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INSIDE THIS ISSUE

Revenue Redistribution in Big-Time College Sports

Strict limitations on player compensation in revenue-generating college sports such as men's football and basketball result in a transfer of resources away from student-athletes in those sports, who are more likely to be from lower-income households, to those in other sports. The student-athletes in the sports receiving subsidies are more likely to be from affluent backgrounds, according to research reported in **Who Profits from Amateurism? Rent-Sharing in Modern College Sports** (NBER Working Paper 27734).

Craig Garthwaite, Jordan Keener, Matthew J. Notowidigdo, and Nicole F. Ozminkowski examine the socioeconomic impact of collegiate rules that restrict player compensation to scholarships and living expenses. They find that the college football and basketball players who are seen on network television capture less than 7 percent of the revenues they generate. Their professional counterparts receive about 50 percent of the revenues from their sports.

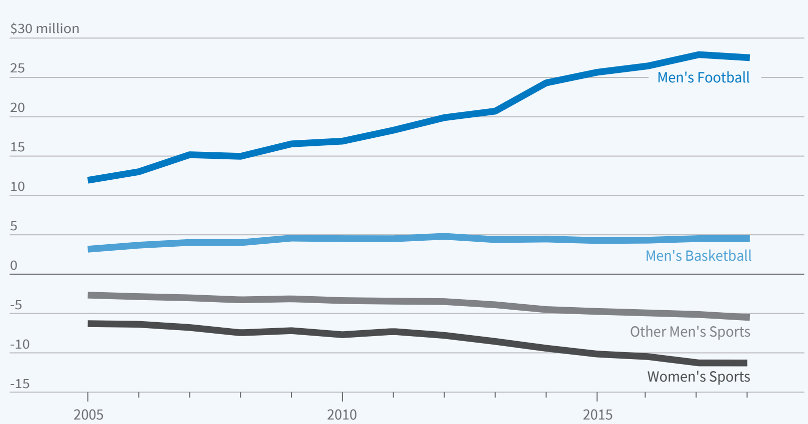
By compensating college players at levels below what they could command in an unfettered market, athletic departments realize economic rents that are used to subsidize non-revenue-generating sports — other sports that would otherwise earn negative net income — to pay the salaries of coaches and other administrative personnel, and to build sports facilities.

Football and basketball, which attract many players from lower-income backgrounds, subsidize money-losing sports which are often played by more affluent athletes.

The study focuses on schools where most athletic department revenue is generated by ticket sales, media contracts, and promotional deals, primarily from football and basketball. The 65 universities analyzed are members of the Power Five conferences: the Big Ten, Pac-12, Big 12, Southeastern, and Atlantic Coast conferences. More detailed budget breakdowns were available from the 46 public institutions in the sample, but not from sports powerhouse private universities such as Notre Dame and Stanford.

Based on data from the public universities, average revenue for the athletic departments stood at $125 million in 2018, up 60 percent from a decade earlier. The surge in proceeds from

Average University-Level Net Revenue in the Power Five Conferences



The conferences in the Power Five are the Atlantic Coast Conference, the Big Ten Conference, the Big 12 Conference, the Pac-12 Conference, and the Southeastern Conference, and represent 61 universities. Source: Researchers' calculations using data from 61 universities in the Power Five conferences, Equity in Athletics Data Analysis dataset, and the Knight Commission football and basketball more than offset a 71 percent increase in the losses incurred by non-revenue-generating sports such as men's golf and baseball and women's basketball, soccer, and tennis.

The researchers report stark demographic differences between players in revenue-producing sports and other student-athletes in Power Five athletic programs. Black players account for nearly half the football and basketball players, but only 11 percent of the players in money-losing sports. Revenue-sport athletes attended high schools with a median family income of $58,400; players in other sports came from high schools with a median family income of $80,000. The researchers also note that only 12 percent of the men's coaches, 9 percent of the women's coaches, and 16 percent of the athletic directors were Black.

