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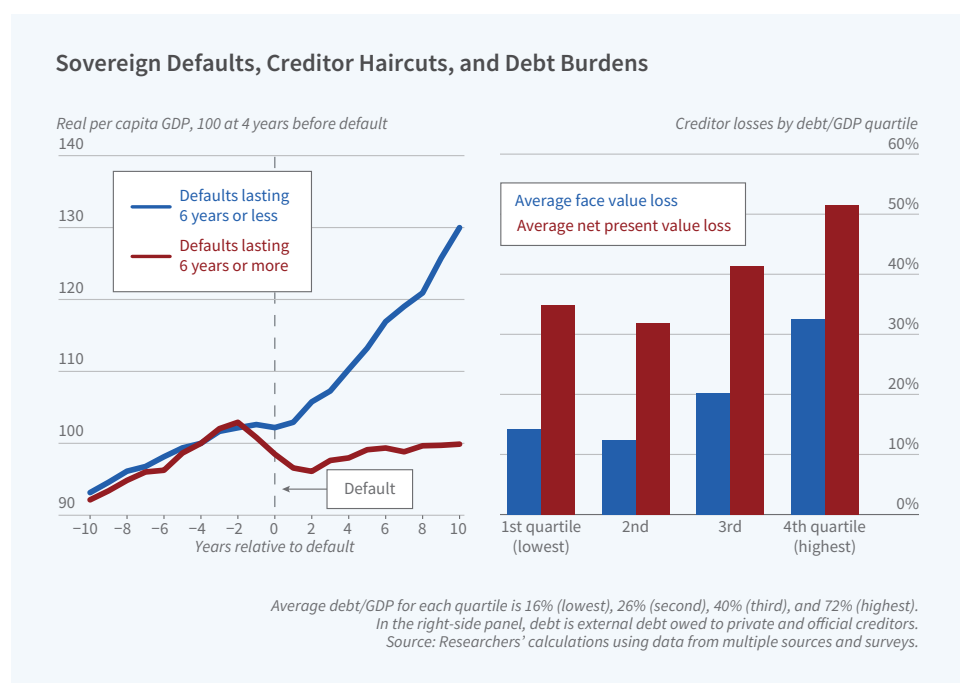
The Digest

August 2024

The Costs of Sovereign Debt Crises

Sovereign debt crises have been a recurring phenomenon in the global economy for over two centuries, with far-reaching consequences for both creditors and debtor nations. Two recent studies examine creditor losses as well as the often-overlooked social costs of sovereign defaults.

In Sovereign Haircuts: 200 Years of Creditor Losses (NBER Working Paper 32599), Clemens M. Graf von Luckner, Josefin Meyer, Carmen M. Reinhart, and Christoph Trebesch analyze creditor losses in 327 restructurings across 205 default spells since 1815. In each case, they calculate total creditor losses — "haircuts" — across all restructurings within the same default spell.

Creditor losses vary widely and in some cases are total, but they have averaged around 45 percent for over two centuries, despite significant changes in the global financial system. Poorer countries, first-time debt issuers, and those with heavy external borrowing face larger losses, on average, when they default.

Geopolitical shocks such as wars, revolutions, or the breakup of empires often lead to the deepest haircuts. Longer debt crises typically result in larger creditor losses, while interim restructurings often provide limited debt relief. The researchers caution that creditor losses do not always translate directly into debt relief for the borrowing country, since a restructuring may address only a portion of a nation's total debt.

Sovereign Defaults, Creditor Haircuts, and Debt Burdens

Real per capita GDP, 100 at 4 years before default

Legend: Defaults lasting 6 years or less; Defaults lasting 6 years or more; Default

Creditor losses by debt/GDP quartile

Legend: Average face value loss; Average net present value loss

1st quartile (lowest), 2nd, 3rd, 4th quartile (highest)

Average debt/GDP for each quartile is 16% (lowest), 26% (second), 40% (third), and 72% (highest). In the right-side panel, debt is external debt owed to private and official creditors. Source: Researchers' calculations using data from multiple sources and surveys.

Sovereign defaults have long-lasting economic and social costs for defaulting nations.

