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U.S. Consumers Have Borne the Brunt of the Current Trade War

In 2018, the United States imposed tariffs on a variety of imported goods, and other countries responded with tariffs on imports from America. Two new NBER working papers analyze how this “trade war” has affected U.S. households and firms.

The recent tariffs, which represent the most comprehensive protectionist U.S. trade policy since the 1930 Smoot-Hawley Act and 1971 tariff actions, ranged from 10 to 50 percent on about \$300 billion of U.S. imports—about 13 percent of the total. Other countries responded with similar tariffs on about \$100 billion worth of U.S. exports.

In **The Impact of the 2018 Trade War on U.S. Prices and Welfare** (NBER Working Paper No. 25672), **Mary Amiti**, **Stephen J. Redding**, and **David Weinstein** find that the costs of the new tariff structure were largely passed through as increases in U.S. prices, affecting domestic consumers and producers who buy imported goods rather than foreign exporters. The researchers estimate that the tariffs reduced real incomes by about \$1.4 billion per month. Due to reduced foreign competition, domestic producer prices also increased. The prices of manufactured goods rose by one percentage

point relative to a no-trade-war scenario. The reduction in real incomes represents the welfare cost of higher consumer prices, less the government revenue collected by the tariffs

around \$165 billion worth of trade has been rerouted to avoid them.

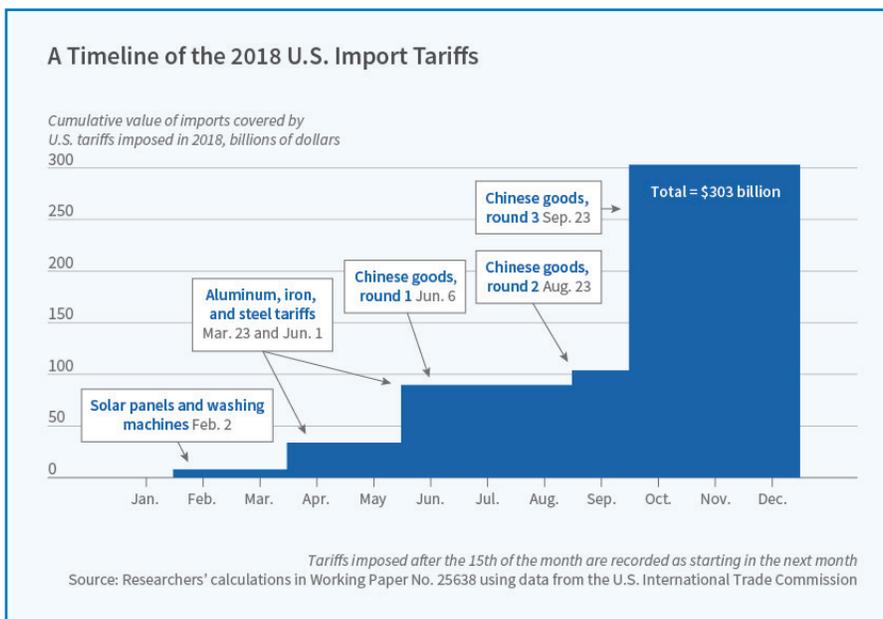
Pablo D. Fajgelbaum, **Pinelopi K. Goldberg**, **Patrick J. Kennedy**, and **Amit K.**

Recent tariff increases are unprecedented in the post-World War II era in terms of breadth, magnitude, and the sizes of the countries involved.

and the additional income of domestic producers who were able to sell their products at higher prices.

The researchers note that continuation of the tariff policy could be especially costly for multinational companies that have made substantial sunk-cost investments in supply chains in other countries, for example by relying on facilities in China or other impacted countries. The study estimates that

Khandelwal adopt a different methodological approach to address the welfare effect of recent tariffs. They also find complete pass-through of U.S. tariffs to import prices. In **The Returns to Protectionism** (NBER Working Paper No. 25638), they estimate that the new tariff regime reduced U.S. imports by 32 percent, and that retaliatory tariffs from other countries resulted in an 11 percent decline of U.S. exports. They use these responses to estimate import demand and export supply elasticities, and then apply these estimates to calibrate a general equilibrium model of the U.S. economy with detailed input-output linkages. They estimate that higher prices facing U.S. consumers and firms who purchased imported goods generated a welfare loss of \$68.8 billion, which was substantially offset by the income gains to U.S. producers who were able to charge higher prices



(\$61 billion). The researchers estimate the resulting real income decline at about \$7.8 billion per year, a value broadly comparable to the net income decline estimated in the previous study.