Between 2008 to 2018, when support for athletes rose by 47 percent, the average salaries of Power Five football coaches at public universities more than doubled, and those for coaches of other sports increased by 70 percent.

What if college players were paid? The researchers estimate a wage structure based on collective bargaining agreements in professional sports. They calculate that salaries would range from $2.4 million for starting quarterbacks to $140,000 for backup running backs. Starting basketball players, whose professional pay tends to be more uniform, would make between $800,000 and $1.2 million. The researchers caution that these values may be overestimated, since in the absence of labor unions, such as those representing professional players, the college athletes would likely command lower salaries, and the student-athletes' pay might also be depressed if their loss of amateur standing reduced fan interest in college competition.

The researchers say the business model of the Power Five athletic departments resembles that of commercial enterprises, with one big difference: "While rent-sharing is theoretically possible in any commercial venture, the potential for rent-sharing in college sports is particularly great because of the NCAA rules limiting the amount of compensation athletes can earn."

— Steve Maas

WWI Liberty Bonds and the Culture of Investing

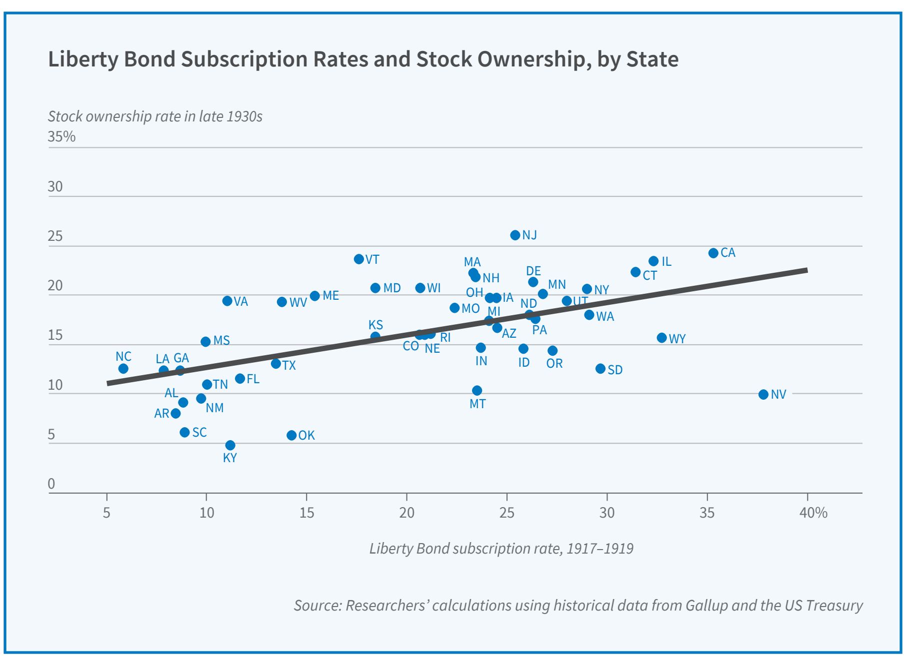
In 1910, fewer than a million individuals owned corporate stock in the United States; by the 1930s that number had increased more than tenfold. What induced so many to move their savings, which were previously held largely in banks, to the security markets?

In **When Uncle Sam Introduced Main Street to Wall Street: Liberty Bonds and the Transformation of American Finance** (NBER Working Paper 27703), Eric Hilt, Matthew S. Jaremski, and Wendy Rahn find that the US government's campaign to finance its World War I effort mobilized new battalions of investors.

> After the war, those who had subscribed to Liberty Bonds were more likely to invest in stocks and bonds, advancing the development of US capital markets.

During the war, political leaders enlisted financial institutions, fraternal organizations, and religious and community groups to persuade Americans that buying the government's bonds was their civic duty. As a result, financial firms learned how to mass market securities, and middle-class Americans became accustomed to putting their savings to work outside the corner bank.

