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INSIDE THIS ISSUE

Electric Utilities Anticipated Clean Air Act Regulations

The landmark Clean Air Act of 1970 did not take effect until 1972, but the electric power industry began taking steps to reduce pollution from power generation a decade earlier.

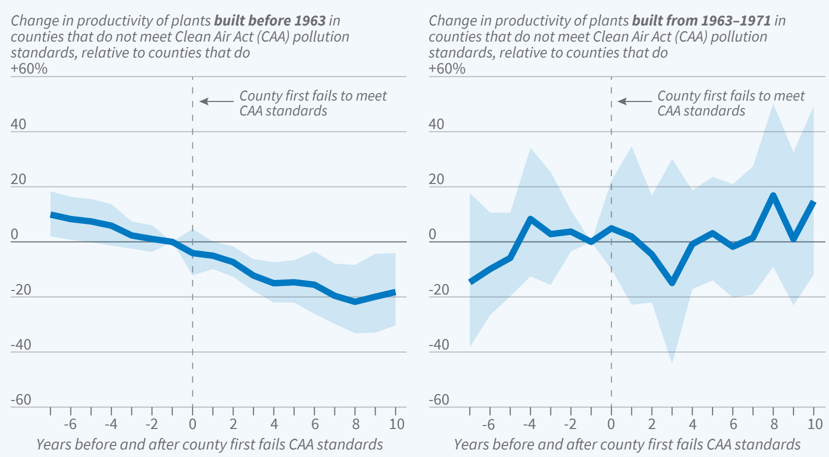
In **Impacts of the Clean Air Act on the Power Sector from 1938–1994: Anticipation and Adaptation** (NBER Working Paper 28962), Karen Clay, Akshaya Jha, Joshua A. Lewis, and Edson R. Severnini show that electric utilities began incorporating abatement measures in their construction plans for fossil fuel plants as early as 1963, when Congress passed legislation authorizing the federal government to control air pollution.

The researchers study data spanning the 1938–94 period to assess the impact of the Clean Air Act (CAA) on power plant output and productivity. They analyze nearly every fossil-fuel plant in the nation and capture both preemptive and reactive responses to the CAA.

To arrive at their estimates, they exploit a provision of the law that divided counties into two categories — attainment and nonattainment — depending on whether their air pollution levels fell below or above federal thresholds. Starting in 1972, plants in nonattainment counties faced much more stringent regulation than those in attainment counties. They had to switch to more expensive, low-sulfur coal, install abatement equipment, or decrease output to comply with the rules.

Well before the legislation was passed, the industry began revamping plans for new construction and developing innovative abatement technology.

Power Plant Productivity and the Clean Air Act



Productivity does not incorporate the benefits of pollution abatement. Shaded regions represent 95% confidence intervals.
Source: Researchers' calculations using data from the Federal Energy Regulation Commission

The Clean Air Act resulted in productivity losses at power plants in nonattainment counties, compared with their counterparts in less-regulated counties, but only for plants built before 1963. By contrast, the impact of the CAA was statistically insignificant on plants that opened from 1963 to 1971. Overall, the CAA led to average annual productivity losses of \$3.5 billion, measured in 2020 dollars, over the 1972–94 period. The losses were greatest in the years soon after the regulatory changes.

The researchers suggest that electric utilities viewed the 1963 clean air legislation as a precursor of much stricter regulation to come. In response, they revamped plans for new construction, raising the height of smokestacks to increase dispersion of pollutants, installing electrostatic precipitators to remove harmful particulates, and developing innovative abatement technology, which is reflected in a surge of patents over the remainder of the decade.

Utilities did relatively little to retrofit older plants. They chose instead to decrease the output of those plants and, when possible, to shift production to newer plants. Such reallocation offset roughly half the aggregate losses from the CAA regulations.