The researchers use the estimated model to study the heterogeneous impacts across U.S. counties. The protective effect of the tariffs was greatest for states in the Great Lakes region and the Northeast, due to their industry structure. Meanwhile, sectors in rural areas of the Midwest and the Mountain West, such as agriculture, were hit relatively harder by retaliatory tariffs. The average real

wage of workers in tradeable sectors declined by 0.7 percentage points, with a standard deviation of 0.4 percentage points across counties, with workers in the Midwest suffering more than those in other regions.

The researchers examine their findings through the lens of party voting in the 2016 presidential election. They find that the U.S. tariffs protected industries that tended to employ workers in the most politically competitive counties. Foreign governments imposed retaliatory tariffs in sectors based in more Republican-leaning counties. The researchers estimate that counties

with at least an 85 percent Republican vote share bore losses over 50 percent greater than counties in which the Republican vote share was less than 15 percent.

To benchmark the consumer losses, the researchers highlight potential developments that could offset impacts of the trade war. For instance, one goal was to reduce intellectual property theft from China. To place this in perspective, China paid \$8 billion in royalties for U.S. intellectual property in 2017. A substantial increase in royalty payments could offset part of the welfare loss.

—Morgan Foy

Mineral Rights Auctions Produce More for Texas than Negotiation

In Texas, the right to drill for oil and gas on land initially belonging to the Texas Permanent School Fund can be allocated in a number of different ways. If the land was purchased from the Permanent School Fund before 1931, the present-day surface owner negotiates mineral rights leases on the state's behalf. Once the negotiated contract is approved by the state's General Land Office, the surface owner receives half of any upfront bonus and royalty payments the land generates.

In 1931, the state ended this practice, and in 1973 it began formally retaining all mineral rights on land sold from the Permanent School Fund. Unlike privately owned land, mineral rights in this state-owned land are sold at public auction. Firms compete for leases with a fixed primary term and royalty rates by submitting bids in the form of bonus payments.

In **Relinquishing Riches: Auctions vs. Informal Negotiations in Texas Oil and Gas Leasing** (NBER Working Paper No. 25712), [Thomas R. Covert](#) and [Richard L. Sweeney](#) find that auctioned leases are 22 percent more likely to be

drilled and that they produce 44 percent more output than negotiated leases. This, along with their slightly higher royalty rates, leads to an average increase in total seller revenue of about

negotiated leases for mineral rights on parcels of land that lie above shale formations. The leases began at approximately the same time in narrowly defined geographic areas. The

Auctions facilitate better matches between land resources and the firms that can use them most productively, yielding sellers about \$249,000 per lease more than negotiated sales.

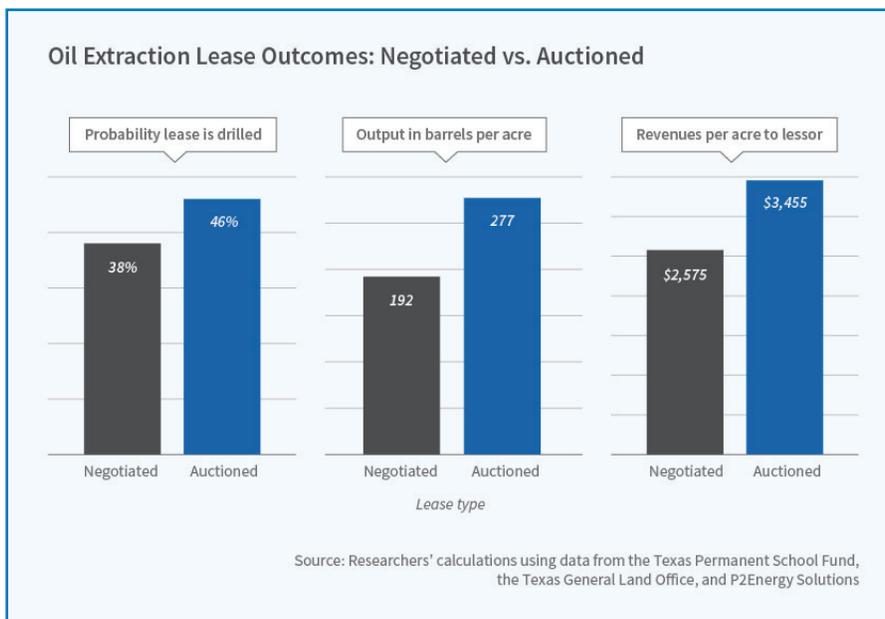
\$249,000 per lease. The researchers conclude that "informal" negotiation performs poorly relative to auction and that auctions facilitate better matches between land and the firms that can use it most productively.

