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ECON FOCUS

FEDERAL RESERVE BANK OF RICHMOND

SPECIAL ISSUE

Economics Over the Life Cycle

Millennials and Their Money

Women at Work

Life Cycle Hypothesis

Gains and Losses in Life Expectancy

Do Economists Ever Really Retire?

Interview with Jonathan Parker



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Monetary Rules in an Independent Fed

A long-running debate in central banking is whether policymakers should follow an explicit formula for setting monetary policy or whether they should be allowed some leeway to exercise their best judgments. Recently, the “rules versus discretion” debate has been reanimated by lawmakers who argue the Fed operates with too much freedom and not enough transparency. They have proposed legislation that would require the Federal Open Market Committee (FOMC) to establish and follow a monetary policy rule — that is, an equation that specifies how the federal funds rate should respond to changes in economic variables.

Perhaps the best-known rules are Taylor rules, first developed by John Taylor of Stanford University in 1993 to describe past central bank behavior during a time when it was thought to be conducting policy effectively. Taylor rules express the federal funds rate as a function of inflation and some measure of real economic activity, such as employment. In general, Taylor rules prescribe lower interest rates when inflation is below target or employment is falling short and higher interest rates when inflation exceeds target or labor markets are exceptionally tight.

Research suggests there are a number of benefits to using such rules. For example, many economists, including some at the Richmond Fed, have found that the Fed generally did follow a Taylor rule during the Great Moderation, the period from the mid-1980s to the mid-2000s when policy was relatively successful at keeping inflation low and stable and minimizing fluctuations in employment. A key element of this success is that the Fed appeared to follow an aspect of the rule known as the “Taylor principle,” which states that the Fed should increase the federal funds rate more than one-for-one in response to increases in inflation. In contrast, during the 1960s and 1970s, when inflation was much more erratic, policymakers departed from this principle.

Given that monetary policy has been fairly close to the prescriptions of a Taylor rule in recent decades, with some exceptions, and that inflation expectations have been well-anchored over that period, departing from such behavior may erode the public’s confidence in the Fed’s commitment to price stability. From this perspective, there might seem to be little harm in legislating the Fed’s adherence to a Taylor-type rule.

But it’s neither reasonable nor realistic to expect monetary policymakers to unthinkingly follow a single rule. In my view, a rigid requirement, like the one in some proposed legislation that the FOMC choose a single rule and explain any departures after every meeting, is too draconian. (Although the proposed legislation does give the Fed the option to depart from the rule, the strict conditions attached to deviation would create too strong an expectation of adherence.)

One reason is that simple and strict rules might be too inflexible for the real world, unable to accommodate

unforeseen events or changes in financial technology, as my colleague John Weinberg discussed in the First Quarter 2015 issue of this magazine. In addition, there is no single “correct” Taylor rule; multiple versions have been proposed, all of which rely on assumptions about unobserved variables, such as the natural rates of unemployment or interest. Finally, and most importantly, there is the danger that in legislating a Taylor rule, Congress could drift into dictating the day-to-day setting of monetary policy instruments — and history has shown that results are superior when the Fed sets interest rates independently in pursuit of monetary policy goals set by Congress.

This does not mean we face an all-or-nothing choice between blind devotion to a rule and policymakers acting capriciously, as some would argue. Instead, I believe there is a sensible middle course.

Policymakers should — and I do — consult the recommendations of a range of policy rules when setting monetary policy. We should generally stay relatively close to those recommendations and should depart only with careful consideration and good reason to believe that a departure is warranted. As we know from the pre-FOMC meeting briefing materials released with FOMC transcripts, at least through 2011 those materials included calculations for a number of alternative Taylor-type rules. Whether policymakers consulted rules — and if they did, which rules — in 2012 and beyond will not be known publicly until the meeting materials are released (five years after the meeting date).

But the public deserves to know more about the rules the committee consults. We could include the calculations for these rules in the Board’s semiannual Monetary Policy Report to Congress, along with a discussion of how and why policy departed from these rules, if applicable. This is a step the Fed could take voluntarily, without the need for legislative action. This approach would help meet the objective of increasing the Fed’s transparency and accountability without tying policymakers’ hands or threatening the Fed’s independence. **EF**



JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND



MARYLAND — In October, at the 2016 Innovation Showcase in Baltimore, grants totaling \$200,000 were awarded to local startups and to researchers from Johns Hopkins and the University of Maryland, Baltimore. The Maryland Department of Commerce awarded four grants, while the Abell Foundation handed out two. The grants are focused on early-stage medical research and development and aim to help with commercialization. Among the recipients were researchers working on projects that include a kidney injury prevention system and a 3D gamma imaging system for medical applications.



NORTH CAROLINA — In November, former Gov. Pat McCrory announced that Mill Spring, N.C., will host the 2018 World Equestrian Games at the Tryon International Equestrian Center — only the second time the international championship event has been held outside of Europe. The two-year-old Tryon Center has 12 riding arenas and hundreds of miles of equestrian trails. Based on past events, it is estimated the games could draw 500,000 spectators to the region over a two-week period.



SOUTH CAROLINA — Nutritional supplement manufacturer Thorne Research will build a \$35 million, 240,000-square-foot facility near Summerville, in addition to relocating its corporate headquarters to the area. The new facility is expected to create 330 research, manufacturing, distribution, and support jobs and will be operational by mid-2018. Job development credits have been approved by the Coordinating Council for Economic Development as an incentive for the project.



VIRGINIA — Gov. Terry McAuliffe launched Cyber Vets Virginia in November. The initiative aims to link veterans who want to live and work in Virginia with cybersecurity training and skill development programs, including a free 12- to 15-week training course slotted to begin in April 2017. The initiative will also provide information on financial support and career tools. Cyber Vets Virginia is a collaboration involving the state, private-sector leaders, and the Institute for Veterans and Military Families' Onward to Opportunity program. McAuliffe estimated that there are 17,000 cybersecurity job openings in Virginia.



WASHINGTON, D.C. — In late October, Vornado Realty Trust announced it was merging its D.C. operations with Maryland-based developer JBG Companies. The tax-free merger will create D.C.'s largest commercial real estate company — to be called JBG SMITH Properties — and is expected to be completed by the second quarter of 2017. The \$8.4 billion deal includes 11.8 million square feet and more than 4,400 multifamily units in the District as well as some areas in Virginia and Maryland. The new company also has a number of projects already under construction that could result in an additional 20 million square feet of development.



WEST VIRGINIA — In November, West Virginia University announced a partnership with China's Shenhua Energy Co., one of the world's largest energy companies. The partnership builds on previous research collaborations between the two organizations. The new partnership will focus on clean energy technologies and will promote technology innovation through education and training exchanges, with the hope that discoveries could lead to cleaner, cheaper energy being available around the world. It will involve WVU's colleges of engineering, business, agriculture, arts and sciences, and law.

The Changing Face of the American Family

BY CHARLES GERENA

“Family Economics Writ Large.” Jeremy Greenwood, Nezh Guner, and Guillaume Vandembroucke, *Federal Reserve Bank of St. Louis Working Paper No. 2016-26B, January 2017.*

The American family looks very different than it did 50 years ago, reshaped by a multitude of changes in the choices that people make and how they are accepted (or not) by society. Fewer couples are getting married and more are getting divorced, while more women are in the workforce and fewer are having babies.

A paper published by the St. Louis Fed has examined the use of models to better understand the macroeconomic effects of these and other family-related decisions made at the micro level throughout the life cycle. According to the authors, Jeremy Greenwood of the University of Pennsylvania, Nezh Guner of the Center for Monetary and Financial Studies, and Guillaume Vandembroucke at the St. Louis Fed, much progress has been made in explaining certain trends. These include the rise in the number of people in the same socioeconomic class marrying each other, a phenomenon known as assortative mating, and the rise in children living with a single mother.

Yet questions remain about other family-related decisions. “It seems likely that the secular decline in fertility is connected with the rise in married female labor-force participation,” noted Greenwood, Guner, and Vandembroucke. “Matching these long-run facts, in addition to the cross-sectional facts on female-labor force participation and fertility, would be an important thing to do. The development of such a macroeconomic model is essential for understanding a host of policy questions surrounding the family.”

As macroeconomic models incorporate these factors, the researchers suggested, they could provide much-needed guidance for state and federal lawmakers who want to use public policy to address societal ills. For example, should child care be subsidized for the growing number of single-parent families? Or, taken to an extreme, should tax policy be used to encourage marriage as it has been to encourage homeownership?

“The Role of Selective High Schools in Equalizing Educational Outcomes: Heterogeneous Effects by Neighborhood Socioeconomic Status.” Lisa Barrow, Lauren Sartain, and Marisa de la Torre, *Federal Reserve Bank of Chicago Working Paper No. 2016-17, November 2016.*

The achievement gap between low-income students and their more affluent counterparts has proven to be a difficult problem for policymakers to tackle. It has

widened over the last 50 years and is much larger than the achievement gap between students of different races. Policymakers want to break the cycle of poverty that results from this gap, as well as from Americans’ relatively low level of income mobility from generation to generation compared to other developed countries.