The Clean Air Act also appears to have affected the geography of power production, moving it away from heavily polluted areas. Before 1972, electricity generation grew faster in counties that never received attainment designation than in those that always had attainment status. After 1972, production by older plants decreased in nonattainment counties but held steady in attainment counties, and production by new plants increased much more in attainment than in nonattainment counties.

— Steve Maas

Facing Troubled Waters, Shippers Trimmed Their Sails

A wave of Somali pirate attacks between 2009 and 2011 created substantial uncertainty for cargo shippers using the Suez Canal. In those three years, companies with ships sized to use the canal reduced their investment in new vessels by an estimated 38 percent, and reduced vessel retirements by 18 percent. The result was a slowdown in the rate of technological upgrading in the fleets of Panamax bulkers and Long Range 2 tankers. This slowdown occurred during a period when, while the risk of attack was high, so were the returns, because competition was attenuated.

In **Delayed Creative Destruction: How Uncertainty Shapes Corporate Assets** (NBER Working Paper 28971), Murillo Campello, Gaurav Kankanhalli, and Hyunseob Kim find that the Somali episode was not an isolated event in the shipping industry. They study nearly 4,000 shipping firms in 109 nations over the period from 2006 to 2019, and find that periods of high uncertainty cause companies to slow the upgrading of their fleets and concentrate them in fewer vessel types. This can make the firms less productive and reduce their market value.

The investment effect of rising uncertainty depends crucially on the liquidity of used-ship markets. Uncertainty has far less effect in a liquid market, in which companies can easily buy or sell used ships in case they have underestimated or overestimated demand. The Somali piracy period illustrates that the reduction in investment and retirements is concentrated in subsectors specifically affected by uncertainty, rather than spread across the shipping industry as a whole.

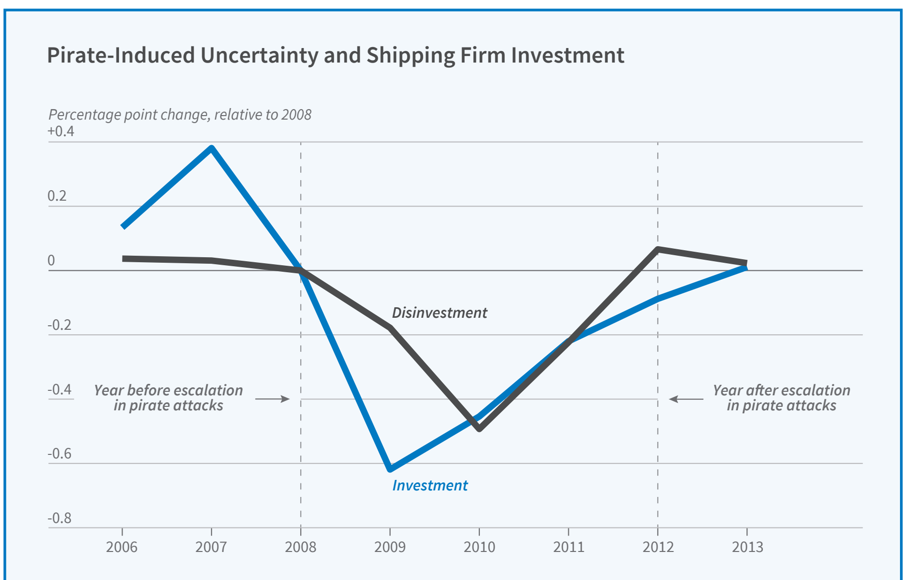
In a period of high uncertainty, shipping lines slowed the upgrading of their fleets and concentrated on a narrower and less-productive asset mix.

The researchers find that when uncertainty in one subsector of the industry rises by one standard deviation, the average firm cuts back investment in that subsector by 15 percent of the baseline average. The investment response varies greatly with the liquidity of the used-ship market. In an illiquid market — at the 5th percentile of liquidity — investment in ships plunges 97 percent. By contrast, when liquidity is high, at the 95th percentile of liquidity, uncertainty has no effect on investment.