The study compared auctioned and

original sample included all oil and gas leases signed on Permanent School Fund land between 2005 and 2016. Royalties, if any, were observed through 2018. There were 4,012 negotiated leases and 915 auctioned leases that fit the initial criteria. After applying

restrictions for missing data, parcel sizes of less than 10 acres and more than 1,000 acres, and leases shorter than a year, the final dataset included 860 negotiated leases and 460 auctioned leases.

The researchers control for a number of factors when analyzing lease payments, including lease terms, a parcel's size and distance to infrastructure, and its landcover characteristics. They find that auctioned leases lasted longer, gen-



erated higher per acre bonus payments, and paid slightly higher royalty rates than their negotiated counterparts.

The researchers suggest that the experience in Texas may generalize to other settings,

and that landowners may be leaving money on the table by engaging in negotiated sales. Most of the United States' estimated \$4.5 trillion in gas and oil reserves are owned and managed privately, and transactions often involve nego-

tiations rather than auctions. A survey of private mineral rights in Pennsylvania, for example, found that only 21 percent of lessors reported ever consulting with a lawyer before transacting.
—Linda Gorman

Why Some Regions Rebounded Faster after the Great Recession

During the Great Recession, the United States experienced an estimated 6 million foreclosures, a steep rise in unemployment, and a sharp decline in consumer spending. The federal government responded with several programs intended to help distressed homeowners, and the Federal Reserve lowered interest rates in an effort to stimulate the economy.

The extent of the downturn varied substantially across regions. Housing prices, for example, fell sharply in some metropolitan areas, and more modestly in others. This pattern was also evident in the recovery. After the economy hit bottom, some areas of the country experienced far swifter recovery than

others. In **Debt Relief and Slow Recovery: A Decade after Lehman**, (NBER Working Paper No. 25403), **Tomasz Piskorski** and **Amit Seru** examine regional variation in the recovery of house prices, consumption, and employment. Even by the end of 2017, they find, half of the zip codes in the U.S. had not returned to the pre-recession levels of these three measures. Why?

The researchers construct a novel dataset that allows them to identify mortgage default, foreclosure, homeownership, mobility, and durable spending patterns at the individual, regional, and aggregate levels, using a representative sample of more than 13.5 million active consumers drawn from credit-reporting agency Equifax's data. The dataset follows these consumers from the end of the second quarter of 2007 through the end of the fourth

quarter of 2017. By combining the Equifax data on delinquency rates, foreclosure rates, homeownership, mobility, income, and other individual information, with regional data on

Frictions in financial intermediation in some regions may have slowed recovery by limiting consumer access to lower interest rates and refinancing opportunities.

employment, house prices, and durable spending, the researchers explore the factors that correlate with differences in recovery patterns.