Lisa Barrow at the Chicago Fed and Lauren Sartain and Marisa de la Torre at the University of Chicago recently examined the effectiveness of Chicago public high schools with selective enrollment in bridging the achievement gap between students of differing income levels. Selective public schools admit students based on admission requirements such as academic performance and entrance exam scores. In Chicago’s case, they also consider a student’s socioeconomic background to extend broader access to their more challenging, academically enriched environments.

Earlier research on selective high schools has suggested mixed results. In countries where all assignments to secondary schools are based on test scores, such as Romania and Trinidad and Tobago, research has found that attending the most selective schools improves student scores on future high stakes exams. But in cities such as Boston and New York, where only a small number of schools have selective admission, the results have been less sunny. While students may be exposed to more rigorous course work, research has found no effect from these schools on test scores, according to the paper.

“These findings suggest that any apparent advantages gained by attending a selective high school are actually due to selection and not to [the] value that the schools themselves add for their students,” the authors noted.

Because the admissions processes of Chicago’s selective high schools give disadvantaged students a leg up, and because those schools are academically enriched, they might be expected to achieve better outcomes for their disadvantaged students than other Chicago schools. Based on the paper’s findings, however, that was not the case.

In addition to a lack of an effect on test scores, selective high schools had a large negative effect on the GPA of students from disadvantaged neighborhoods. Perhaps as a result, these students were less likely to attend a selective college.

Overall, students at Chicago’s selective high schools did have a more positive perception of secondary education. “[They] are more likely to say that students get along well and treat each other with respect, and they are similarly more likely to report that their teachers care about them and listen to their ideas.” They are also less likely to worry about crime, violence, and bullying at school.

“Perhaps it is factors like these that make SEHSs highly desirable to students and families — more so than the potential to improve test scores and college outcomes.” **EF**

1965: The Year the Fed and LBJ Clashed

BY HELEN FESSENDEN

The storied showdown between Fed Chairman Bill Martin and President Lyndon Johnson wasn't just about personalities. It was a fundamental dispute over the Fed's policymaking role

President Lyndon Johnson and Fed Chairman William McChesney Martin Jr., in a more collegial moment, shake hands during a bill signing in September 1966.

Few challenges to the Federal Reserve's independence have ever matched the drama of Dec. 5, 1965. Fed Chairman William McChesney Martin Jr. had just convinced the Board of Governors to raise the discount rate amid signs that the economy was starting to overheat. Fiscal stimulus — increased spending on the Vietnam War, expanded domestic programs for President Lyndon Johnson's "Great Society," and a tax cut enacted in 1964 — had raised inflationary warning signals for Martin and, increasingly, a majority of the Federal Open Market Committee (FOMC). But Johnson was adamant that higher rates would slow down the economy and compromise his domestic agenda. Enraged, he called Martin and other top economic officials to his Texas ranch, where he was recovering from gallbladder surgery.

"You've got me in a position where you can run a rapier into me and you've done it," charged Johnson, as recounted by Robert Bremner in *Chairman of the Fed*. "You took advantage of me and I just want you to know that's a despicable thing to do."

Johnson was accustomed to getting his way — whether through bluntness or sweet-talking, as the occasion might require. But not this time.

"I've never implied that I'm right and you're wrong," Martin said. "But I do have a very strong conviction that the Federal Reserve Act placed the responsibility for interest rates with the Federal Reserve Board. This is one of those few occasions where the Federal Reserve Board decision has to be final."

Johnson finally relented, and Martin's refusal to back down is often considered one his strongest moments as Fed chairman. His relationship with the president was sometimes strained in the following years. But the 1965 showdown was seen as a tough lesson to Johnson that the Fed would flex its muscles when needed to push back against the inflationary pressures caused, in part, by his administration's own policies.

What is less often remembered in the popular mind is that the rate hike of 1965 did not, in fact, turn a corner on inflation. In the years that followed, fiscal stimulus was ample, war spending kept rising, and the deficit grew. But FOMC members were often divided, and their policy decisions reflected this ambivalence. Furthermore, while Martin saw monetary and fiscal policymakers as obligated to work together to promote price stability and growth, he discovered that dealing with this particular White House and Congress was often a one-way street. And even though the Fed was substantially upgrading its analytic capacity in the 1960s — hiring more Ph.D. economists, building up its research departments, and adopting forecasting — it didn't always translate into consistent monetary policymaking.

What this meant for the economy was that high inflation, so closely associated today with the 1970s, was already ticking upward in the 1960s. While it averaged only 1.5 percent a



PHOTOGRAPHY: ASSOCIATED PRESS

year from 1952 to 1965, it rose to an annual average of 4.5 percent starting in 1966. In 1969, it hit an 18-year high of 5.75 percent. In retrospect, many scholars now believe that the roots of the 1970s inflationary spiral can be found in the 1960s. The economic historian Allan Meltzer has described 1965 as a turning point on inflation. Robert Hetzel of the Richmond Fed, similarly, noted in his history of the Fed that “an explanation for the Great Inflation must deal with Martin’s responsibility.” Martin himself seemed to have grasped this, lamenting to his colleagues upon retirement in 1970, “I’ve failed.”

The Early Years

Martin’s 19-year tenure saw historic changes at the Fed, and many scholars consider him one of the most influential Fed leaders ever. Named as chairman following the 1951 Treasury-Fed Accord — the deal that cemented the Fed’s independence from the executive branch — he presided over a stretch of strong economic growth, interrupted by a few relatively short recessions, and low inflation for the next 14 years. During the administrations of Eisenhower and Kennedy, he generally had good relations with a White House that was mindful of the Fed’s authority. His commitment to Fed independence and to a strong price-stability mandate was summed up in two of his most famous sayings: that the Fed’s role is that of the chaperone who “has ordered the punch bowl removed just when the party was really warming up,” and that monetary policy’s mandate was to “lean against the winds” of either inflation or deflation.

Martin’s background was not in economics but in finance. His father, William McChesney Martin Sr., had helped draft the 1913 Federal Reserve Act and later headed the St. Louis Fed. Martin Jr. started after college as a bank examiner for the St. Louis Fed and later moved to Wall Street. He got his first big professional break in 1938, when he was tapped as chairman of the New York Stock Exchange at the age of 31. Steeped in Fed history and culture, Martin Jr. was profoundly influenced by the failure of the Federal Reserve Banks to coordinate monetary policy effectively during the early years of the Depression, including the missed chance to prevent the 1929 crash from worsening into a recession in the first place. Martin also eschewed economic theory and preferred an “intuitive” approach to monetary policy, scouring the markets for clues on where interest rates, and the real economy, were heading. And until late in his tenure, he didn’t see much value in economic forecasting.

Martin strongly believed that the Fed’s core mission was price stability. But he also adhered to the view that the Fed and the other branches of government would work most effectively if they respected the interaction of their

Martin’s 19-year tenure saw historic changes at the Fed, and many scholars consider him one of the most influential Fed leaders ever.

policy decisions. As part of this approach, he believed, the Fed had to communicate effectively with Treasury and Congress to achieve a common set of goals. Sometimes this meant that the burden of adjustment (i.e., tightening policy) was on the Fed, since Congress, as the democratically elected branch with

the power of the purse, determined the course of fiscal policy, including whether to run deficits. “It is monetary policy that must adapt itself to the hard facts of the budget,” is how Martin put it in a 1965 speech. “Not the other way around.”

Priming the Pump

Martin’s approach generally worked well during the administrations of both Eisenhower and Kennedy, even though Kennedy pledged to accelerate growth and lower unemployment and hired economists who were generally supportive of fiscal stimulus (for example, Walter Heller as chairman of the Council of Economic Advisers, or CEA). But Martin had to deal with a new administration in 1964. One of Johnson’s first priorities was passing Kennedy’s tax cut proposal, which Congress quickly cleared that spring. At the same time, Johnson sought to ramp up domestic spending. He also brought on a number of officials, including Gardner Ackley at the CEA and Henry Fowler to lead the Treasury Department, who he thought would support him in these efforts. This camp held that the Fed’s primary role was keeping unemployment very low, around a target of 4 percent, and providing stimulus through low interest rates. Unlike Martin, they believed allowing a modest amount of inflation to reach low unemployment was not risky; as long as the economy had not reached full employment, it would have enough slack to keep wage pressures in check. And if inflation did emerge, they believed fiscal policy, rather than the Fed, was the most effective tool to manage it.

Martin was at odds not only with those officials in the executive branch, but also with some of his fellow FOMC colleagues. The appointments of George Mitchell (1961) and Sherman Maisel (1965) as governors effectively ensured a strong “dovish” plurality. Martin preferred to avoid tipping the scales during votes until he knew where a majority was heading, but as inflationary signs picked up, he increasingly tried to bring the Reserve Bank presidents — who generally were more independent — to his side.

By spring 1965, Martin became concerned that the stimulus of the past year was working its way through the economy, noting signs of rising demand for credit. Money market rates and bond yields were trending up. Meanwhile, the effective fed funds rate — what banks can charge each other for interbank loans — began to rise above the official discount rate — what the Fed charges member banks for loans from the Fed’s discount window, as determined by the Board of Governors. (At the time, the Fed’s preferred monetary

policy tool was the discount rate; the fed funds rate didn't take on that function until the 1980s.)

