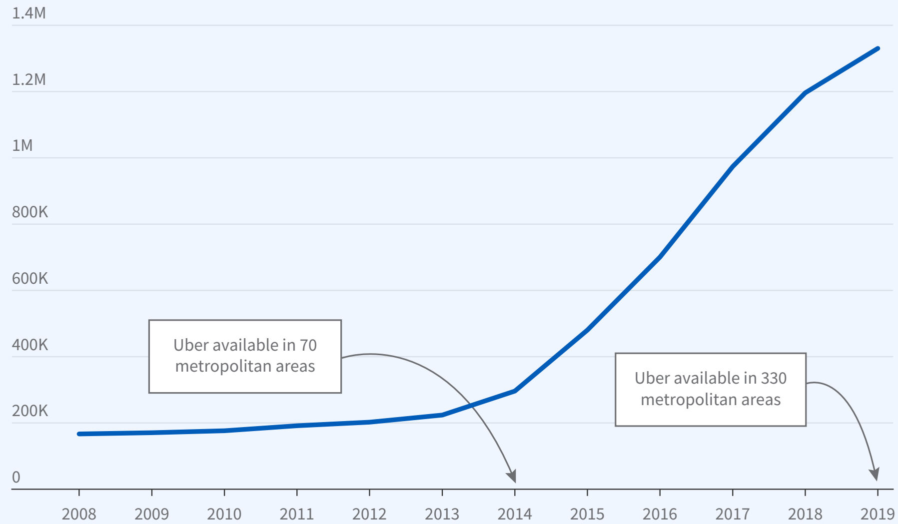
The recent rise of the gig economy has raised many new questions about labor markets and the impact of new business models on workers. In Driving the Gig Economy (NBER Working Paper 32766), Katharine G. Abraham, John C. Haltiwanger, Claire Y. Hou, Kristin Sandusky, and James Spletzer examine the effects of Uber's rollout on the entry, employment, and earnings of workers in the taxi and limousine services (TLS) industry.

Platform work, including rideshare activities, grew rapidly in the 2010s. Uber first entered two large core-based statistical areas (CBSAs) in 2011. It then rapidly expanded, serving 330 by 2019. The number of nonemployer TLS businesses grew from just over 200,000 in 2013 to more than 680,000 in 2016 and more than 1.3 million in 2019, largely as a result of the entry of platform workers.

The researchers link business data from the Census Bureau on nonemployer sole proprietors in the TLS industry to their wage and salary earnings from the Longitudinal Employer-Household Dynamics data as well as demographic data from the Census Bureau's Individual Characteristics File for the years 2010–2016. They define entrants to the industry in a given year as those with nonemployer earnings in that year but not in the previous year.

The researchers compare outcomes across CBSAs where Uber entered at different times. On average, relative to the overall mean rate of entry, each additional year that Uber exists in a CBSA leads to a 65 percent increase in the likelihood that someone in that CBSA will enter the TLS industry. Recent job displacement, as measured by separation from an employer with a large quarter-over-quarter decline in employment in that year, raises the TLS entry rate by 23 percent.

Number of Individuals Reporting Income from Rideshare Services



Source: Researchers' calculations using data from the US Census Bureau.

Ridesharing dramatically increased the pace of entry of workers into the taxi industry. New entrants were more likely to be young, female, White and US-born, and more likely to combine earnings from driving with wage and salary earnings.

Because platform work allows workers to flexibly earn income for short periods of time on their own schedules, it is an attractive option to many workers outside the taxi industry. Compared to traditional taxi drivers, new entrants are more likely to be young, female, White, and native-born, and to combine self-employment income from driving with wage and salary income.

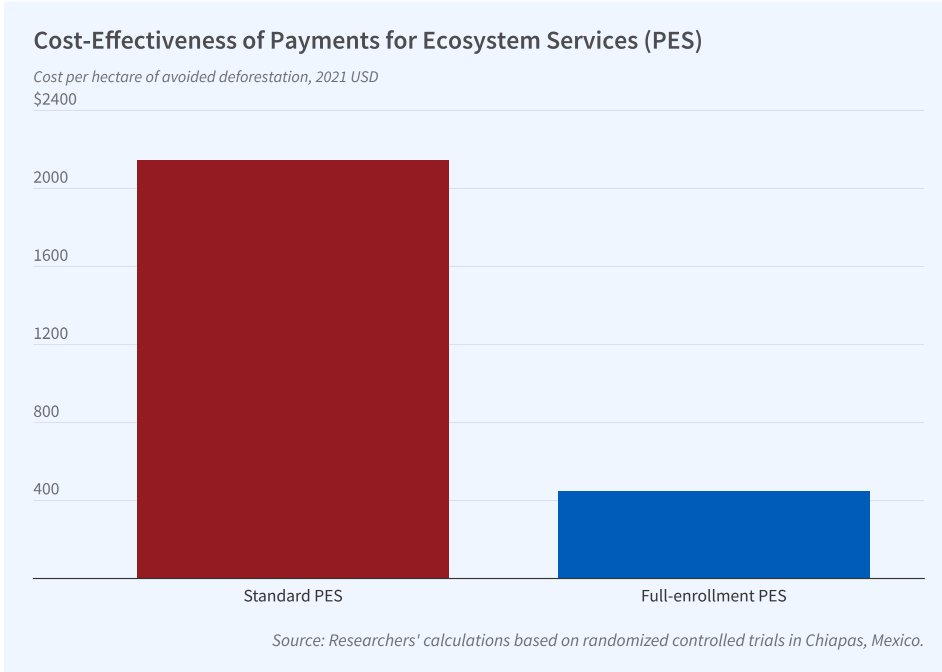
The dramatic rise of new entrants in the TLS industry increased competition with incumbents, defined by the researchers as those with nonemployer sole proprietor earnings in 2009 and 2010. With each additional year Uber is present, the likelihood of industry exit by these incumbent workers increases and few of those who exit take other jobs. The heightened exit rate is entirely due to the behavior of low-earning (net earnings of less than $12,000 in 2015 dollars) rather than high-earning drivers. High-earning drivers are no more likely to exit after Uber's entry than before.