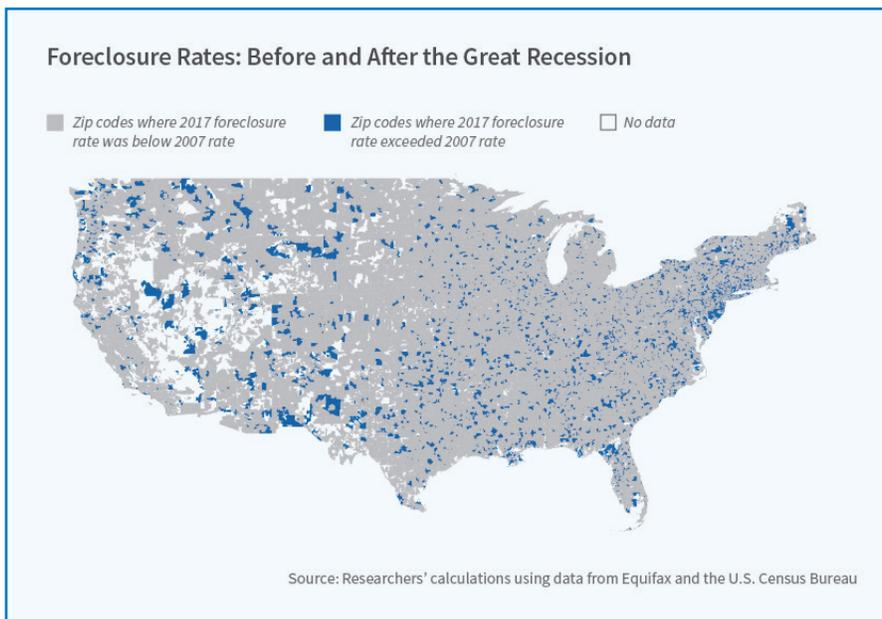
They find that of the six million foreclosures in the decade after the onset of the Great Recession, 25 percent were associated with owners of multiple homes. These owners com-

be chalked up to predictable factors. For example, homes were more likely to be foreclosed for buyers with larger mortgages, lower credit scores, and lower incomes. Consumers living

in zip codes with higher unemployment rates, lower shares of people with a college education, and lower home prices were more likely to become delinquent on their mortgages. But these factors don't explain everything. The researchers also find that features of a local economy's banking, mortgage, and credit markets—its "financial intermediation sector"—are associated with the speed of its recovery.

They identify several important features of the financial intermediation sector. One is mortgage contract rigidity—whether a mortgage was fixed-rate or adjustable. A second is constraints on refinancing, in particular whether eligibility requirements limited the set of homeowners who could refinance to take advantage of low interest rates. A third is the capacity of

loan servicers to renegotiate troubled loans. In areas with a higher fraction of fixed-rate mortgages, with tighter constraints on refinancing, and with less lender capacity to renegotiate loans, the recovery was slower. Borrowers in these areas did not receive the benefits of lower interest rates and debt relief as quickly as borrowers in other areas. When these forms of



prised only 13 percent of the market. Many foreclosures displaced homeowners, with most of them moving at least once. Only a quarter of foreclosed households regained homeownership, taking an average of four years to do so.

The primary focus of the study is explaining the regional differences in recovery patterns over the last decade. Some of the variation can

relief were more available, they helped mortgage borrowers to stay in their homes.

Overall, the extent and speed of recovery is strongly related to frictions in the intermediation sector. The researchers conclude that the crisis could have been “much less

severe if some specific frictions in the financial intermediation sector affecting the pass-through of lower rates and debt relief measures had been alleviated.”

The results highlight the role of the financial intermediation sector when design-

ing debt relief policies in the wake of a housing crash. They have potential implications for mortgage market design, monetary policy pass-through, and macroprudential policy interventions.

—Anna Louie Sussman

How Top Earners Make Money: Often, from Running a Business

Tax planning by business owner-managers has obscured understanding of how typical top earners make money.

Indeed, even among households in the top 0.1 percent of the income distribution, most receive more income from their human capital than from their financial capital, according to **Capitalists in the Twenty-First Century** (NBER Working Paper No. 25442) by Matthew Smith, Danny Yagan, Owen M. Zidar, and Eric Zwick. That human capital income may reflect socially beneficial hard work or socially harmful rent capture and uncompetitive behavior.

The primary source of top income is usually not recorded as wage income, however, but as tax-favored private business profit. The researchers estimate that 75 percent of the business profits reported by this group can be attributed to human capital—namely, returns on business owners’ intellectual and physical efforts, whether socially beneficial or not—rather than financial capital investments. They derive this figure by comparing the performance of firms that have lost their owners through retirement or premature death with that of comparable firms that have not experienced these shocks.