To Martin, this indicated that the market was pushing short-term borrowing rates upward, and the Fed was behind the curve. Industrial wholesale prices were also rising after holding steady for four years, as was the money supply, which had expanded by an annualized rate of almost 6 percent by year-end. Martin typically did not focus on the money supply as an early indicator, but he was alarmed about the shift in market rates, and his public comments in the spring and summer began reflecting that. At the same time, he worried that he didn't have a majority of the Board behind him.

The Secret Surge

Another red flag to Martin was that Vietnam War spending began accelerating — and far more than the administration would let on. Johnson announced a massive troop increase in the summer of 1965 but withheld the actual, far higher, budget estimates from most of Congress as well as from the Fed. Johnson got some cover from Ackley, who said the economy could absorb the extra defense spending without risking inflation, but Martin had his doubts.

Through secret talks that autumn with Sen. Richard Russell, D-Ga., Martin learned that war spending was ballooning well above official numbers, by about 25 percent. At the same time, Johnson kept telling Martin that the Fed should hold off on any tightening until the White House released the next year's budget the following January. Martin was deeply reluctant to force a confrontation, but Johnson's dissembling in the matter made the Fed chairman skeptical that the budget would be accurate. (Indeed, when the White House released its budget, it asserted that Congress didn't need to raise taxes because the war would end in June 1967.)

Worried that the Fed would be acting too late if it waited until 1966, and that its independence might be compromised, Martin decided that early December was the time to act. On a 4-3 vote, the Board decided on Dec. 3 to lift the discount rate from 4 percent to 4.5 percent. That also allowed it to lift the ceiling on the prime lending rate that banks could charge to 5.5 percent (a limit known as Regulation Q, which the Fed gradually phased out starting in 1980). As Martin argued to his colleagues, and later to Johnson and to Congress, if the Fed had decided to keep short-term rates as low as 4 percent, it would have to flood banks with more reserves, increasing the risk of inflation.

The showdown at Johnson's ranch occurred two days later, and Martin held his ground. He also laid out his case in public statements after that meeting, emphasizing that the economy was in strong enough shape — with unemployment dropping close to 4 percent and labor costs holding steady — that it could weather the tightening well. He pointed out that it was a boost in credit demand, not rising wages, that was driving inflation, and he explained the Fed's decision as an adjustment to meet that demand.

The rate hike “is intended not to reduce the pace of the economy's expansion but to moderate mounting demands for bank credit that might jeopardize that pace by over-stimulating the economy,” he said in a speech to an insurance conference in New York City shortly after the Texas trip. And given that the economy was close to full employment, he added, the risk was that “bottlenecks will develop in strategic areas so that large new injections of bank credit and money will serve to raise prices more than production.”

The Tax Battle

But it wasn't enough. Martin and others on the FOMC soon became alarmed that inflation continued to rise despite the December 1965 hike. It reached 2.8 percent by March 1966, and the effective fed funds rate began to creep over the discount rate, by around a half a percentage point that summer. In July 1966, without the prospect of any action on taxes, the Board asked banks to ration credit rather than raising benchmark rates. This time, the move had broad support.

In the following months, Martin also made progress in another priority: getting high-level support to convince Johnson and Congress to raise taxes to pay for Johnson's programs. Higher taxes, Martin believed, would relieve the Fed of the need to tighten rates further to offset rising deficit financing. By fall 1966, both Ackley and Fowler began siding with Martin on this point, even though both were unhappy about the December rate hike. Still, Johnson continued to resist. Powerful fiscal conservatives in Congress wanted domestic spending cuts in return if they were going to raise taxes — and that was a bargain Johnson refused to consider.

The summer tightening of 1966 did dampen inflation temporarily but brought with it the side effect of a deep credit crunch. By spring 1967, Martin felt that inflation had slowed down enough to allow the Fed to dial the discount rate back to 4 percent — on the condition that Johnson would finally push his tax hike proposal in Congress. Again, the president resisted. It was not until spring 1968, when the Johnson administration and the Fed had to scramble to address a balance-of-payments crisis caused by destabilization in the gold market and a looming collapse of the British pound, that Johnson and Congress found the support to move the tax hike package. (It was also at this point that Johnson had decided against running for re-election.) But by then both interest rates and inflation were moving higher. In fact, starting in fall 1967, the Board had begun raising the discount rate again, and by July 1969 it reached 6 percent; the effective fed funds rate topped 10 percent.

What were the drivers of this inflation? To be sure, Johnson's policies produced a sharp rise in deficit spending, which Johnson failed to offset with higher taxes until the waning days of his presidency. From 1965 to 1968, the deficit jumped from 0.2 percent of gross domestic product to

2.7 percent. But the inflation of the 1960s also can be traced to the expansion of the money supply. From the mid-to-late 1960s, it grew at an annualized rate of 5 percent to 7 percent, well above the average of 4 percent in the first half of the decade. Among the newer Fed economists at the time, the growth of money supply was getting increasing attention as one indicator among several that merited consideration. But in terms of policy adjustment, the Fed didn't set targets for money growth as an intermediate step in controlling inflation; rather, economists were still debating how to measure it and what role it should play as an indicator.

The Changing of the Guard

Martin's term was set to end in January 1970, but with the election of Nixon, Martin feared his leverage would be diminished in his remaining months. Nixon had long resented Martin — believing that the Fed's tightening policy of the late 1950s caused the brief recession of 1960 and cost Nixon the election — and settled on the economist Arthur Burns to replace Martin. An awkward arrangement was reached in which Burns would succeed Martin as Fed chair once Martin served out his formal term — but until then, Burns would work for Nixon as a White House adviser. This close political relationship is one reason why many scholars, in retrospect, consider Burns' tenure to have been compromised from the start.

Many economists today view the 1970s a “lost decade” for monetary policy, when the Fed, under Burns, failed to craft a consistent and effective approach to address ever-rising inflation. As the data show, however, the inflation crisis began in the 1960s, with two important drivers in particular: strong stimulus on the fiscal side, including deficit spending, and the rapid growth of the money supply. Martin secured some temporary successes — like the 1965 rate hike and the 1968 tax increase — but inflation accelerated all the same. One constant challenge was that the increases in domestic and war spending were more substantial than initially expected. But the Fed's own efforts to control inflation were not always consistent, due in part to the Board's divisions;

one example was Martin's decision to hold off until late 1965 to act, even though he had wanted to move earlier that year. Finally, Martin himself later admitted he may have placed too much emphasis on tax policy as a sufficiently powerful tool to reach his desired outcome, after the 1968 tax hike failed to have much impact on tamping down inflation.

Testifying before Congress in 1969, Martin addressed the issue of consistency, suggesting he regretted the Fed's decision to ease in 1967 in hopes of getting the tax hike. “[A] credibility gap has developed over our capacity and willingness to maintain restraint,” he said. “We have been unwilling to take any real risks.”

Some scholars also note the problems with the Fed's own approach. As a traditionalist who preferred studying the financial markets rather than formal models, Martin had parted company with many of the younger economists joining the Fed, who began assessing a broader range of indicators, including the money supply. But these refinements had not been fully incorporated into the FOMC's own decision-making during those critical years in the mid-1960s, as Meltzer noted in *A History of the Federal Reserve*. For example, rather than take note of the rapid rise in total reserves — the sum of all bank deposits and cash — and other monetary aggregates in late 1965 and early 1966, Martin focused primarily on the much smaller amount of free reserves — what a bank has on hand to lend — and short-term market rates.

“Martin had not raised the discount rate [in 1965] to reduce money growth,” wrote Meltzer. Martin and his backers relied “on the decline in free reserves and the rise in the federal funds rate and other short-term rates. Once again, these indicators misled them.”

The persistence of inflation weighed heavily on Martin in his final days as chair — so much so that at his lavish farewell party at the White House, he shrugged off a series of laudatory toasts. Instead, he offered an apology for the state of the economy. “I wish I could turn the bank over to Arthur Burns as I would have liked,” he said. “But we are in very deep trouble. We are in the wildest inflation since the Civil War.” He then sat down, to uneasy applause. **EF**

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Life Cycle Hypothesis

BY TIM SABLİK

What determines how individuals save and spend their income over their lifetimes? It may seem like simply a question of personal preference, but the answer can have big implications for the economy as a whole. The life cycle hypothesis, which argues that people seek to maintain the same level of consumption throughout their lifetimes, is one way that economists have answered the question — but it was not the first.

An early theory of saving came from John Maynard Keynes' *General Theory of Employment, Interest and Money* in 1936. Keynes viewed saving as simply another type of good that individuals could “purchase.” As with other goods, Keynes reasoned that expenditures on saving would increase with income. This posed a potential problem. When individuals allocate income toward saving, it means they aren't using that income for consumption. This reduction in demand for goods and services could have negative effects on economic output.