Building on these findings, The Social Costs of Sovereign Default (NBER Working Paper 32600) by Juan P. Farah-Yacoub, Clemens M. Graf von Luckner, and Carmen M. Reinhart shifts the focus to the economic and social consequences of sovereign defaults. This study analyzes 221 default episodes from 1815 to 2020. Within three years of default, affected economies' real per capita GDP falls behind that of nondefaulting countries by 8.5 percent, and after a decade, the gap is 20 percent. Longer defaults result in worse economic and social outcomes.

Ten years after a default, 10 percent more households in the defaulting nation are living in poverty compared to nondefaulting nations. The infant death rate is higher by 5 per 1,000, and life expectancy at birth is 1.1 years lower. The researchers cannot determine whether default-induced recessions have a larger impact on these social measures than recessions with other causes.
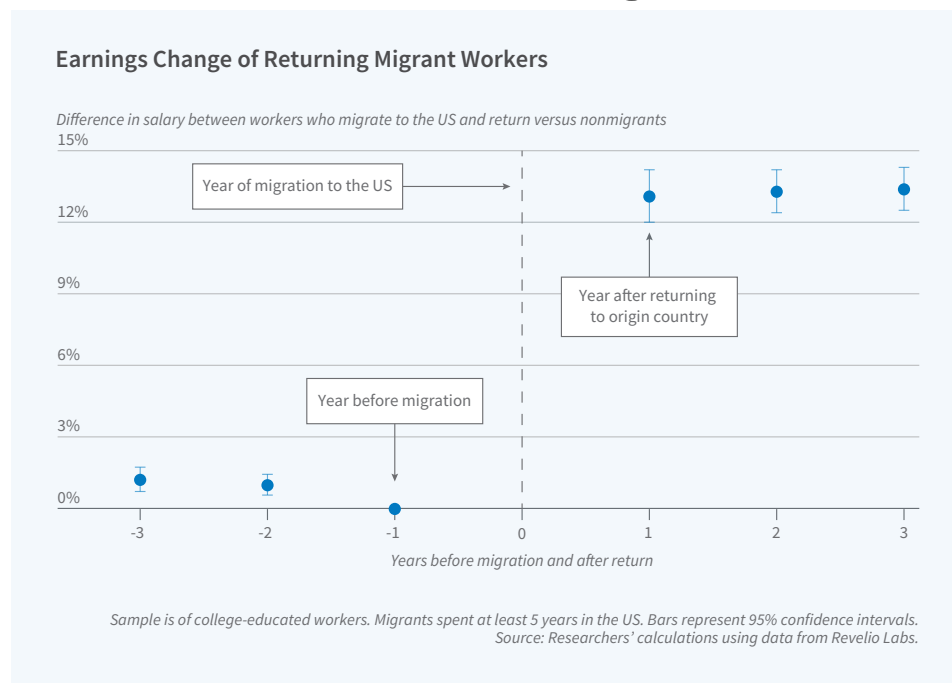
— Leonardo Vasquez

Labor Market Returns from International Migration

The international migration of skilled workers can bring needed talent to developed nations, but it has also been labeled "brain drain" in the countries these workers leave. In Return Migration and Human Capital Flows (NBER Working Paper 32352), Naser Amanzadeh, Amir Kermani, and Timothy McQuade provide new evidence on the labor market returns to international migration from the perspective of skilled workers.

The researchers analyze data on employment and education histories from Revelio Labs, which gathers information from public LinkedIn profiles and other sources. The dataset consists of more than 450 million profiles of workers in over 180 countries. In many cases, the worker's posting includes a country location. For many of those that do not, the researchers impute the employment location based on employer data. They combine the Revelio data with firm and position-level salary data from Glassdoor.

The dataset provides interesting evidence on migration patterns. On average, 3.4 percent of skilled laborers migrate during a five-year period. Higher-skill workers are more likely to migrate, especially in emerging markets. Out-migration rates vary substantially among different countries, being below the global average in the US and China and above it in Germany and India. About one-third of those who migrate are employed by multinational firms in their destination country, and about one in eight of this group were previously employed by the same firm in their home country.

Ten percent of migrants return to their home country within a year, and 33 percent return within five years. A decade after leaving their home country, half have remained in the host country they first moved to, 12 percent have moved to a third country, and 38 percent have returned to their country of origin. Return rates differ substantially by country, with higher return rates in advanced econ-

Earnings Change of Returning Migrant Workers

Difference in salary between workers who migrate to the US and return versus nonmigrants

Years before migration and after return

Sample is of college-educated workers. Migrants spent at least 5 years in the US. Bars represent 95% confidence intervals.
Source: Researchers' calculations using data from Revelio Labs.