IRS changes dating back to the 1980s provide an incentive for owners of pass-through businesses—partnerships and S-corporations—to receive income as business profits rather than wages. To the extent that

pass-through profits are in fact disguised wages, they can distort traditional measurements of labor and capital income. Today, up to the 99th percentile of the income distribution, wage income dominates. At the very top of the distri-

bution, in the top 0.1 percent, business income is more important than either wage income or investment returns. In this elite group of households, fewer than 13 percent rely primarily on interest, rents, and other capital income.

Who are the human-capital rich? More than 70 percent are under age 60. They own

ership, beverage distributor, or large law firm.

The researchers acknowledge that elite earners could be erroneously labeled as human-capital rich if they are drawing money from a family-owned pass-through company as a way

More than 70 percent of the human-capital rich are under age 60. They own mid-size companies in the white-collar, skilled service industries or in regional trade.

of avoiding estate taxes. To identify top earners who are unlikely to be wealthy heirs, they examine the earnings of parents of top earners born from 1980 to 1982. Children whose parents were in the bottom 99 percent of the income distribution are unlikely to be wealthy heirs. The researchers find that most young

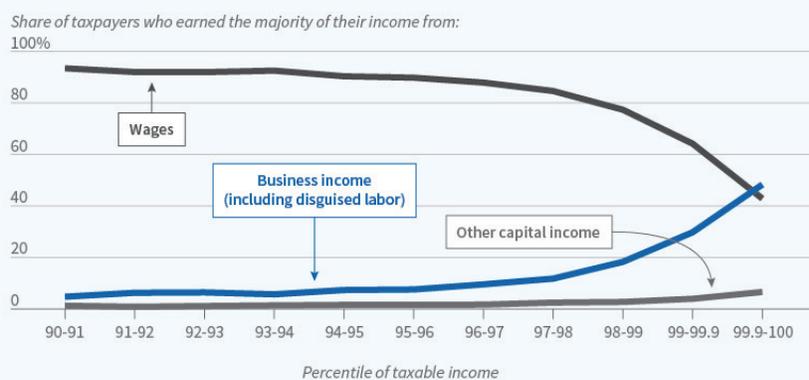
top earners are children of parents from the bottom 99 percent, so their results are unlikely driven by erroneously labeled wages of wealthy heirs.

The growth of income from pass-through entities has contributed to widening income inequality in the last two decades. The profits of pass-through owners rose during the 2001–14 study period, as they benefited both from increased labor productivity and from their widening share of the value

added by their workforces. In other words, owners claimed an increasingly large slice of a growing pie. Among top 1 percent firms, that slice grew from 37 percent to 48 percent; for top 0.1 percent firms, it grew from 40 percent to 52 percent.

—Steve Maas

The Income Sources of Top U.S. Earners, 2014



“Wages” includes wages, salaries, tips, pension distributions, and annuities.
“Business income” includes income from public companies and private businesses including pass-through businesses.
“Other capital income” includes interest, rents, royalties, estate, and trust income.
Source: Researchers’ calculations using data from the Statistics of Income division of the IRS

mid-size companies in the white-collar, skilled service industries. Near the top—the 99th to 99.9th percentile—they typically own single establishments that offer consulting, legal, medical and other highly specialized services. Among the top 0.1 percent, above the 99.9th percentile, the typical company is an auto deal-

Cities' Bright Lights and Big Promises Dim for the Less-Educated

American cities have historically been centers of opportunity, beckoning workers from elsewhere with the promise of economic mobility.

In *Work of the Past, Work of the Future* (NBER Working Paper No. 25588), David Autor concludes that's a promise cities may no longer be able to keep. He finds that non-college-educated workers in cities are far less likely to work in middle-skill occupations than in the past. What's more, their shift into low-skilled jobs has come with a steep decline in the wage premium that urban centers once offered.

The hollowing out of middle-skill jobs has remade labor markets across the United States, leaving behind mostly low-skill, low-paid jobs on the one hand and high-skill, highly remunerated jobs on the other. Autor examines this job polarization on a geographic basis, yielding a new finding: Polarization has been far more pronounced in urban than in suburban or rural labor markets. The impact of job polarization on urban markets alone has been a key part of the secular fall in wages over the past four decades for workers without a college degree.