To be sure, the negative impact of a decline in consumption is offset by the fact that savings are often channeled into productive investments. But what if there aren't enough investment opportunities to absorb people's desire to save? Keynes and other economists like Alvin Hansen of Harvard University worried that this was a very real possibility as national incomes grew in the postwar era. Hansen coined the term “secular stagnation” to describe the economic slowdown that would result from a “savings glut” with too few investment opportunities.

Studies in the 1940s called Keynes' saving theory into question, however. In 1946, Simon Kuznets of Harvard University examined national income in the United States between 1869 and 1938 and found that the saving ratio in America had barely changed across that period, despite large increases in per capita income. And in a 1947 paper published by the National Bureau of Economic Research, Dorothy Brady and Rose Friedman found that the savings ratio for families at different income levels depended on their income relative to the mean rather than on their absolute income.

To explain these findings, in the 1950s Franco Modigliani of MIT and his student Richard Brumberg developed a new theory for saving. The life cycle hypothesis argued that people seek to maintain roughly the same level of consumption throughout their lifetimes by taking on debt or liquidating assets early and late in life (when their income is low) and saving during their prime earning years when their income is high. This hypothesis predicts that wealth

accumulation will follow a “hump-shaped” pattern — that is, low near the beginning of adulthood and in old age, and peaking in the middle.

Modigliani and Brumberg's theory has important implications for the broader economy. In contrast to the Keynesian view that a country's aggregate saving rate is driven by its total level of income, the life cycle hypothesis implies that the savings ratio depends on the growth rate of income. When income in a country is growing, each new generation has higher consumption expectations than the previous one. To maintain their higher consumption when they get older, prime-age workers in a growing economy will save more than past cohorts of prime-age workers, and the dissaving of those

past cohorts (who are now retirees) will be less than the current workers' savings rate.

Over the years, empirical studies have called into question some of the conclusions of the simple life cycle hypothesis. Data suggest that retirees do not draw down their wealth as quickly as the model would predict. Moreover, studies in the United States and the United Kingdom find that consumption, too, is not smooth over people's lifetimes; instead, it tends to rise through middle age and fall after retirement.

There are different possible explanations for these findings. Consumption may be lower for young people than the model predicts if they are credit constrained. They may wish to borrow against expected higher future earnings but can do so only if lenders extend the credit to them. Uncertainty may play a role as well. Since young individuals don't know exactly what their future earnings potential will be, they may hesitate to accumulate a lot of debt for fear that they won't be able to pay it off.

Uncertainty plays a role at the end of life as well. Since individuals do not know exactly how long they will live, it is hard for them to smoothly draw down their wealth throughout retirement. Retirees may also save more than predicted because they wish to leave some of their wealth to their descendants. Finally, the drop in consumption at the end of the life cycle could be due to “hyperbolic discounting.” Behavioral economists have advanced the idea that individuals have trouble planning for the future, which leads them to save too little to maintain their level of consumption after retirement.

The life cycle hypothesis has evolved in the decades since Modigliani and Brumberg first developed it, but despite challenges to it, it remains a key part of modern economic theory.



ILLUSTRATION: TIMOTHY COOK

EF

Underinsuring for Old-Age Care

BY HELEN FESSENDEN

The financial cost of aging is often unexpected — but very serious — to many Americans. One of the biggest bills for seniors is late-in-life care, often in a nursing home, for those who can no longer meet basic needs on their own. About one in six seniors will need at least three years of care, with an average cost of \$84,000 a year.

Despite the price tag, only about one in five older Americans insure themselves against this risk, according to a recent paper published by the National Bureau of Economic Research. Five researchers — John Ameriks of the Vanguard Group, Joseph Briggs of the Fed’s Board of Governors, Andrew Caplin of New York University, Matthew Shapiro of the University of Michigan, and Christopher Tonetti of Stanford University — have tried to explain this behavior. Despite the great expense and substantial chance of needing late-in-life care, why do so few buy a policy to protect themselves?

The authors posed two potential explanations for this puzzle at the outset. The first is that before people need this care, they’re either overly optimistic or unsure about their late-in-life needs — so this underinsurance reflects a risk assessment by consumers. The other explanation is that this particular market is riddled with gaps: Consumers face a poor selection of insurance plans, so they decide that buying a policy is not worth the cost. After analyzing a sample of more than 1,000 seniors aged 55 and over, the authors concluded that much of the puzzle can indeed be understood this way. Far more consumers, they found, would buy late-in-life insurance if these policies were better priced and better designed.

The study polled Vanguard clients to find out how many would buy insurance if they were offered well-priced, actuarially fair products that they believed would meet their late-in-life needs. It compared these results against a theoretical model, developed by the authors, that estimated the highest possible percentage of seniors who would buy such a policy. In contrast to the 22 percent who currently own policies, the coverage rate increases to 46 percent after accounting for respondents who would buy the improved product. That share comes much closer to what the model estimated as the theoretical “ceiling,” which was 59 percent. In effect, this means that much, although not all, of the “gap” between actual purchases and modeled demand can be explained by a poor offering of insurance products.

What would a typical policy look like if it were better designed and actuarially fair? For women aged 55-64 who

decide to buy a policy, the authors found, it would provide a median annual benefit of \$33,000 with a total premium cost of \$72,000; for men of the same age bracket, it would come to a median annual benefit of \$39,000 with a total cost of \$50,000. (The difference accounts for the fact that women usually live longer than men, and with a longer lifespan comes a longer time in a care setting.) To offset these premium costs, respondents typically said they would scale back the amount they would leave to heirs.

The researchers listed some possible explanations of why the current insurance market falls short from the consumers’ perspective. One reason is that many plans don’t differentiate premiums by gender, which adversely affects male customers because — as noted — they don’t live as long as women on average. In addition, most of the survey respondents said that

the typical plans offered are too expensive, and cover too little, to be a wise insurance purchase. The authors noted that this perception is borne out by the fact that these plans do often have higher overhead than other forms of insurance, and these costs are passed on to customers. Other research suggests that these plans usually cover only

about two-thirds of basic costs and often exclude conditions that require long-term care, such as dementia. Consumers are concerned about the risk of rate hikes and of being dropped from those plans if they can’t pay those increases. And finally, seniors face a shrinking number of plan choices.

For many, the fallback option is Medicaid, which insures most low-income seniors who need long-term care. But many seniors and their families see this route as less than ideal, because the care is considered to be lower quality and health outcomes are worse. Otherwise, seniors or their families must either bear the substantial costs of private care or rely on a family member for caretaking.

The study addressed only consumer behavior and did not draw conclusions about the reasons why insurers did not offer more appealing policies. The authors noted, however, that other research has pointed to concern about adverse selection (that is, the greater incentive for those who believe they will be in need of long-term care to buy policies) and crowding out by Medicaid, among other explanations, to attempt to illuminate insurers’ behavior.

Americans already willingly accept the idea of insuring their cars and their homes, and many buy term life plans. The findings of this study suggest that they might do the same in greater numbers for old-age care if they had better options. **EF**

“Late-in-Life Risks and the Under-Insurance Puzzle.” John Ameriks, Joseph Briggs, Andrew Caplin, Matthew D. Shapiro, and Christopher Tonetti. National Bureau of Economic Research Working Paper No. 22726, October 2016.

Do Economists Ever Really Retire?

BY DAVID A. PRICE

No doubt there are some economists who retire so they can put their profession in the rear-view mirror. But many, it seems, never truly leave economics behind. They continue practicing economics long after they've nominally retired or taken emeritus status — and even when they eventually stop, the economist's way of thinking sticks with them.

For some, the compulsion to do economics in retirement takes the form of publishing. Elmus Wicker, 90, a former Rhodes Scholar who retired from Indiana University in 1992, turned to writing and publishing three books for university presses on economic history. Not resting on his laurels, he has drafted a fourth.

"It never occurred to me that retirement meant doing something else," he says. "And it never occurred to me that maybe I wasn't still qualified."

Bruce Yandle retired from Clemson University in 2000, then returned in 2005 to serve for two years as a dean, then retired again for good. But he has maintained an adjunct affiliation with another institution, the Mercatus Center at George Mason University, where, among other activities, he advises graduate students on their master's and doctoral theses. "Interaction with young people who are excited about ideas has a contagion associated with it," he observes. (See also "Interview: Bruce Yandle," *Region Focus*, Second Quarter 2011.)

After Leonard Schiffrin retired from the College of William and Mary in 1998, he found a lot of work coming his way in his field of health care economics, especially contract research for the federal government and expert-witness work in litigation. "I was busy for eight years traveling and doing interesting things," he recalls. "That was a lot of fun and really postponed my retirement from being an economist."

Research suggests that their sentiments about economics are widespread among their peers. A 2014 working paper by several German and Swiss researchers, "Happiness of Economists," concluded on the basis of a large-scale survey that economists are "highly happy with life"; moreover, those in North America are the happiest (together with those from Scandinavia and Switzerland). And while data on retirement rates by discipline are unavailable, a 2002 article by Orley Ashenfelter and David Card of the University of California, Berkeley in the *American Economic Review* found that retirement rates for faculty in the social sciences and physical sciences at age 70 or 71 are "significantly lower than those for faculty in humanities or life sciences" — which may mean that social scientists, including economists, tend to like what they're doing.