The annual wage increase from a year of employment for an average worker with 10 years of experience is at least 60 percent higher if that year is worked in the US rather than at home.

omies and some emerging market economies like Chile and Indonesia. India has a relatively low return migration rate.

Some similarities are evident in migration patterns. Migrants tend to move to countries with higher per capita GDP, and they display a preference for closer destinations and for countries that speak the same language as their home country. Originating from a higher GDP per capita country and sharing a language with the destination country increases workers' likelihood of returning to their country of origin. Industry growth also affects migration choices, with return migration increasing with growth in a worker's industry and adjacent industries in the origin country, and decreasing with growth in that industry and adjacent industries in the destination country.

A given worker's wage can be decomposed into a component due to work location, a component due to the worker's skills, and a component

due to labor market experience. On average, a worker in an emerging market with 10 years of experience who gains an additional year of experience in the home country sees a wage increase of about 1 to 1.8 percent. If, instead, the same worker acquires another year of experience in the US, her wage increase upon her return is about 2.8 percent.

The researchers also study the returns to migrating for education. In emerging markets, an additional year of education at a school ranked in the top 50 globally is associated with a wage increase roughly twice as large as the increase from an additional year in a school not ranked in the top 1,000 globally. The relationship between schooling and wages is weaker in advanced economies outside the US and there is less spread in the wages earned by graduates of higher- and lower-ranked schools than in developing nations.
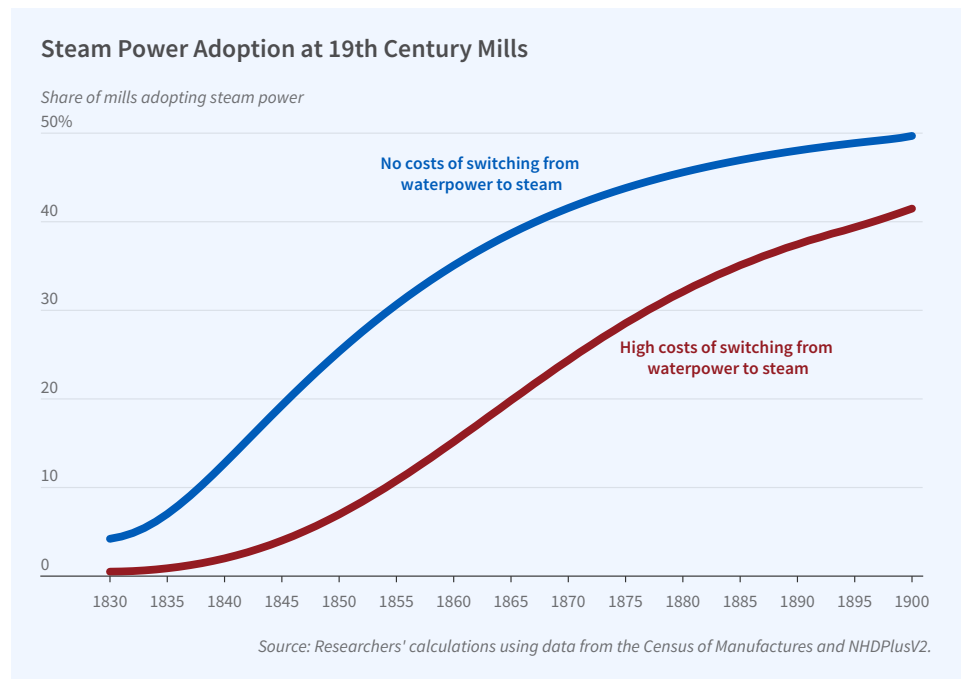
— Whitney Zhang

Gaining Steam: Incumbent Lock-In and Entrant Leapfrogging

Water mills were the predominant power sources in the US in the early nineteenth century. The introduction of improved steam engines around 1850 offered a viable alternative. Steam power was less expensive for scaling up production and offered consistent year-round access, but it was costly to install and required continual maintenance. There were also substantial barriers to switching from waterpower, including retrofitting costs and scrappage. In Gaining Steam: Incumbent Lock-In and Entrant Leapfrogging (NBER Working Paper 32384), Richard Hornbeck, Shanon Hsuan-Ming Hsu, Anders Humlum, and Martin Rotemberg document how switching barriers slowed down the technological transition from waterpower to steam.