Liberty loans raised $22 billion to finance World War I, the equivalent of more than $5 trillion today. At least a third of Americans 18 or older bought bonds. Banks advanced customers money to purchase bonds, paving the way for the margin loans that played a significant part in the stock market run-up of the 1920s.



Liberty Bond Subscription Rates and Stock Ownership, by State

Source: Researchers' calculations using historical data from Gallup and the US Treasury

The researchers analyze data on bond sales in 869 counties in 17 states during the war and control for other factors that could affect security purchases and commercial bank assets. They find that, after the war, counties that had higher subscription rates to Liberty Bonds had lower levels of commercial bank assets. A 10 percentage point increase in a county's rate of wartime bond subscription was associated with lower commercial bank assets of 7.3 percent in 1920 and 9.7 percent in 1929.

The researchers also analyze data from a survey George Gallup conducted in 1937–38 asking individuals if they owned any stocks and bonds. A single percentage point increase in a state's Liberty Bond subscription rate was associated with a 0.3 percent increase in the likelihood that its residents owned securities two decades later. Without the Liberty Bond campaign, the researchers estimate that there would have been 22 percent fewer investment banks in 1929 and the collective assets of commercial banks would have been nearly a fifth greater than they were.

The researchers note that the shift of assets from commercial banks to the securities market may have curtailed bank lending, and slowed the growth of manufacturing and farming in some of the sampled counties. For the nation as a whole, however, they conclude that by raising financial literacy, the Liberty Bond campaign unleashed a new source of investment funding "that likely helped fuel the large-scale expansion in American industry of the mid-20th century."

— *Steve Maas*

Survival Pessimism and the Limited Demand for Annuities

On reaching retirement, individuals must decide how best to use their savings to provide for the remaining years of their lives. This problem is complicated in part because they do not know to what age they will live. Buying an annuity provides insurance against the possibility of living a longer-than-expected life by converting wealth into an income stream that is guaranteed until death. This feature notwithstanding, relatively few retirees buy annuities.

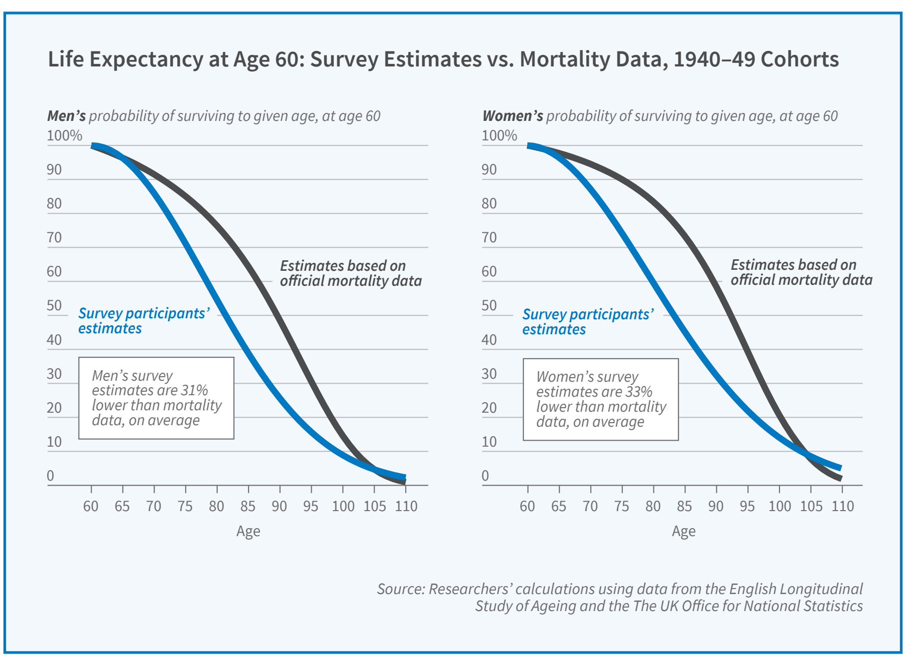
One possible explanation for this low demand is that individuals underestimate how long they will live. In **Survival Pessimism and the Demand for Annuities** (NBER Working Paper 27677), Cormac O'Dea and David Sturrock examine how this phenomenon influences annuity demand.