The same dynamic also plays out in the disposal of old vessels. A rise of one standard deviation in uncertainty causes company owners to trim sales or demolitions of ships by 57 percent when the market for used vessels is illiquid; sales or demolitions fall only 36 percent when the market is liquid. Elevated uncertainty hampers the process of creative destruction through which shippers scrap old ships and replace them with technologically advanced new ones.

The researchers also find that companies faced with high uncertainty consolidate their ship holdings into fewer subsectors. The average age of the fleet rises and firms hold on to smaller, less fuel-efficient, and less-productive vessels. Analysis of a subsample of 76 shipping firms finds that high uncertainty also reduces market value for those in low-liquidity sectors. The share prices for these firms drop 7 to 9 percent relative to matched portfolios in the month following an uptick in uncertainty, which is consistent with the reduced productivity of their fleets.

— Laurent Belsie



Source: Researchers' calculations using data from Clarksons Research and the International Maritime Bureau

Risk Aversion, Overconfidence, and Gender Disparity in Job Search

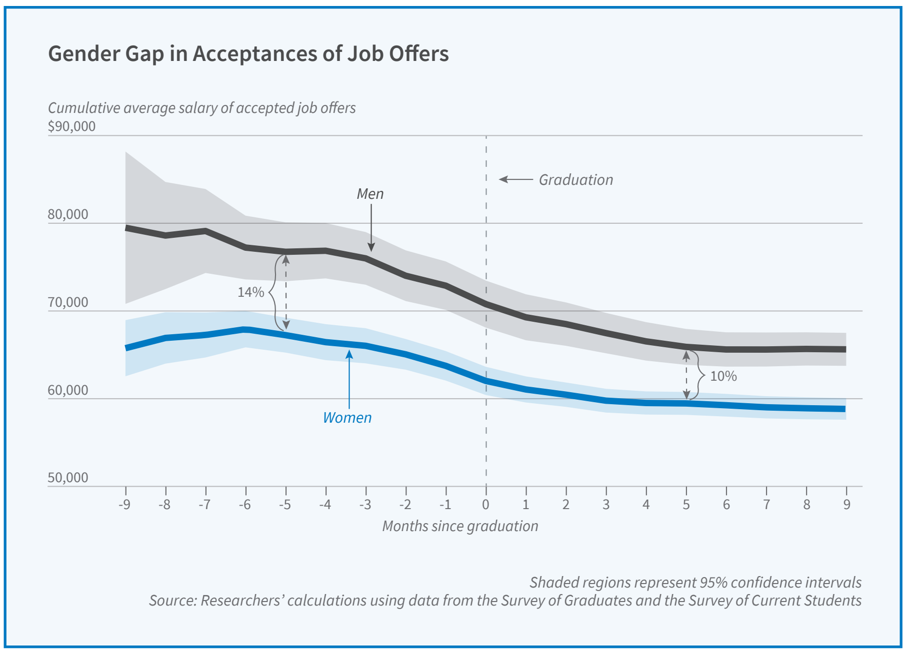
Gendered differences in men's and women's behavioral traits — namely, risk preferences and overconfidence — generate differences in job search behavior and may explain as much as 25 percent of the difference between men's and women's earnings in their first jobs, according to survey data on job search behavior analyzed by Patricia Cortés, Jessica Pan, Laura Pilossoph, and Basit Zafar in **Gender Differences in Job Search and the Earnings Gap: Evidence from Business Majors** (NBER Working Paper 28820).

The researchers surveyed alumni who graduated with a bachelor's degree from Boston University's Questrom School of Business from 2013 through 2019. About 1,000, 20 percent of those contacted, responded. Men and women had similar employment outcomes, but men self-reported greater willingness to take risks and generally were more optimistic about their future wages. Optimism makes graduates less likely to accept a job offer at any point in time. Risk-tolerant individuals are more likely to accept jobs later than risk-averse job seekers. Since more-optimistic and risk-tolerant individuals have higher reservation earnings, this likely generates a positive relationship between risk tolerance (as well as optimism) and earnings and contributes to gender disparities in earnings.