Steam power was particularly useful in locations where waterpower would have required building expensive dams, millponds, and river walls, or involved high costs for securing water rights. The researchers estimate the waterpower potential of a county using data on the flow rate and fall height of water from the National Hydrography Dataset Plus (NHDPlusV2). They obtain data on mills and other manufacturing establishments spanning the years 1850 to 1880 from the Census of Manufactures.

A one standard deviation decline in a county's waterpower potential was associated with 65 percent fewer water-powered mills, 68 percent less water-powered revenue, a 9 percentage point higher share of steam-powered mills, and a 12 percentage point higher share of revenues produced using steam power in 1850. The share of mills using steam power grew 6.7 percentage points more between 1850 and 1860 in counties with lower waterpower potential and 3.4 percentage points more in the subsequent decade. The growth disparity between 1870 and 1880 was statistically insignificant, as places with more water-

Steam Power Adoption at 19th Century Mills

Share of mills adopting steam power

Source: Researchers' calculations using data from the Census of Manufactures and NHDPlusV2.

When steam power became widely available, many firms that initially adopted waterpower faced substantial switching costs that slowed adoption of the new technology.

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power potential also began to adopt steam more in later periods.

Counties with one standard deviation less waterpower potential also had 25 percent more growth in the number of mills overall and a 20 percent greater increase in total revenue. This growth was driven by entrant firms: lower waterpower potential counties had 38 percent higher firm entry rates and 21 percent lower survival rates than high waterpower potential counties as local incumbent firms were driven out. Entrants were four times more likely to use steam power than incumbents.

These differences affected other manufacturing activity. In 1850, counties with lower waterpower potential had substantially less non-mill manufacturing activity, and those activities were also more likely to use steam power. Steam implementation in mills required building a local knowledge base and encouraged local manufac-

turing of steam equipment, leading others to adopt steam technologies.

The researchers estimate a structural model to understand the influence on steam adoption decisions of different initial costs of adopting waterpower versus steam power, costs of switching from water to steam, and falling steam prices over time. They conclude that in the absence of switching barriers, the steam adoption rate would have hit 30 percent more than two decades earlier than it did. Although many incumbents exited, many low-productivity incumbents stayed with waterpower even as they scaled up. The researchers also estimate that if governments had subsidized steam adoption by purchasing old waterpower infrastructure, they could have counteracted technological lock-in, promoted agglomeration effects, lowered goods prices, and raised profits for existing firms.

— Whitney Zhang

The Declining Status of the Teaching Profession

Over 5.4 million Americans, or more than 8 percent of the college-educated workforce, teach in K–12 schools. Teachers play a central role in the creation of human capital and the training of the future workforce. Despite these important functions, in The Rise and Fall of the Teaching Profession: Prestige, Interest, Preparation, and Satisfaction over the Last Half Century (NBER Working Paper 32386), Matthew A. Kraft and Melissa Arnold Lyon find that the status of the teaching profession has declined in the last two decades and is at or near half-century lows. The researchers focus on K–12 schoolteachers in the US and examine a range of nationally representative data sources starting in the 1970s. They analyze public perceptions of occupational prestige, expressed interest among students, education degrees and licenses awarded to prospective teachers, and job satisfaction among current teachers. Trends in these measures have been remarkably consistent over the past 50 years, showing a rapid decline in the 1970s, a swift rise in the 1980s extending into the mid-1990s, relative stability, and then a sustained decline beginning around 2010.

During the late 1970s, the number of Americans who viewed the teaching profession as having "considerable" or "very great" prestige fell from 67 percent (1977) to 54 percent (1981). It gradually rebounded, reaching 79 percent in 1998. Since 2010, it has once again declined sharply, reaching just 58 percent in 2022. Answers to questions about whether parents would like their child to become a teacher show broadly similar trends, dropping from 75 percent who were in favor in 1969 to 46 percent in 1983, recovering to over 65 percent in the 1990s, then falling sharply after 2011 to only 37 percent in 2022.