The researchers begin by measuring the extent of "survival pessimism," the tendency to underestimate longevity. They use data from the English Longitudinal Study of Ageing, a biennial survey of English households over the age of 50. They combine survey data in which individuals are asked about their expected lifespans with mortality data that reveal actual lifespans. They find that, on average, individuals underestimate their lifespan during their 50s, 60s, and 70s. Those in their early 60s underestimate the likelihood that they will survive to age 75 by more than 25 percentage points, on average, and those in their early 70s underestimate survival to age 85 by more than 15 percentage points. In contrast, they overestimate it during their late 80s and beyond.

Since annuities are priced according to insurers' observations of actual longevity, survival pessimism can explain why annuities, to many individuals, appear to offer poor value: they do not expect to live as long as insurers think they will. The researchers estimate that 88 percent of individuals would view as unfairly priced an annuity that is in fact priced fairly for someone of their age, sex, and year of birth.

Survey data from England show individuals in their 60s and 70s underestimate their likelihood of living to old ages, which could account for limited annuity demand.

Depending on their attitude toward risk, however, even survival pessimists may still buy annuities they regard as overpriced rather than stay uninsured. The researchers apply a lifecycle model that accounts for individuals' patience and their attitude to risk to estimate the demand for annuities. In their model, individuals who do not discount the future at all would all purchase annuities if they had correct information about their lifespan. When they base their decisions on expected lifespans, recognizing survival pessimism, however, the rate of annuitization falls to values between 42 and 64 percent depending on risk aversion. For individuals with positive discount



Life Expectancy at Age 60: Survey Estimates vs. Mortality Data, 1940–49 Cohorts

Source: Researchers' calculations using data from the English Longitudinal Study of Ageing and the The UK Office for National Statistics rates toward the future, the level of desired annuitization is lower, but the drop in annuity demand from survival pessimism is still substantial.

The researchers note that another explanation for low annuity demand is that these products offer low payouts because of market imperfections such as adverse selection in the pool of annuity buyers. They estimate that the impact of survival pessimism on the demand for annuities is comparable to the impact of offering payouts that are 82 percent of the actuarially fair payout using population mortality rates. The effect of individuals underestimating their lifespans may therefore be comparable to the effect of these market imperfections.