Of those alumni accepting an offer, women on average accepted jobs almost a month earlier than men. At graduation, 60 percent of women had a job, compared to 52 percent of men, and 92 percent of women accepted jobs within six months of graduation, compared to 86 percent of men. Women were also more likely to start searching for jobs earlier, a factor that partially explains the gender gap in the timing of job acceptance. Both genders averaged about 1.7 offers per person and they were equally likely to have rejected at least one offer. Men were more likely to rely on referrals in their job search. Women were more likely to rely on the university career center.

> Among business school undergraduate alumni, men were more willing than women to hold out for higher-paying first jobs after graduation.

In 2017 dollars, women's earnings in their first post-graduation year averaged $6,719 less than men's, a difference of about 10 percent. Adjustment for individual-level differences in academic and socioeconomic backgrounds reduced this gap by almost 30 percent, to $4,542, or about 7.4 percent of mean earnings. Most of the individual-level adjustment was driven by men being more likely to choose finance and other higher-paying course concentrations. Women were more likely to select less lucrative concentrations like advertising and marketing. Inclusion of the survey measure of risk preferences further reduces the gender earnings gap to $3,687, implying that gender differences in risk preferences can explain about 20 percent of the residual gender gap in accepted offers.



Students who expected to graduate between 2018 and 2021 completed an in-class survey asking "What would the lowest annual total compensation (including base pay, signing bonus, and bonus pay) have to be for you to accept a job offer?" After controlling for individual-level background variables, the average lowest wage women would accept was about $2,000 less than that for men. Students were also asked about expected earnings in their first job; about 54 percent overestimated their actual subsequent wage. Of the graduates, 41 percent of women and 52 percent of men reported having regrets about their job search. Although men were slower to revise their earnings expectations downward if they did not receive job offers, the researchers conclude that, on average, men benefited in terms of higher earnings relative to women from overestimating their future offers. However, at the individual level, a lot more men were worse off because of their greater overoptimism and experienced larger welfare losses from their biased beliefs.

The researchers estimate a model of job search that incorporates these features. The model can match the patterns in the data. Counterfactual policies reveal that debiasing students' beliefs increases welfare and reduces the gender gap. In addition, a policy that allows for recalls reduces the gender gap in accepted offers by almost a third.

—Linda Gorman

Religious Festivals, Agriculture, and Economic Progress in Mexico

Despite their popularity in Mexico's agrarian communities, religious festivals that coincide with peak planting and harvesting months negatively affect household income, Eduardo Montero and Dean Yang conclude in **Religious Festivals and Economic Development: Evidence from Catholic Saint Day Festivals in Mexico** (NBER Working Paper 28821).

Spanish conquerors introduced patron saint day festivals, which celebrate a particular Roman Catholic saint or holy figure associated with a town or city, during their 16th century conquest of the country. These festivals are typically public holidays and involve substantial financial expenditures by local households and governments. The conquerors assigned the religious holidays without regard for when planting and harvesting took place.

To examine the economic impact of the festivals, the researchers first determined the dates of the festivals. Then, to see which towns' festivals coincide with peak agricultural periods, they synced the festival dates with the municipalities' optimal planting and harvesting periods, which they gleaned from data compiled by the Food and Agriculture Organization of the United Nations. They focused on a relatively homogeneous sample of maize-growing municipalities in the former New Spain region of the country. The researchers compared the festivals' coincidence with the agricultural schedule to municipalities' economic outcomes, using data from the 2010 federal census.

Household income in municipalities holding festivals coincident with planting or harvesting was 20 percent lower than in other towns. An economic index constructed by the researchers, which included all the questions in the census related to economic development, was also lower. They observed particularly large negative effects on outcomes related to literacy and education. The worst economic outcomes occurred when a festival fell in the month before planting or the month after harvesting.