These patterns align with student interest in teaching, preparation for the profession, and job satisfaction. While 22 percent of college freshmen

Teaching Career Interest among College Freshmen
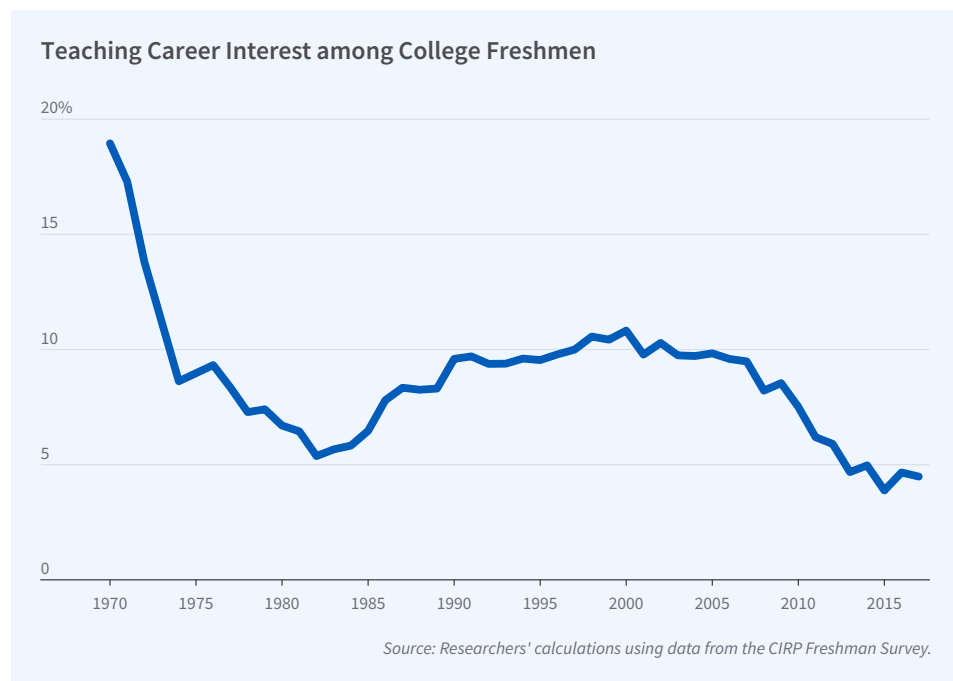
Teachers' prestige and job satisfaction, as well as student interest in the profession and the number of college graduates earning teaching degrees, are currently near 50-year lows.

were interested in teaching careers in the early 1970s, only 5 percent were in 1982. Interest in teaching doubled by the mid-1990s and has dropped since 2010. While 25 percent of bachelor's and master's graduates earned education degrees in the early 1970s, only 12 percent did so in 1987. In 2020, the share was just 8 percent. The number of licenses issued to new public school teachers shows a similar pattern, peaking at 320,000 in 2006 and declining to 215,000 in 2021. In 2001, 52 percent of teachers reported high job satisfaction, but only 12 percent did so in 2022, as the COVID-19 pandemic was winding down. This satisfaction measure did rebound to 20 percent in 2023.

The authors explore a range of possible interrelated causes of these dynamic trends. Notably, fluctuations in real teacher wages align closely, falling 13 percent in the 1970s before rising and plateauing in the 1990s and early 2000s, then declining again