There is substantial variation in the degree of local regulation of taxi markets. In CBSAs with unregulated taxi markets, high- and low-earning incumbent taxi drivers suffer annual earnings losses of $1,200 and $600, respectively, four years after Uber entry. In more regulated markets, Uber's entry has no effect on earnings for low-earning drivers, and the decline in earnings for high-earning drivers is only one-third as large as in unregulated markets. In New York City, which has very stringent regulations on the taxi industry, both groups of taxi drivers appear to have experienced slightly higher annual earnings following Uber's entry.

— Whitney Zhang

Designing Cost-Effective Forest Conservation Programs

Deforestation is a significant contributor to greenhouse gas emissions and biodiversity loss. In Redesigning Payments for Ecosystem Services to Increase Cost-Effectiveness (NBER Working Paper 32689), Santiago Izquierdo-Tort, Seema Jayachandran, and Santiago Saavedra investigate the incentive effects of Payments for Ecosystem Services (PES) programs, which have emerged as tools for conserving forests. PES programs offer cash or in-kind incentives to participating landowners and condition payments on specific natural resource management activities, such as forest protection. PES effectiveness depends on the extent to which payments go toward protecting forests that would not have been protected even without financial incentive.



Allowing landowners to selectively enroll parcels leads to less forest conservation and higher costs per hectare conserved.

The authors investigate whether requiring PES participants to enroll all of their eligible forest landholdings, rather than allowing them to pick and choose plots, increases the programs' cost-effectiveness. They focus on participants' strategic selection of which land to enroll. If eligible landowners enroll only the subset of their lands that they were unlikely to deforest, payments will be inframarginal: they will not affect the extent of conservation. Consider the owner of 20 forest hectares who wants to clear 4 hectares during the contract period. With a standard PES scheme, she can enroll the 16 hectares that will not be cleared and keep them intact while deforesting the other 4 hectares. She will receive payment for 16 conserved acres despite not reducing her deforestation. In contrast, a full-enrollment scheme offers her the choice of not participating or enrolling all 20 hectares she owns. Now she cannot receive payment without reducing her deforestation. If she complies, she will generate more additional forest cover under full enrollment (4 hectares versus 0 hectares). However, due to its more demanding contract terms, full enrollment may also reduce compliance.

The researchers test these predictions by conducting a randomized controlled trial in the state of Chiapas, Mexico. They compare a full-enrollment treatment group to a control group of landowners who are offered a "partial-enrollment" PES contract that provides them the flexibility to enroll only some of their land. The partial-enrollment provision is the standard PES structure; it is used in Mexico's national Pago por Servicios Ambientales program as well as other major PES programs worldwide, including the Conservation Reserve Program in the US.

Using satellite imagery, the researchers find 5.7 percent less land is deforested annually with full rather than partial enrollment, a 41 percent decline in the deforestation rate. The extra conservation with full enrollment is on parcels that individuals were not planning to enroll if given the choice. The researchers calculate that the full enrollment PES is more than four times as cost-effective as the partial enrollment program.

— Lauri Scherer

The National Bureau of Economic Research is a private nonprofit research organization founded in 1920 and devoted to conducting and disseminating nonpartisan economic research. Its officers are:

James M. Poterba—President & CEO
Peter Blair Henry—Chair
Karen G. Mills—Vice Chair
Robert Mednick —Treasurer

The Digest *summarizes selected Working Papers recently produced as part of the NBER's program of research. Working Papers are intended to make preliminary research results available to encourage discussion and suggestions for revision. Neither the Working Papers nor* The Digest *have been subject to peer review or review by the NBER Board of Directors.*

The Digest *is free and may be reproduced with appropriate attribution to the NBER. Please provide the NBER's Communications team (ktasley@nber.org) with copies of anything reproduced.*

Requests for print Digest *subscriptions, changes of address, and cancellations may be sent to Digest, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398 (please include the current mailing label), or emailed to subs@nber.org. Print copies of the* Digest *are only mailed to subscribers in the US and Canada; electronic subscriptions may be managed at my.nber.org/email_preferences.*