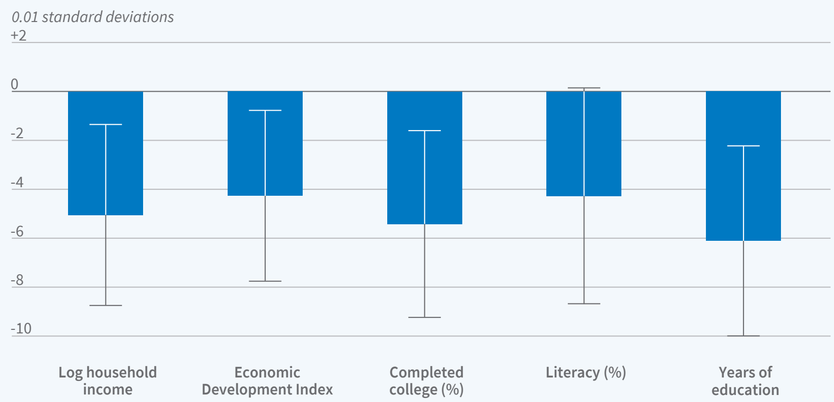
The researchers suggest that festival expenses tighten liquidity constraints, leading households to forego high-return but time-sensitive agricultural investment opportunities during planting and harvesting periods. Festivals just before planting season, for example, may "reduce funds available for investment in ... land preparation, fertilizer, and seeds." Just after harvest season, crop prices are low; a festival in that period may induce households to sell a greater share of their crops at these low prices, thereby missing out on higher prices if the crop had been stored. These reductions in agricultural investments lead to lower agricultural productivity in festival-coinciding locations. Maize yields for municipalities with coinciding festivals are 0.07 standard deviations lower than elsewhere. This reduction in agricultural productivity due to coinciding festivals may not be noticeable to communities in the short run, from one year to the next. But over the long run, persistently lower agricultural productivity inhibits the structural transformation out of agriculture and into the modern sectors of the economy. Municipalities with festivals coinciding with planting or harvesting have higher shares of workers in agriculture and significantly lower shares of workers in services.

In light of these negative impacts on economic development, why do festivals around planting and harvesting persist? Using 2008–18 survey data from the AmericasBarometer — Vanderbilt University's Latin American public opinion research project — the researchers constructed indices of religiosity and of social capital. They also constructed municipality-level measures of income inequality. Municipalities where festivals coincide with critical agricultural activity have higher levels of both religiosity and social capital and lower levels of income inequality, suggesting a trade-off between equity and efficiency. The higher level of religiosity and social capital in locations with coinciding festivals may explain why these festivals persist.

— Brett M. Rhyne

Household income in municipalities where festivals coincide with planting or harvesting is lower than in other towns, and the transition from agriculture to services has been slower.

Impact of Agriculturally Coincident Festivals on Development Outcomes



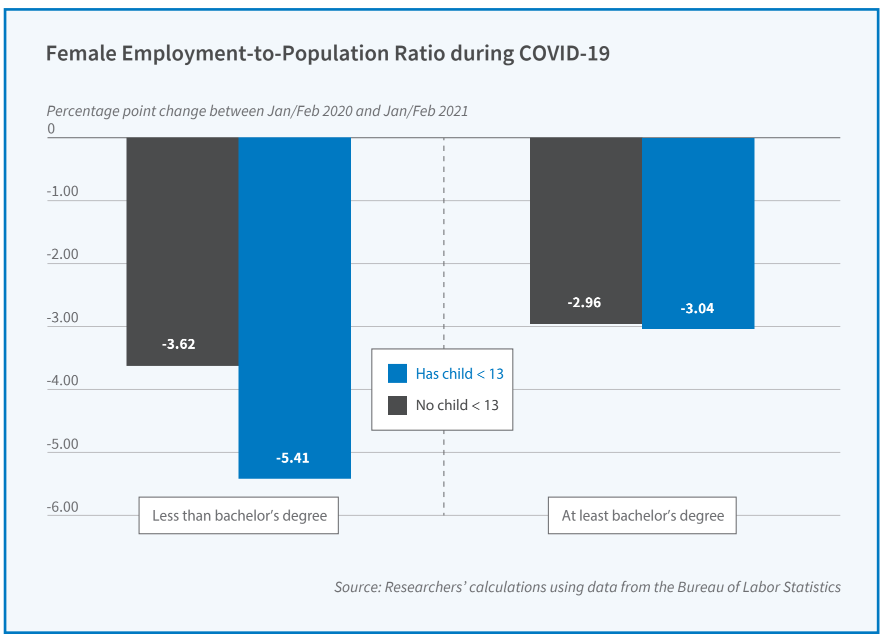
Agriculturally coincident festivals are Catholic saint day festivals that occur within the month before planting or month after harvest. Thin gray lines represent 95% confidence intervals.
Source: Researchers' calculations using data from the 2010 Mexico Population Census