But if working as an economist is so much fun, why do they retire at all? Although mandatory retirement at age 70 was once nearly universal in universities, where most

research economists are employed, Congress abolished mandatory retirement for faculty starting in 1994.

Anecdotally, at least, one of the main factors luring academic economists into retirement is the lure of a zero-course schedule. Wicker found that when he was teaching, he couldn't find the time to write the books he wanted to write. Some people can do it, he says — but not him. "Even when I taught only one course, that was distracting," he says. "I don't know quite how to say this, but I think I took teaching too seriously."

Freedom from scheduled classes also makes it easier to collaborate face-to-face with researchers at other institutions. "Once you retire, every day is Saturday," says Yandle. "So you can pull up and go somewhere and spend two or three days with colleagues elsewhere to work on projects and papers."

For some academic economists, seniority can make teaching seem less productive and enjoyable. Schiffrin recalls that the real-world examples he used in class increasingly had taken place before his students were born. "I felt a growing generation gap," says Schiffrin. "I lost a way of communicating through examples of economics or political economy, many of which were at best history, at worst trivial or unknown to students."

Economists in retirement who want to continue to be active in their profession have advantages over their counterparts in some other fields. For instance, unlike their colleagues in the physical sciences, most of them don't need a laboratory.

"I have lots of friends and colleagues from other disciplines and most of them do not seem to carry their discipline work forward into their retirement years," observes Yandle. "Most of the economists I know do. I think perhaps part of it has to do with the fact that we're a social science. What you need is a laptop and access to the Web."

Another factor, Yandle suggests, is that retired economists may simply be more in demand. "It's a popular topic," he says. "Economists are typically engaged with the world — both public and private sector — much more than individuals from comparable professions. Their knowledge and ability to interpret data and events are in demand far beyond the classroom."

And even if a retired economist no longer participates in the profession in any form — no research, no writing, no consulting, no advising students — he or she may well continue to be an economist.

"It's a discipline where there might not be too much distinction between what we do and who we are," Schiffrin says. "In retirement, I still think like an economist; I still view the world from an economist's perspective. And I think that the field is so ever-changing that we stay interested in it, and we want to see what happens next." **EF**

Are the Kids All Right?

Many worry that the Great Recession and mounting student debt have stunted millennials' financial development

BY TIM SABLİK

Generation Y. Echo boomers. Millennials. They've been called many things, but one thing for sure is that those born between the early 1980s and late 1990s will shape the economy for decades to come. According to a recent Pew Research Center report, this group overtook baby boomers as the largest living generation in America in 2015.

But some commentators also call them the Lost Generation, based on worries that the future doesn't look as bright for them as it did for previous generations. Many millennials graduated from college and began working just as the worst economic downturn since the Great Depression hit. They've also been called the Boomerang Generation: According to another Pew study, in 2014 roughly a third of those aged 18 to 34 lived with their parents, edging out marriage or cohabitation with a partner as the most common living arrangement for the first time in over a century. (See chart.)

Millennials face other longer-term challenges as well. They are more likely to have student debt, and more of it, than previous generations. Since 2001 alone, the median value of student debt for those who took on loans has nearly doubled from \$6,600 to \$11,100, according to the 2013 Survey of Consumer Finances. And while parents have historically expected their children to be more prosperous than they were at the same age, there are signs that this may no longer be the case. A recent paper by Raj Chetty, David Grusky, and Maximilian Hell of Stanford University, Nathaniel Hendren and Robert Manduca of Harvard University, and Jimmy Narang of the University of California, Berkeley found that only half of the children born in the 1980s were earning more than their parents by age 30, compared to more than 90 percent of 30-year-olds born in 1940.

Some commentators have expressed concerns about the long-term consequences of these trends. Conventional financial wisdom holds that the earlier one starts building wealth and saving for retirement, the better. But if millennials are postponing or entirely avoiding homeownership and struggling with lower wages and higher debt burdens, it may take them much longer to achieve financial self-sufficiency — if they ever do. In addition to individual welfare implications, this would have repercussions for the economy as a whole.

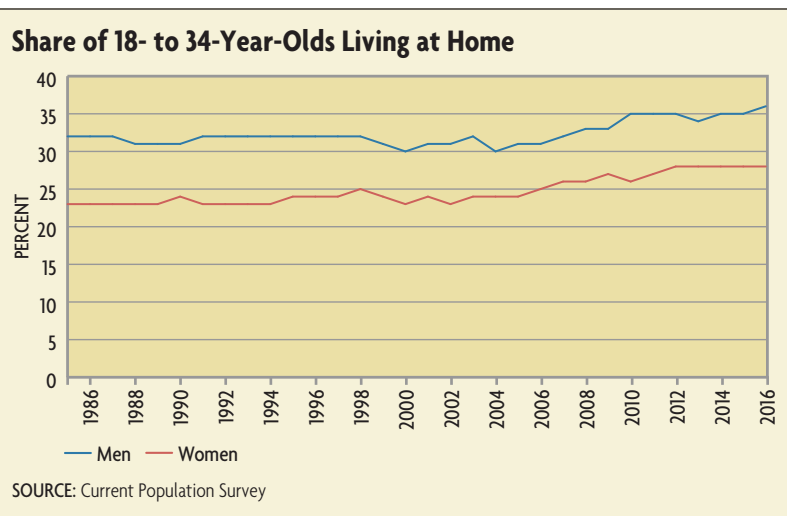
But is the future as dire as it seems for millennials?

First Job, False Start

Finding a full-time job is often the first step young adults take on the path toward financial independence. This can be a challenge even in the best of times — and for millennials entering the labor market in 2008 and 2009, it was hardly the best of times. Rather than looking to hire, employers were shedding workers at a rapid pace. From the start of 2008 to the fall of 2009, the unemployment rate doubled from 5 percent to 10 percent. But while millennials faced higher unemployment rates during the Great Recession, they didn't suffer disproportionately worse job losses relative to older workers.

Still, even those millennials who managed to land their first job in the midst of the recession didn't necessarily escape the recession's curse. Several studies have documented persistent negative effects on wages for those who begin their careers during economic downturns. For example, a 2012 article by Philip Oreopoulos of the University of Toronto, Till von Wachter of the University of California, Los Angeles, and Andrew Heisz of Statistics Canada found that a 5 percentage point increase in unemployment rates translated to as much as a 9 percent initial loss in earnings for recent male college graduates in Canada.

A 2016 article by Joseph Altonji and Lisa Kahn of Yale University and Jamin Speer of the University of Memphis found a similar effect for U.S. graduates. In both cases, the authors attributed these effects to the fact that young adults graduating in a recession have fewer job options, leading



them to choose less desirable and lower-paying employers than they would have in better times. Starting out on a lower rung also negatively affected their climb up the job ladder, meaning that these wage effects can persist for up to a decade. They also found that the losses for recent graduates during the Great Recession were much larger than in previous recessions going back to 1974.

And yes, one of the ways that graduates have compensated for weaker labor market opportunities is by choosing to live with parents longer. An analysis of data from the Current Population Survey and Consumer Expenditure Survey in a 2015 paper by Daiji Kawaguchi of Hitotsubashi University and Ayako Kondo of Yokohama National University found that higher unemployment rates increase the probability that recent graduates live at home with parents. The authors argued that young adults use this option as a sort of “intergenerational insurance mechanism” to smooth their consumption. As a result, recent graduates did not reduce their consumption as drastically as would be expected from the recession.

Building Wealth in a Recession

A weak job market was not the only effect the Great Recession had on millennials just starting out, however. The collapse of the housing and financial markets had a profound effect on the wealth of young and old households alike.

On the bright side for millennials, young adults are less likely to own assets like stocks or homes than older cohorts, which may have insulated them somewhat from turmoil in those markets. Indeed, a 2014 paper by Lisa Dettling and Joanne Hsu of the Federal Reserve Board of Governors found that, on average, young adults suffered less of a decline in net worth than older adults during the Great Recession. Still, those who owned a home or stocks did take a hit. Millennials’ median net worth fell by almost 40 percent, from about \$10,000 in 2004 to about \$6,000 in 2013. This decline was particularly concentrated among the college educated.

Falling asset prices weren’t completely bad for millennials, though. Young adults had the opportunity to benefit from lower stock and house prices by buying into markets after the crash and reaping the benefits of the recovery. But buying stocks during a financial crisis runs counter to most peoples’ inclinations. In a 2011 article in the *Quarterly Journal of Economics*, Ulrike Malmendier of the University of California, Berkeley and Stefan Nagel of the University of Michigan found that individuals who have experienced low stock market returns are less willing to take on financial risk or participate in the stock market at all and are more pessimistic about future returns if they do participate. Young individuals are particularly influenced by recent experiences, since they have fewer lifetime experiences to draw from.

“If you look at the average experience that a millennial has had with the stock market over the past 10 to 15 years, it certainly looks different than what a young person would have seen in, say, 1998,” says Nagel. “These cohorts have quite different experiences, and as such they would be less willing to take risks than these earlier cohorts.”