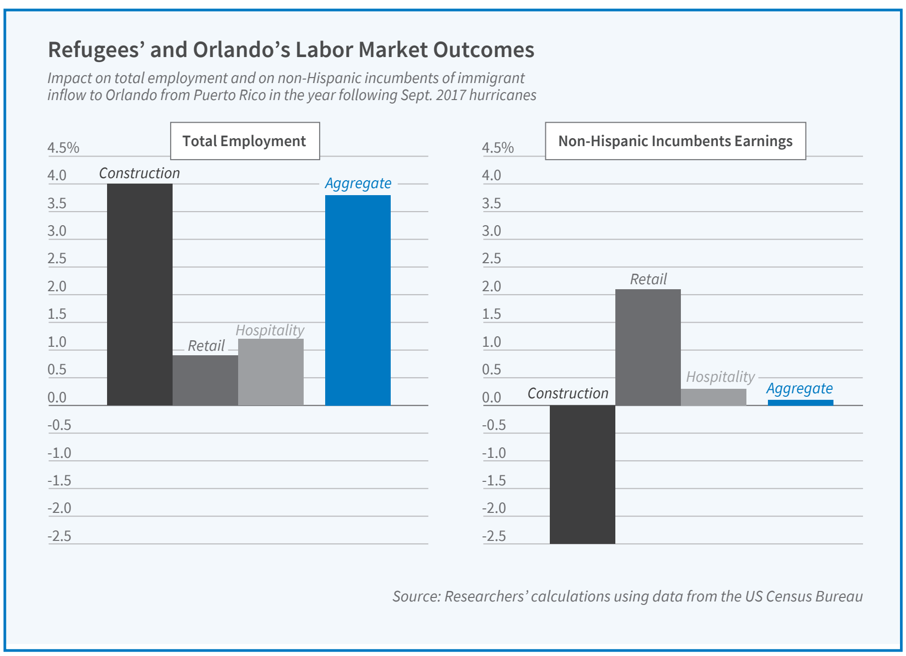
—Dylan Parry

Labor Market Effects of a Hurricane-Induced Rise in Immigration

In September 2017, Hurricane Maria struck Puerto Rico, causing extensive loss of life and property and displacing hundreds of thousands of individuals. In the following months, more than 120,000 Puerto Ricans migrated to the US mainland.

> An influx of migrants lowered wages of incumbent less-educated workers in the construction sector, but wages rose in retail and hospitality.

In **The Economic Impact of Migrants from Hurricane Maria** (NBER Working Paper 27718), Giovanni Peri, Derek Rury, and Justin C. Wiltshire examine the short-run economic impact of this sudden migration event on Orlando, a Florida city that they estimate received approximately 24,000 migrants. They focus on the local labor market impact of this influx of migrants. There has been much previous study of the effects of the massive migration of Cubans to Miami in the Mariel boatlift of 1980.



Refugees' and Orlando's Labor Market Outcomes

Impact on total employment and on non-Hispanic incumbents of immigrant inflow to Orlando from Puerto Rico in the year following Sept. 2017 hurricanes

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

The Puerto Rican migration is more recent, and, the researchers observe, the economy of Orlando in 2018 was more comparable to that of other current US metropolitan areas than was the Miami economy in 1980. In addition, unlike the Cubans of 1980, the Puerto Rican migrants have levels of education similar to those of mainland US workers. Because they were already US citizens, they also had immediate access to the labor market and other benefits of citizenship. This would increase their potential crowding-out impact on other workers, relative to migrants who were not citizens.

The researchers employed data from the Quarterly Census of Employment and Wages and the Quarterly Workforce Indicators, county-by-industry-level administrative data covering more than 95 percent of all workers. They found that following the arrival of the migrants, employment in Orlando increased, especially in construction and retail, and that there were positive aggregate labor market effects for non-Hispanic and less-educated workers. The construction sector was the most likely to experience a sudden increase in labor supply in the short run. One year after the migration event, the data indicate a negative impact on construction sector wages of incumbent non-Hispanic workers of 2.5 percent. This was balanced by earnings growth in retail and hospitality: retail earnings increased for incumbent and less-educated workers by 2.1 percent and 0.3 percent, respectively, over the same period.

Across all sectors and workers, the researchers find no evidence of a negative impact on wages despite the large and sudden influx of thousands of new workers into the region, suggesting that the sector-specific positive wage effects at least offset the negative ones in the aggregate. They estimate a 0.8 percent increase in aggregate employment one year after the hurricane for incumbent non-Hispanic and for less-educated workers. The findings suggest that migrants put modest downward pressure on earnings in sectors most exposed to the new labor supply, while having positive effects on employment and earnings for workers in sectors that meet their demands as consumers.

—Lauri Scherer

The Impact of the Fed's Steps to Preserve Liquidity during the Pandemic

In late February 2020, a few weeks after Chinese officials announced possible human transmission of the COVID-19 virus, severe dislocations started to emerge in global credit markets. In the United States, liquidity in the commercial paper and corporate bond markets deteriorated significantly by early March. In response, the Federal Reserve announced on March 17 and 18 a number of emergency measures to shore up the critical short-term funding markets. Despite the Fed's actions, liquidity conditions in the corporate bond market — a key source of longer-term financing for US companies — worsened further and credit spreads shot up.