Childcare Challenges and Pandemic-Related Employment Dynamics

In April 2021, the number of jobs in the US economy was about 8 million below the number in February 2020. As vaccinations spread and hard-hit sectors of the economy reopened, individuals who were not seeking employment appeared to play a major role in the low level of employment, since there were record numbers of job openings and the largest wage increases in decades.

Three leading hypotheses for this phenomenon are the possibility that school closings and an inadequate supply of childcare prevented parents, particularly mothers, with young children from returning to work, the fear among some workers that they would catch COVID-19 if they returned to the workplace, and reduced job search on account of more generous unemployment benefits.

In **The Role of Childcare Challenges in the US Jobs Market Recovery during the COVID-19 Pandemic** (NBER Working Paper 28934), Jason Furman, Melissa Schettini Kearney, and Wilson Powell find that disproportionate job loss among women with young children accounts for a negligible share of the aggregate employment deficit in early 2021.



The employment rates of women of similar age and educational attainment have not systematically differed by whether or not they have young children.

There are several reasons that challenges specific to working parents explain only a small part of the sluggish job recovery, the researchers find. First, mothers with young children are a relatively small part of the workforce, about 12 percent, so even if they did experience excess job loss, that would account for only a small share of the total employment decline. Second, the employment declines of women with young children are similar to those of women without small children but of similar age and education. Third, fathers of young children comprise about 13 percent of the labor force, and they experienced less job loss than other men.

Simple summary data on employment declines can be deceiving. Employment rates for women with at least one child under 13 fell by 6.3 percent (4.4 percentage points). Employment rates for women without a child under 13 fell by 6.1 percent (3.2 percentage points). This difference might suggest that women with young children faced unique challenges if the groups were similar with respect to other factors likely to affect their employment rates. But women with young children are younger on average, 37 versus 50 years old, and more likely to hold a four-year college degree. Among women with a bachelor's degree, mothers of young children experienced a smaller proportional decline in employment than women without a small child, 3.9 percent compared to 4.4 percent. Among women without a bachelor's degree, those with young children experienced an 8.6 percent decline in employment, compared to 7.9 percent among those without a young child.

As a counterfactual exercise, the researchers used data from the Bureau of Labor Statistics on individuals aged 16 and up to calculate what aggregate employment would have been had parents with a child under 13 experienced the same percentage change in employment as adults in the same sex-age-education category without a child under 13. They found that the impact of the pandemic on parents with young children cannot explain the decline in aggregate employment rates.

Upper-bound estimates suggest that excess declines in employment among mothers of young children accounted for at most 1 percent of the total decline in employment and 3 percent of the total decline in labor force participation, measured in the first part of 2021. There were no systematic differences between individuals with young children in states that had below median rates of in-person schooling. Furthermore, in the recessions of 2001 and 2007–09, during which schools remained open, differential employment loss between parents of young children and others played a similarly small role in aggregate employment declines. While mothers of young children may have had to shoulder increased childcare and educational responsibilities for their children during the COVID-19 recession, they have not disproportionately stayed withdrawn from the workforce.