In fact, Nagel says that young people, like many individual investors in general, tend to invest in the stock market when returns are high and pull out of the market when returns are low — the opposite of what would maximize their returns and minimize the damage from recessions.

Young adults may also face constraints building other forms of wealth. Owning a home not only provides a place for an individual or family to live, it also represents a significant asset. But purchasing a home typically require access to credit, and young adults are more credit constrained than older cohorts. Lenders might also tighten standards in response to a market crash as they did during the Great Recession.

Credit constraints like these may limit how much young adults can benefit from lower asset prices during a recession. In a 2016 paper, Sewon Hur of the University of Pittsburgh constructed a model that included borrowing constraints for young adults. Hur estimated that young adults suffered the largest overall welfare losses of any age group during the Great Recession, equivalent to a 7 percent decline in lifetime consumption.

Shouldering Student Debt

The Great Recession, while certainly a significant event in the lives of many millennials, doesn’t seem to fully explain their pattern of behavior. In fact, some studies, like a 2015 article by Marianne Bitler of the University of California, Davis and Hilary Hoynes of the University of California, Berkeley, have found little relationship between changes in unemployment and young adults moving in with their parents. The bigger influence, some believe, is debt.

While it is true that student debt burdens have been rising on average for decades, it’s not entirely clear what impact this is having on the decisions of young adults. The news is full of stories of recent grads struggling to pay down five- and six-figure student loans. But those cases are more the exception than the rule, according to economist Beth Akers of the Manhattan Institute, co-author of the 2016 book *Game of Loans*.

“The median borrower is spending about 4 percent of their monthly income on student loan repayment,” says Akers. “If you look at the data on household expenditures, that’s similar to the category of personal entertainment.”

Calls to reduce student debt burdens also often assume other things are held constant. “Of course, most young adults would like an extra \$275 or so a month,” says Akers. “But if we think about debt as allowing people to make investments in higher education, then removing that debt but also taking away the degree and the earning power that comes with it would almost certainly reduce homeownership rates and retirement savings.”

Indeed, despite rising college costs, the returns to higher education are still substantial. A 2014 New York Fed study estimated that for the last decade, the return from spending on a college degree has been about 15 percent, making it still one of the best investments an individual can make. But it is a return that depends on finishing the degree as well as the

field of study, meaning that some can end up with the debt and little to show for it. Moreover, the consistent returns to higher education somewhat mask a trend of worsening outcomes for young adults who don't go to college. (See chart.)

"The rate of return on higher education has held up over time and been about constant for the past decade, but part of what's keeping that in place is that the alternative is getting worse," says Akers. "In essence, it is getting more expensive not to go to college."

Indeed, the changes in living arrangements for millennials don't necessarily point to a choking effect from student debt but rather to a growing divide between those who finish college and those who don't. According to a 2016 report by Richard Fry of Pew Research Center, 40 percent of 18- to 34-year-old high school dropouts and 39 percent of high school graduates lived with their parents in 2014, compared to just 19 percent of college graduates.

Different Dreams or Deferred Dreams?

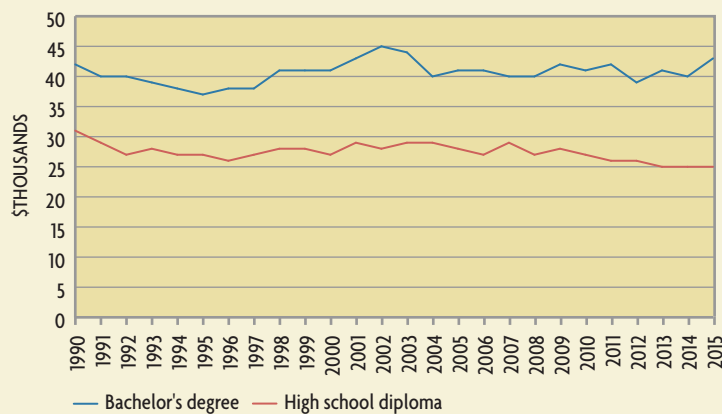
How will millennials stack up to their older siblings and parents in the long run? It is a difficult question to answer, in large part because the story of this generation is still being written.

If changing patterns of household formation reflect a response to the Great Recession, then those patterns may reverse as that event fades into memory. Still, that process could take a long time. In terms of risk-taking and the stock market, "even things that happened 30 years ago still play some meaningful role," says Nagel.

But there is some evidence to suggest that at least in the housing market, retrenchment in response to crises won't last forever. A 2015 article by Renata Bottazzi and Matthew Wakefield of the University of Bologna and Thomas Crossley of the University of Essex studied homeownership rates in England over the past 40 years. They found that although individuals who experienced a decline in the housing market when young reduced their homeownership rates, that same cohort looked largely the same as earlier generations by the time they reached age 40. In essence, generations that exhibit historically low homeownership rates while young seem to "catch up" as they age.

Data suggest such a catch-up may be taking place among millennials in the United States. Older cohorts who were in their mid-to-late 20s when the recovery began in 2010 exhibited larger gains in homeownership by 2014 than younger

Median Annual Wages for Recent Graduates



NOTE: Values in 2016 dollars.

SOURCES: Federal Reserve Bank of New York, U.S. Census Bureau, and U.S. Bureau of Labor Statistics

millennials. Still, there's always the possibility that this generation will be different. Evidence from the Great Recession suggests that both young adults and their parents have become more accepting of living together longer. Additionally, delayed homeownership may partly be a symptom of changing trends in family formation. During the height of the nuclear family era in 1960, 62 percent of young adults were married or cohabiting with a partner by their early 30s. But nearly half as many millennials, 31.6 percent, were doing so at the same age in 2014.

What will delays in homeownership mean for millennials on an individual level and for the economy as a whole? The Survey of Consumer Finances provides a picture of young adult millennials who were living independently in 2013 and suggests that they are not doing substantially worse on average than previous cohorts. They are more likely than young adults in 1989 — members of Generation X — to own a bank account, a home, retirement accounts, and stocks. And while their student debt is much higher on average, other forms of debt like credit cards, housing, and car loans are lower than for the median young adult in 1989. And that higher student debt comes with a benefit. Millennials have received more college education than any other generation in American history. In particular, female millennials are significantly more likely to have a bachelor's degree than their Baby Boom or Gen X counterparts.

But what about those left behind? Non-college graduates and some college graduates are increasingly struggling to achieve the American dream. It may be that the data on this generation reflect this divide. While some of the kids look to be all right, for others, only time may tell. **EF**

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Why Aren't More Women Working?

The share of American women in the labor force is slipping even as it rises in the rest of the developed world

BY HELEN FESSENDEN

In December, the Washington, D.C., City Council took a historic vote to require paid family leave for employees working in the District, joining California, New Jersey, Rhode Island, and New York as part of a movement to expand such benefits. The debate was fierce — some business owners objected to a new payroll tax the measure would impose — but the Council voted in the end to enact a compromise bill granting leave up to eight weeks. Lauren Kunis, a D.C. resident and mother of a toddler, summed up the sentiment of the bill's supporters as she told the *Washington Post* the legislation would have helped her in the “scary and vulnerable” time right after childbirth, noting that her husband had to return to work immediately so they could make ends meet. “It forced us into gender roles we never believed in,” she said. “He went to work and I stayed home.”

The District and those four states are outliers in the United States, which has no federally mandated paid leave. To its supporters, the push for paid leave is primarily about securing better work-life balance. But it has implications for a surprising trend affecting the entire U.S. economy: the declining share of women in the labor force. This drop is prompting economists to ask just how much paid leave and other family support policies can help women stay in the job market over the long run.

The puzzle: American women have long been near the top of global rankings in educational achievement, work-force participation, and career advancement. But since 2000, women who are between their student years and retirement are increasingly dropping out of the labor force, even as more and more complete college. Just as notable is that the opposite is happening with working-age women around the world, whether they're in prosperous economies with generous family support programs, nations hard-hit by recession, or countries with more traditional notions of gender roles. In terms of rank, American women now have a middling labor participation rate among developed nations

despite their gains in education — and that rate is slipping while other nations' rates are rising. To economists, this is a surprise because rising education is strongly correlated with labor force participation. Moreover, researchers are increasingly focused on the broader trend of stagnant or declining participation by both men and women in the United States despite the economic recovery since 2009.

The American Exception

Just how different is the United States from the rest of the world? The Organization for Economic Co-operation and Development (OECD), a 35-nation club of industrialized economies, estimates that the average labor force participation rate for prime-age women (defined as aged 25-64) among its members jumped from 62 percent to 68 percent between 2000 and 2015. But in the United States, it fell from 73 percent to 70 percent. This may seem like a blip, but it happened while the percent of prime-age American women with a college degree spiked from 36 percent to 47 percent — a jump so large that it's now about 5 percentage points higher than that for men. (See charts.) The labor force participation rate for American women is also striking in that it lags the OECD leaders in female labor force participation by 10 percentage points or more.

“In many other nations, we see a rise in women's employment that is driven by working mothers, while in the United States, that's been static,” says OECD economist Olivier Thévenon. “And American women who are highly educated aren't participating in the labor force to the same degree that women elsewhere are.”