after the Great Recession. The rising cost of attending college, coupled with stagnant wages for teachers, has increased the relative cost of tuition from 10 percent of teachers' average salary in the early 1980s to 27 percent in the late 2010s. This may have deterred some students from pursuing teaching, given that all 50 states require a bachelor's degree for teacher licensure. Declines in per-pupil spending and significant teacher layoffs during recessions may also have made teaching less attractive. The perceived loss of job security and professional autonomy due to accountability reforms also accord with recent declines. Finally, the researchers point out that safety concerns may have contributed to a drop in satisfaction, as the frequency of threats and attacks on teachers rose modestly around 2010 and the number of school shootings has spiked in recent years.
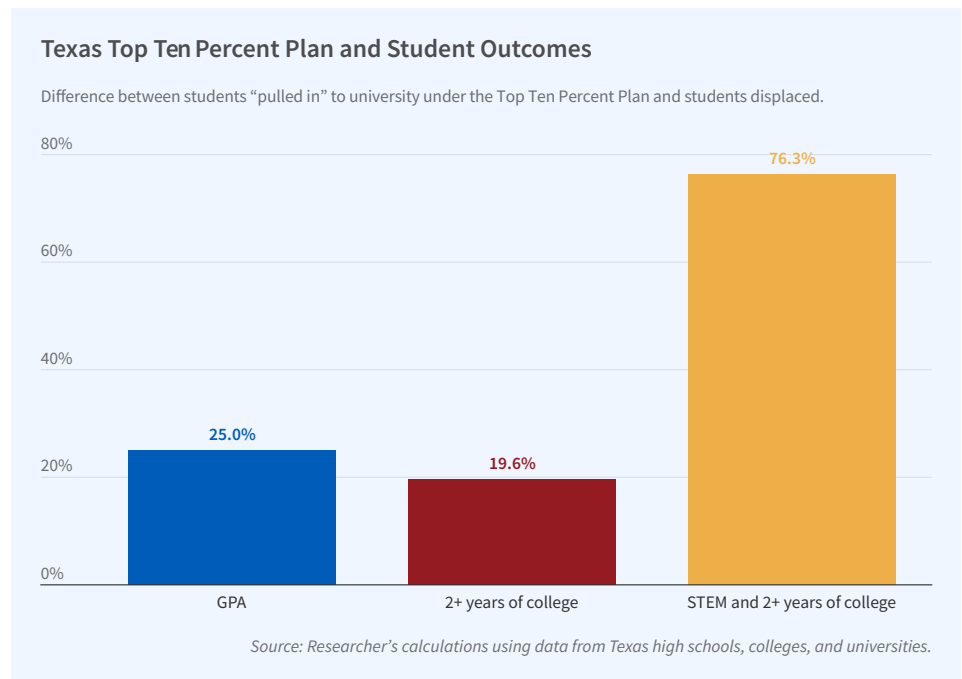
— *Leonardo Vasquez*

Effects of Texas' Top Ten Percent College Admissions Plan

While some colleges use transparent criteria such as grade point averages (GPAs) and class ranks to evaluate applicants, many add elements such as applicant essays and letters of recommendation to their admissions process. Broader criteria allow colleges to consider more information about applicants at the cost of increased opacity of the admissions process. This lack of transparency may deter applicants who are uncertain about their chances of satisfying vague requirements.

In Transparency and Percent Plans (NBER Working Paper 32372), Adam Kapor studies the Texas Top Ten Percent Plan, a policy dating back to 1997 that guarantees admission to any Texas public college to high school students whose grades are in the top 10 percent of their class. Kapor studies the effect of the policy on application, admission, and matriculation decisions.

By comparing students just above and just below the 90th percentile in their high school class, Kapor finds that being in the top 10 percent raises the probability that a student will attend a flagship state university, identified as UT Austin and Texas A&M, by 13.8 percentage points. This is due in part to an increase in submitted applications: students just above the cutoff are 17.7 percentage points more likely to apply to a flagship school.

To disentangle the "mechanical" component of increased attendance due to the increased probability of admission from the "informative" component of transparent signals of students' acceptance probability, Kapor exploits variation in students' probability of admission to a flagship school absent the plan. He finds that

Texas Top Ten Percent Plan and Student Outcomes

Difference between students "pulled in" to university under the Top Ten Percent Plan and students displaced.

	GPA	2+ years of college	STEM and 2+ years of college
	25.0%	19.6%	76.3%

Source: Researcher's calculations using data from Texas high schools, colleges, and universities.

Guaranteeing admission to a flagship state university to the top 10 percent of high school graduates raised enrollment of economically disadvantaged students but had few other effects on diversity.

69 percent of the increase in affected students' flagship school enrollment is attributable to information. This finding suggests that opaque admissions processes can deter students, even those with relatively high probabilities of admission, from applying.

The additional top 10 percent students who enroll in flagship schools displace other students who otherwise would have attended those flagship schools. Kapor finds that the "pulled-in" students have higher academic achievement than the displaced students: they have a 0.71 higher average GPA, are 16 percentage points more likely to remain in college for at least two years, and are more likely to choose STEM majors. They are also more likely to come from high schools with a high percentage of economically disadvantaged students, but they are only slightly more likely to be members of racial minorities than the students they displace. This is in part because the Top Ten Percent Plan raises the admissions standards at flagship schools for students who are not admitted under it; this has the effect of pushing out some underrepresented minority students.