To avert a market meltdown, the Fed announced on March 23 that it would buy corporate bonds in the primary and secondary markets. Secondary market purchases of eligible bonds, defined as investment-grade bonds with the remaining maturity of less than or equal to five years, would be made through the Secondary Market Corporate Credit Facility (SMCCF) and would track "a broad, diversified market index of US corporate bonds." On April 9, the Fed expanded SMCCF eligibility to include corporate bonds from "fallen angels," US companies that were investment grade on March 22 but had subsequently been downgraded to junk status.

In **The Fed Takes On Corporate Credit Risk: An Analysis of the Efficacy of the SMCCF** (NBER Working Paper 27809) Simon Gilchrist, Bin Wei, Vivian Z. Yue, and Egon Zakrajšek document economically large and statistically significant effects of the two SMCCF announcements on credit and bid-ask spreads. They study the SMCCF's impact on the yields on individual bonds, and then aggregate their findings. They define the credit spread for each bond each day as the difference between the bond's yield to maturity based on its daily price and the yield on a synthetic, risk-free security constructed using zero-coupon Treasury yields. As the market's perception of a bond's risk rises, so does the credit spread.

The announced interventions affected credit spreads even before the Fed began buying bonds. In the two weeks after the April 9 announcement, the credit spreads on eligible investment-grade bonds fell by 70 basis points relative to the spreads of similar bonds with maturities slightly above the five-year maturity cutoff. Average daily credit spreads between SMCCF-eligible and ineligible bonds from the same company narrowed by about 20 basis points.

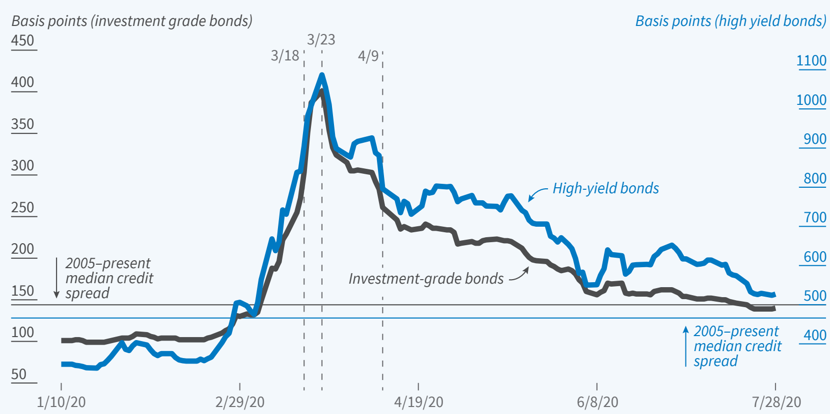
The Federal Reserve's announcements that it would buy a progressively broader range of US corporate bonds produced sharp reductions in credit spreads for eligible securities.

Evidence that the Fed's actions significantly reduced near-term default risk is particularly clear in the market for fallen angels' bonds. These bonds were not eligible for the SMCCF until April 9. Their credit spreads rose by 340 basis points in the 10 days following the March 23 announcement, and then narrowed by 250 basis points in the 10 days after the April 9 announcement.

In addition to the market impact of policy announcements, the researchers also find an effect of actual bond purchases. On June 16, the Fed began purchasing an average of $150 million in corporate bonds daily. By the end of July, cumulative purchases totaled almost $3.4 billion. The SMCCF had purchased 1,351 individual corporate bonds issued by 482 companies. By matching each bond's CUSIP number, purchase date and time, transaction price, and quantity in dealer-to-customer transactions, the researchers could identify all but one of the Fed's bond purchases. They estimate intraday purchase effects by tracking bond prices in the 20 hours before and after each of the Fed's purchases. They find that the net decline in the credit spread when the purchase was made was about 3 basis points. The researchers conclude that the SMCCF made it substantially easier for companies to borrow in the corporate bond market.