To be sure, the OECD average rate masks the fact that some countries have made a big leap from a low baseline (Spain went from 55 percent to 75 percent), while others with an already high rate posted a smaller gain, such as Norway (79 percent to 81 percent). Still, taken together, these changes cap a global historic shift of women moving

out of the home and into the formal labor market. As recently as 1980, for example, the OECD average rate for prime-age women was only 54 percent.

What's particularly interesting to economists about the U.S. decline is that it's concentrated among women in their 30s and 40s. In fact, the participation rate for U.S. women aged 55-64 has jumped since 2000, from 52 percent to 59 percent, a trend also seen among older women in many other countries. But it's dropped by a more than offsetting amount for those aged 25-54, whereas it's risen for that age group globally. The fact that this drop is affecting U.S. women in their childbearing and child-raising years has led many observers to conclude that the explanation lies in policy: The lack of paid family leave and subsidized day care for very young children (from newborn to age 3) may be a factor in inducing more American women to drop out of the labor force — while the expansion of those very benefits abroad may have helped their international counterparts stay in. Indeed, in a 2014 report, the Pew Research Center found an increase in the share of American mothers who stay at home, from 23 percent in 1999 to 29 percent in 2012.

Who's In, Who's Out?

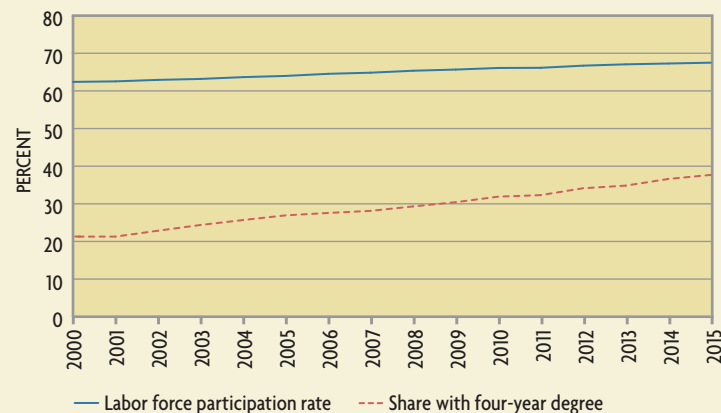
To economists, labor force participation has a very specific meaning. It includes both full-time and part-time workers, as well as those who are not working but are looking for jobs. Full-time students and retirees, as well as stay-at-home parents and disabled people who aren't actively looking for work, are considered out of the labor force, as are people who are so discouraged that they stopped job hunting. In terms of women's participation, a mother on leave is still considered in the labor force if a return to her job is protected (whether leave is paid or not). But if she formally quits her job to take care of her child, she's considered out of the labor force.

Sometimes the labor force participation rate can fall for demographic reasons, like a rising share of retirees or of young people who continue studies before starting work. But if it affects people, whether men or women, in their prime working years especially, it could have important macroeconomic consequences. Among other things, lower labor force participation often means slower GDP growth (unless productivity jumps), reduced consumption, and less Social Security and tax revenue. Long breaks from the labor force also make it more likely that skills erode. Economists are now focusing more research on why U.S. prime-age labor force participation rates for both men and women have not recovered along with the economy since 2009.

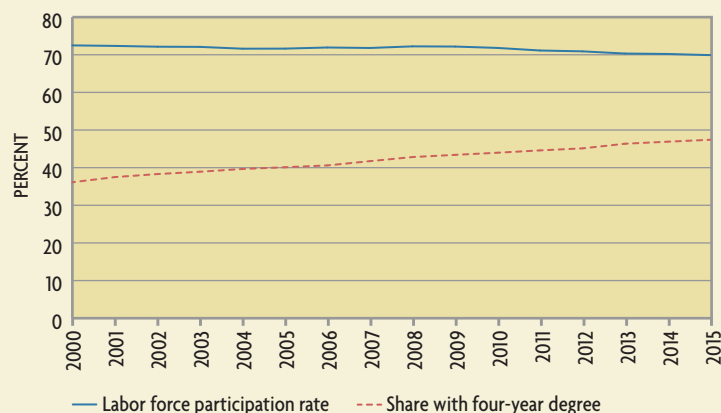
Does Paid Leave Matter?

Paid family leave is one of the major policy differences between the United States and the rest of the OECD. The United States is the only OECD member that hasn't mandated this benefit at a national level, whereas almost every other member has expanded it in the past two decades, usually to one to three years. Even the Family and Medical

In the OECD, higher education and labor force participation rates of women are rising ...



But in the United States, women's labor force participation is dropping despite rising educational attainment



NOTE: Labor force participation rate is the percentage of prime-age women, defined as 25-64, who are working or looking for work. Percentage with four-year degrees is also for prime-age women.
SOURCE: Organization for Economic Co-operation and Development

Leave Act of 1993 (FMLA), which established the requirement of three months of unpaid leave, excludes a large share of workers — about 40 percent — because it exempts firms smaller than 50 employees, among other restrictions.

Economists who study the relationship between paid leave and labor force participation have generally found a modest, but positive, correlation. On the one hand, employers may view paid leave as a net liability because it may make more workers want to take a longer absence rather than return to work soon and because it may be financed (as in Washington, D.C.) by a tax on firms. But international studies suggest that paid leave induces workers to stay at their jobs rather than switching employers or moving in and out of the work force. This, in turn, builds labor force attachment.

How has this played out in the United States? California's paid-leave policy, now going on 13 years, provides a break of up to six weeks at a 55 percent wage-replacement rate, although not all workers take it or are aware of it. But its track record has been getting more attention from researchers. For

example, a report co-authored by the Center for Economic and Policy Research and three university institutes found that the policy has had the largest impact on workers in low-paying jobs, who tend to have little or no benefits; for these parents, job retention rates rose to 83 percent compared to 74 percent for those who took unpaid or no leave. Meanwhile, Tanya Byker, an economist at Middlebury College, has published a study on both the California and New Jersey laws that finds paid family leave lifts female labor force participation by 5 to 8 percentage points in the months following birth — with a stronger effect on women without college degrees.

In a study with a broader national sample, Claudia Goldin of Harvard University and Joshua Mitchell of the U.S. Census Bureau compared how long mothers in the 1990s stayed in the labor force following the birth of their first child. Over the course of 10 years, the highest participation rate was found among those who had taken paid leave offered by their employer, followed by those who took unpaid leave, and last, those who quit their jobs after their child's birth. But Goldin and Mitchell also noted these findings aren't clear-cut because a woman could fall into more than one category over those 10 years.

For the time being, however, there is relatively little U.S. data on paid leave to go on, outside of the few states mentioned above. Only one in nine U.S. employers offer paid family leave, so parents tend to use up savings and vacation days to cover costs if they take time off. Many mothers who don't have the finances to cover an unpaid leave return to work quickly, sometimes within days. And women who return to work soon tend to be concentrated in lower-paying, lower-skilled work, and they are more likely to be single. For this reason, many advocates of paid leave argue for it primarily on grounds of reducing inequality.

Minding the Kids

Another major policy divergence is the provision of subsidized day care for infants and toddlers. As with paid leave, this policy has become widespread throughout the developed world except in the United States. Proponents argue it's especially effective at keeping women in the labor force — especially when paired with paid leave — because it substantially reduces the cost of working outside the home. It also provides continuity for a woman's career development and thereby can make her a more valuable worker in the eyes of employers.

On average, an OECD country spends about 0.9 percent of its gross domestic product on subsidized day care for infants and toddlers, although in some cases, such as the Nordic nations and France, this share rises to 2 percent. In the United States, whether at the federal or state level, there is almost no public money at all for day care except some targeted programs for low-income parents, which vary from state to state. In terms of per capita public spending on early child care, the United States ranks near the bottom in the OECD. (This comparison doesn't include cash subsidies or tax credits to offset child care costs, policies that also vary from country to country. In the United States, parents who

pay income tax are eligible for a refundable federal tax credit for child care expenses, but only up to \$1,000.)

Despite this low ranking on spending, about 30 percent of American infants and toddlers are in day care. But this is a market that is almost entirely private. Research by doctoral student So Kubota of Princeton University has estimated that inflation-adjusted hourly costs of day care have risen by 32 percent since the mid-1990s, while the hours of market-based day care used have fallen by 27 percent (often with informal care provided by family members making up the difference). The effect of this cost increase, he estimated, was a drop of 5 full percentage points in the employment rate for all women, and a 13 percent drop for mothers with children under 5.

As for its effect, subsidized day care and early childhood education tends to have a positive impact on women's labor force participation — even though it alone is not a “sufficient driver,” in Thévenon's words. In a study of 18 OECD countries, Thévenon has estimated that about 2.8 percent of the total increase in prime-age women's labor force participation from 1980 to 2007 (that is, a quarter of the total) resulted from the expansion of those policies. Another new paper by Claudia Olivetti of Boston College and Barbara Petrongolo of the London School of Economics has also found that public spending on day care and early childhood education lifted labor force participation rates in the countries that enacted them — and generally, these measures have had a stronger effect than paid leave policies.