Overall, the findings suggest that simple and transparent admissions policies can induce some academically gifted students — especially those from economically disadvantaged backgrounds — to apply and increase the share of such students who matriculate.

— *Shakked Noy*

Wage Insurance for Displaced Workers

Wage insurance (WI) aims to mitigate the negative impacts of job loss and to encourage reentry into the labor market by providing partial income replacement to displaced workers who are reemployed at a new wage that is lower than their prior wage. Whether it achieves this goal in practice, however, remains unclear; it could also result in worse job matches and persistently low wages after benefits expire.
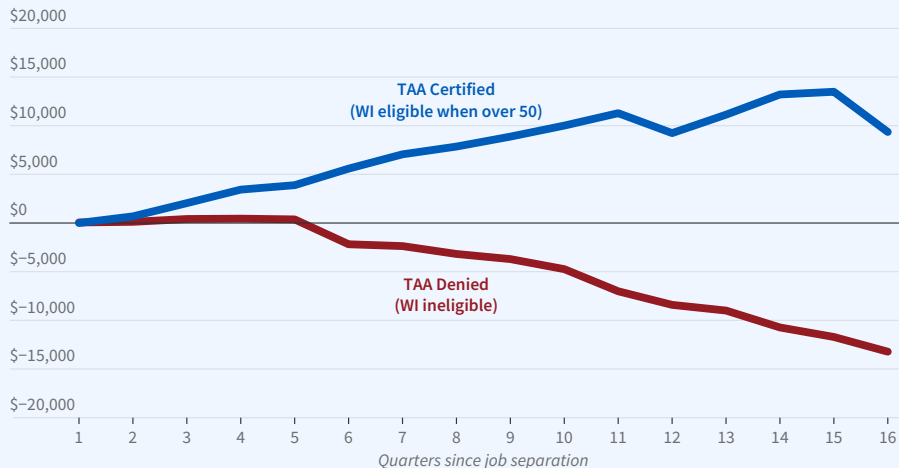
In Wage Insurance for Displaced Workers (NBER Working Paper 32464), Benjamin G. Hyman, Brian K. Kovak, and Adam Leive study the impacts of wage insurance in the context of the US Trade Adjustment Assistance (TAA) Program, which compensates workers who become unemployed as a result of international trade.

Workers must be 50 or older to qualify for TAA wage insurance, which pays up to half of the difference between their pre- and post-separation wages for up to two years. The researchers use administrative data on TAA petitions combined with linked employer-employee Census Bureau data to compare outcomes for workers just above and just below the age eligibility cutoff. To account for the possibility that other public programs may also be differentially available to those over the age of 50, they also compare workers above and below age 50 whose petitions for TAA were denied.

The researchers estimate that during the two years following displacement, wage insurance eligi-

Wage Insurance and Cumulative Earnings of Displaced Workers

Change in cumulative earnings of workers above age 50 (wage insurance eligible) and below age 50 (ineligible)

TAA Certified (WI eligible when over 50)

TAA Denied (WI ineligible)

Quarters since job separation

Source: Researchers' calculations using data from the Trade Adjustment Assistance (TAA) program and the US Census Bureau.

Eligibility for wage insurance through the US Trade Adjustment Assistance Program increases displaced workers' earnings by $18,000 (26 percent) over the four years following displacement.

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bility increases the likelihood that a worker will be employed by between 8 and 17 percentage points. They do not find any effect on employment four years after an unemployment spell begins. Program eligibility also increases the proportion of displaced workers' prior earnings that are replaced by income from a new job by 10 percentage points. On average, cumulative earnings rise by over $18,000 (26 percent) during the four years following displacement.

These effects are driven by shorter unemployment durations among workers who are eligible for wage insurance. Compared to WI-ineligible workers, eligible workers experience initial nonemployment spells that are about one calendar quarter shorter, and total time out of employment in the four years after separation that is about 1.26 quarters shorter.

The researchers estimate that the reduced outlays on unemployment insurance as a result of quicker job finding and the long-term revenue gain from taxing a worker's increased earnings more than cover the cost of wage insurance benefits and administrative program costs.

— *Abigail Hiller*