Autor identifies three mechanisms through which the drop in wages for non-college workers has occurred. Occupational polarization has shunted non-college workers from middle-skill jobs, such as clerical or factory work, into traditionally low-paid jobs that require little specialized training, for example in the retail and hospitality sectors. Second, because occupational polarization has been much more pronounced in dense urban areas than in suburbs and rural areas, it has differen-

tially diminished the fraction of non-college workers holding middle-skilled jobs in high-wage cities. Finally, and as a result, job polarization has unwound the wage premium for non-college workers resid-

Non-college-educated workers in cities are far less likely to work in middle-skill occupations than in the past, and the urban wage premium has sharply eroded.

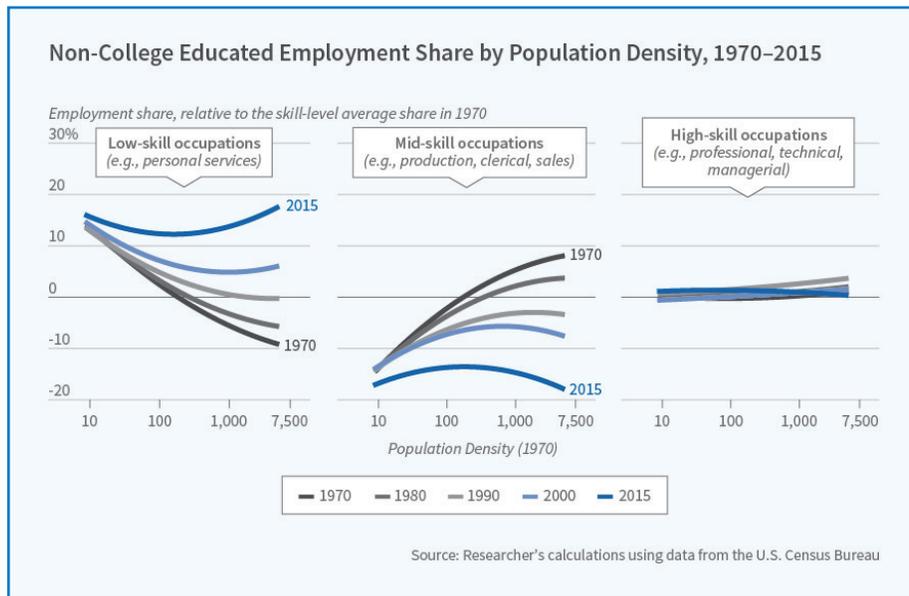
ing in cities. This premium prevailed in the decades following World War II.

In 1970, workers without a college degree in the densest commuting zones — cities — were roughly 25 percentage points more likely to work in middle-skill occupations, and conversely, 25 percentage points less likely to work in low-skill occupations, than their non-col-

urban-rural difference of approximately 15 percentage points in the share of workers engaged in clerical, administrative, sales, and production work. Over the next two decades, especially following the introduc-

tion of computing technologies, this share eroded. Many of these workers had been reallocated from middle-skill factory and office work to jobs in services and transportation which require fewer specialized skills.

Moving from middle-skill to low-skill jobs also depressed workers' earnings. Autor shows this by calculating how wages of college and non-college workers might have evolved if the observed polarization occurred between 1970 and 2015, but wage levels by occupation and location stayed constant at 1970 levels. Occupational reallocation on its own explains part of the fall in wages for non-college workers, but adding geography provides additional explanatory power. As an illustrative calculation, Autor finds that with the



lege peers in low-density areas. (They were no more likely to work in high-skill occupations in cities than elsewhere.) Over the next 45 years, that difference eroded and ultimately reversed. By 2015, the low-skilled employment share among non-college workers was several points higher in the most versus least dense commuting zones, while the middle-skilled employment share was correspondingly several points lower.

Consider a set of common middle-skill occupations. In 1970, there was an

addition of a geography factor, one can approximately account for the entirety of the fall in wages of high school dropouts and high school graduates.

Now that non-college urban workers hold the same low-skill jobs their peers in rural and suburban areas do, such as custodial work, food services, protective services, recreation, health services, transportation services, and laborer occupations, the urban wage premium for non-college workers has all but vanished.