—Linda Gorman

US Corporate Bond Credit Spreads During COVID-19



Noted dates: 3/18, Fed announces Commercial Paper Funding Facility; 3/23, Fed announces Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF); 4/9 Fed Expands PMCCF and SMCCF to include downgraded corporate debt.
Source: Researchers' calculations using data from the Bank of America/Merrill Lynch bond database

Fee Disclosures and 401(k) Investment Allocations

At the beginning of 2012, the US Department of Labor (DOL) required fiduciaries of 401(k) retirement plans to provide plan participants with an accessible presentation of the annual fees and returns of each investment option in their plan. Though this information had long been publicly available, it was often difficult to find, as it was reported in fund prospectuses or regulatory filings.

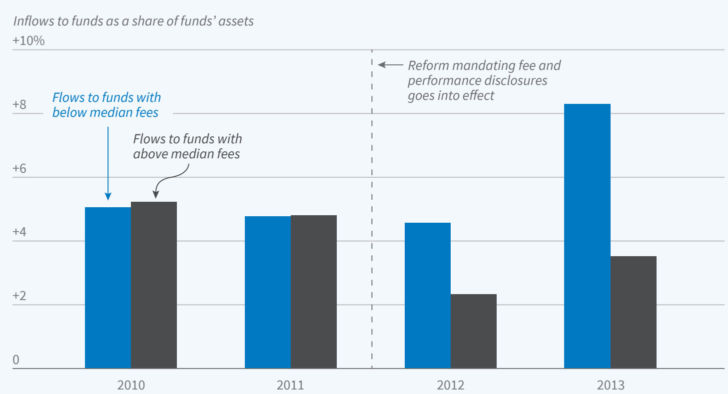
In **Out of Sight No More? The Effect of Fee Disclosures on 401(k) Investment Allocations** (NBER Working Paper 27573), Mathias Kronlund, Veronika K. Pool, Clemens Sialm, and Irina Stefanescu show that in response to the increased clarity of these presentations, many retirement plan participants have switched their retirement investments to cheaper funds.

The researchers collected information on the complete set of investment options offered by a large sample of 401(k) plans from Form 5500 filings required by the DOL from 2010 through 2013. They compared how plan participants allocated their retirement money among the funds in each plan for the two years before and after the regulatory change. They matched the mutual funds offered in these retirement plans with entries in the CRSP Survivor-Bias-Free US Mutual Fund Database to obtain information on net asset values and fees. They restricted their sample to plans with at least three and no more than 100 investment options. Each year of the sample contained nearly 1,400 plans.

By 2013, the sample of retirement plans included about 18 million participants who together had $1.3 trillion in retirement assets, roughly a third of the total 401(k) assets in the United States. The average plan had $799 million in assets and 13,000 participants. The average participant's account was worth $77,200; the average contribution was about $4,600 per year. In general, plans averaged 21 investment options, 18 of which were on the menu for at least two consecutive years. About half of the investment options in the sample were domestic equity funds.

When the US Department of Labor required retirement plans to make the fees and returns on investment options more accessible, many savers switched to cheaper funds.

Mandated Fee Disclosures for 401(k) Investment Options and Fund Inflows



Source: Researchers' calculations using data from filings with the Security and Exchange Commission and the Department of Labor, and from the Center for Research in Security Prices Survivorship Bias-Free US Mutual Fund database

The average annual fee across all funds in all plans in the sample was 0.57 percent. It ranged from 0.16 percent in the 1st percentile to 1.05 percent in the 99th percentile. To study how retirement plan participants changed their investment allocations, the researchers measured the investment flows in and out of plan investment options. They found funds with a one-standard-deviation lower average expense ratio—0.36 percentage points—experienced a 0.17 percentage point per year increase in plan allocation. To place this in perspective, the median fund's share of assets in a retirement plan is 2.9 percent. Funds with a one-standard-deviation higher fee had an 8 percent higher probability of experiencing outflows, as investors actively moved money away.

Participants had the option to purchase employer stock with zero fees in 66 percent of the sample plans. In general, they allocated 15.4 percent of plan assets to employer stock in plans with this option. After the reform, participants reallocated funds toward employer stock when the investment options in a plan were relatively expensive and when one-year performance of company stock was relatively high.

—Linda Gorman

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