The researchers conclude that the ongoing employment deficit in 2021 can best be explained by factors that affect workers in general rather than on challenges specific to working parents.

—Linda Gorman

Disclosing Costs and Setting Loan Limits Reduce Payday Borrowing

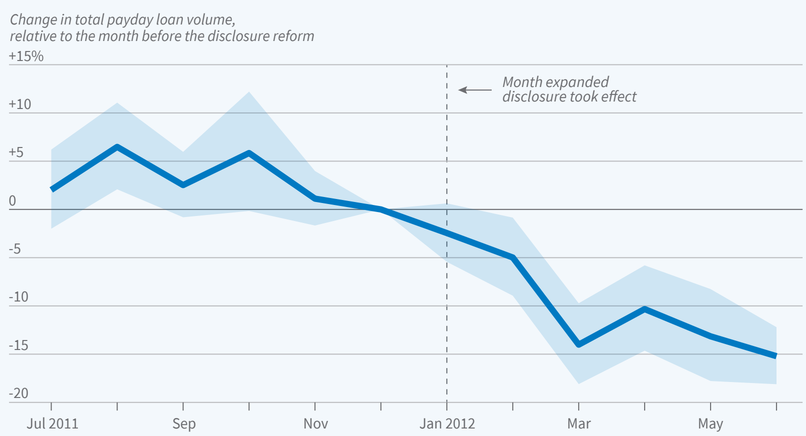
> Requiring payday lenders to give potential borrowers information comparing the cost of their loans and other credit products reduced payday borrowing by 13 percent.

Consumer protection regulation is motivated, in part, by concern that markets do not provide consumers with the information necessary to make optimal choices. Requiring firms to make disclosures is a core consumer protection tool.

In **The Effects of Disclosure and Enforcement on Payday Lending in Texas** (NBER Working Paper 28765), Jialan Wang and Kathleen Burke explore the effects of such disclosures, as well as restrictions on loan size and amortization, on the payday loan market. Payday loans are very short-term, high-interest loans that often come due around the borrower's next payday. Previous research on payday loans suggests that some consumers use them in ways that are not in their best interests. This is often attributed to behavioral biases, such as present bias, overoptimism, and limited attention.

In 2012, Texas enacted a law requiring firms to make disclosures to consumers before every payday loan transaction. The disclosures compare the cost of payday loans with the cost of other credit products and present the likelihood of loan renewal in easy-to-understand terms. Using a dataset covering payday loans in multiple states, the researchers find that the Texas disclosure rules were associated with a 13 percent decline in loan volume that persisted for at least six months after the regulations were implemented.

The researchers also examined the effects of city ordinances in Austin and Dallas, enacted at the same time as the disclosure rule, that restricted the loan-to-income ratio and amortization rate of payday loans made within city borders. Once enforced, loan volume declined by 61 percent in Austin and 44 percent in Dallas. The study did not find any effect of either disclosure or quantity limitations on loan prices or evidence of income falsification to evade regulation. It found only limited evidence that disclosures affect renewal, delinquency, and default rates. There were no clear patterns by income or other borrower characteristics, with every demographic group exhibiting a significant reduction in borrowing. Overall, the results suggest a decline in demand and reduction in lender revenue as a result of the disclosures.



Payday Lending and Information Disclosure in Texas

Shading represents the 95% confidence interval
Source: Researchers' calculations using data from the Consumer Financial Protection Bureau

Although the researchers cannot pinpoint the psychological mechanisms that account for the consumer response to disclosure, they hypothesize that at least some consumers concluded they were better off taking fewer loans once they were exposed to easy-to-understand information. They point out that since consumers across a range of demographic groups responded similarly to the disclosures, it may be challenging for regulation to target biased consumers based on easily observable characteristics. The results illustrate the potential role of disclosures and other interventions as a counterbalance to behavioral biases.

— Lauri Scherer