—Anna Louie Sussman

Unintended Births and Fertility Trends in the U.S. since 1991

Over the last ten years, the U.S. fertility rate declined by 13 percent, to the lowest level in the nation's history. The teen birth rate fell from its peak of 62 births per 1,000 women aged 15 to 19 in 1991 to roughly 19 births per 1,000 women in 2017 — a 69 percent decline. Conversely, the birth rate for women over 30 has risen steadily since 1980, so much so that “[f]or the first time in U.S. history, the age group with the highest birth rate in 2016 was women 30 to 34,” Kasey Buckles, Melanie Guldi, and Lucie Schmidt report.

“...[M]uch of the fertility decline of the last ten years is driven by declines among women whose births were likely to be unintended, and specifically by births to young women,” they conclude in **Fertility Trends in the United States, 1980–2017: The Role of Unintended Births** (NBER Working Paper No. 25521). To investigate the role of unintended births in explaining fertility trends, the researchers develop a statistical model to predict whether a birth was unintended, using data from the National Survey of Family Growth and the National

Center for Health Statistics' Natality Detail Files. The study classifies a birth as unintended if the mother reports that the child was unwanted or if she reports that she wanted to have children but not for two

One-third of the overall decline in fertility between 2007 and 2016 is attributable to a decline in the number of unintended births.

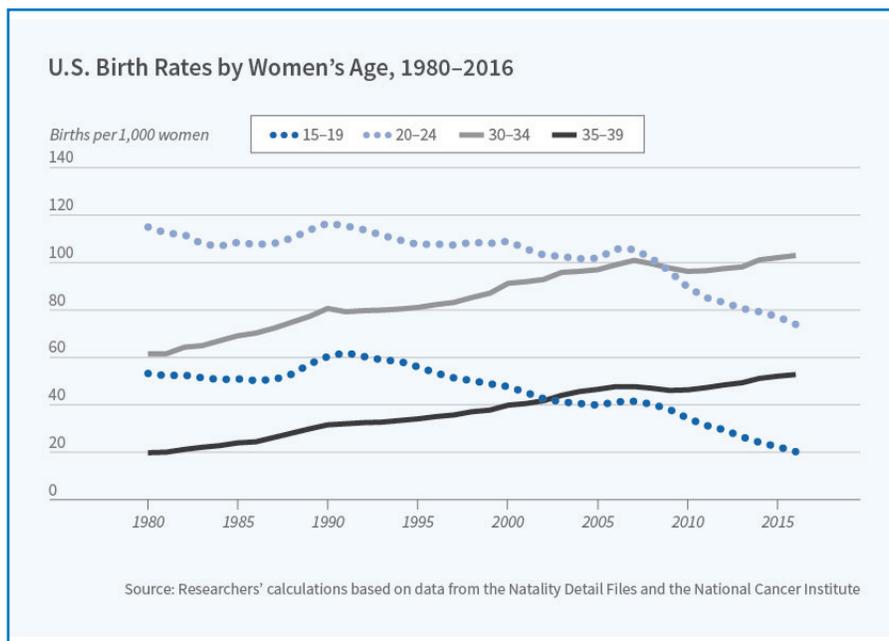
years or more. With this definition, unintended births peaked in 2005–06 at 35.6 percent of all births. Since then, that fraction has dropped steadily, to 29.5 percent between 2013 and 2015.

and 2016 explains about a third of the overall drop in fertility over the period. They find that this decline is almost entirely due to changes in the age distribution of women giving birth. The researchers also

examine trends in birth rates by marital status and find that the rate for unmarried women has started to decline while that for married women has increased. The drop in childbearing by unmarried women over the last decade is driven by younger cohorts: Women born in the late 1980s and early 1990s had fewer nonmarital births by age 25 than their predecessors.

More than two-thirds of unintended births in 2010 were paid for by public insurance programs. The study results suggest that if the number of unintended births in 2016 had been the same as the number in 2007, federal and state governments would have spent \$2.4 billion more on delivery related medical costs.

— Alex Verkhivker



The researchers conclude that the decline in unintended births between 2007

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