The Secular Shifts

Policy debates aside, economists generally agree that even more fundamental economic changes account for a large part of the long-term trend of rising female labor force participation across the globe. In poor and developing countries, women's labor force participation is actually quite high because so many work in agriculture or in small family businesses. Then, as economies industrialize, women drop out as men take a lion's share of manufacturing jobs. Later, as nations become wealthier, education tends to become more widespread for both boys and girls. Educated women, in turn, are much more likely to join the labor force. They also tend to have fewer children, and they have them later, because the opportunity cost of each child rises as well. Another driver that brings women back to work is the shift from manufacturing to services in advanced economies, as these jobs tend to be female dominated. For many countries that used to have very few women working — Southern Europe, Ireland, and Japan, for example — these long-term changes in labor demand, rather than modernizing cultural attitudes per se, can help explain their rising share in the workforce.

In the case of the United States, this boost in women working since the 1970s may also help to explain the modest decrease of married men in the labor force over that time, from 97 percent to 93 percent, according to economists Limor Golan and Usa Kerdnurvong of the St. Louis Fed. They found that as more married women join the labor force, this can allow their spouses to either work part

time or take time off, whether to take over more domestic work, spend more time looking for a better-matching job, or go back to school.

The Part-Time Difference

The growth of the service sector also dovetails with another trend: the rise of part-time work. Part-time jobs are much more common in the services sector throughout the world, and these, too, tend to be female dominated. In some nations with high female labor force participation, a large percentage of prime-age women also work part time. But the OECD average — which came to 22 percent of women aged 25-54 who work 30 hours a week or less in 2015 — masks a wide range of part-time rates. In the Nordic countries, they are only in the teens, whereas they reach almost 55 percent in the Netherlands. As for the United States, a direct comparison is not quite exact, because the Bureau of Labor Statistics definition of part time encompasses a broader pool — all women working 35 hours a week or less. In 2015, that share was around 26 percent.

Cornell University economists Francine Blau and Lawrence Kahn, who have studied the impact of policy differences and the rate of part-time work on labor force participation, believe these cross-national comparisons are telling. In a 2013 paper, they compared an estimate of part time incidence in the United States, harmonized for the OECD's definition (30 hours a week or less), with that in 16 other OECD countries. By this measure, they found that about 13 percent of prime-age American women worked part time in 2010, compared to 26 percent of their international sample, suggesting that higher labor force participation rates outside the United States may be inflated in part by a higher incidence of women working part time. The paper did conclude that policy differences — including parental leave and part-time policies, as well as public spending on child care — could account for some of the gap between the rate for American women and women elsewhere, by about 29 percent. But they also noted more than half of the employment gains for women outside the United States came through part-time work.

Why does this matter? To be sure, some women chose part-time work as the more suitable balance at certain stages of their lives. But this issue is important to labor economists because part-time jobs are less likely to lead to career advancement and better pay.

“Part-time work is important and positive in that it builds greater labor-force attachment” says Blau. “But it’s not necessarily a good channel for moving up. It can keep women trapped in secondary positions.”

Goldin and Mitchell also cite the incidence of part-time work as a factor to consider. In a recent paper, they estimated what the drop in the international ranking of U.S. female labor force participation would look like if it were just confined to women aged 25-54 working in full-time jobs. According to the OECD, the U.S. ranking fell from sixth place to 17th from 1990 to 2014. But Goldin found that if the

rankings were adjusted to account for only full-time jobs, the U.S. drop would be far less — from fourth to eighth.

Meanwhile, Blau and Kahn have also found that American women are not just more likely to hold full-time work but are twice as likely to hold managerial positions than were women in the 16 other OECD countries compared in their sample; American women are also more likely to work in traditionally male professions. One possible reason, they suggest, is that employers are less likely to discriminate against female employees if they think the risk of that employee taking a long leave or switching to part-time work is low.

Lessons Learned Abroad

In a recent paper, the OECD's Thévenon noted that the question of quantifying policy impacts is a complicated one given the great variation of approaches across countries. Equally challenging is that many of these policies' effects tend to interact with each other. For example, a government can offer a long or generous provision of paid leave and a robust job protection, but if the day care provision is modest or if the hours of day care offered per day are limited, a mother may still be inclined to stay at home. The comprehensiveness of day care may also affect whether a woman chooses full-time or part-time work. In general, though, the countries that tend to post the highest labor force participation rates for women — the Nordic countries and France — also tend to provide workers with the most generous leave and day care policies, and the effects of these two policies tend to magnify each other in their impact on labor force participation. They also have a higher full-time female workforce than other countries. In the United Kingdom and other English-speaking countries, by contrast, less public money is spent on child care, but leave policies are still generous. There tends to be more labor market flexibility and more part-time work. But mothers tend not to return to full-time work until children are older. This leads to more stratification between high-paying male-dominated jobs and lower-paying female-dominated ones.

The Disappearing “Hump”

Goldin and Mitchell have been looking at this debate from a different angle: What if the drop-off of U.S. women in the labor force is a temporary phenomenon? Their paper concluded that the rise of older women working has fundamentally changed the traditional life cycle model of employment for women. The pattern used to be a “hump” — more and more women would work as they entered their 30s and 40s, then they would gradually leave the labor force as they approached retirement age. But increasingly, that “hump” is flattening out: Among younger generations, more women are working in their 50s and 60s than earlier generations did once they reached their later years, even if they dropped out of the labor force in their 30s and 40s.

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The Mortality Gap

Life expectancy has increased dramatically over the past century. But some people might be falling behind

BY JESSIE ROMERO

At the turn of the 20th century, most babies born in America could expect to die before age 50 — if they survived past their first birthday, which roughly one in 10 babies did not. But over the past century, improvements in sanitation, nutrition, and medical care — especially the development of vaccines and antibiotics — have driven a dramatic increase in life expectancy. Babies born today can expect to live until they are nearly 80, and adults who reach old age are increasingly likely to survive additional years.

But between 2014 and 2015, life expectancy for the U.S. population as a whole declined for the first time in more than two decades; some research suggests the decline has been more pronounced, and perhaps has been a longer-term trend, for whites (that is, non-Hispanic whites). In addition, while it has long been the case that the wealthier and more educated have had longer life expectancies and lower mortality rates than those with less money and education, the gap appears to have grown in recent decades.

The magnitude of changes in life expectancy and “mortality inequality” is the subject of considerable debate, as are the causes. But to the extent life expectancies have stagnated or declined, “I do think we should be concerned,” says economist Janet Currie of Princeton University. “It suggests that things are going wrong for certain people.”

Recent Trends in Life Expectancy

Between 1900 and 2014, life expectancy at birth in the United States increased nearly 70 percent, from 47.3 years to 78.9 years. (See chart.) But in 2015, life expectancy declined to 78.8 years — only a slight drop, but the first since 1993, when death rates spiked due to the AIDS pandemic and a particularly lethal flu season. The decline was reported in a December 2016 report by the Centers for Disease Control (CDC).

Life expectancy at birth tends to understate the number of years an individual is actually likely to live. The measure denotes the average age infants born in a given year can expect to reach, assuming the mortality trends prevailing at the time of their birth prevail for their entire lives. But life expectancy generally increases as people reach older ages. That’s in part because, historically, mortality trends have improved over time, and in part because life expectancy at a given age is conditional on having reached that age. For example, a white baby girl born in 1949 had, at that time, a life of expectancy of about 72 years. But by the time that baby was 65, in 2014, she could expect to live about 20 more years, to age 85.

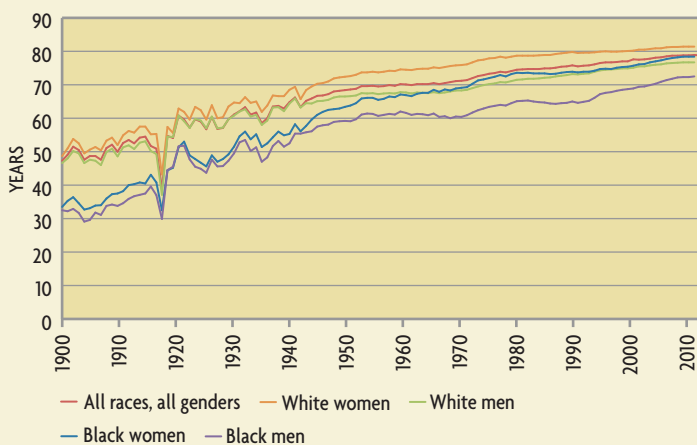
The 2015 decline in life expectancy was driven by increases in mortality rates of white men and women of 1 percent and 1.6 percent, respectively, and an increase of 0.9 percent for black men (that is, non-Hispanic black men). This decline follows a drop in life expectancy for whites from 78.9 years in 2013 to 78.8 years in 2014, the most recent year for which the CDC has published life tables by race and ethnicity. The 2014 decrease was driven by a decline among white women from 82.2 years to 81.1 years. (Life expectancy was unchanged for white men at 76.5 years.)

Are More White People Dying?

While it’s possible the recent decline for the population as a whole is just a statistical blip, there is some evidence that changes in mortality for whites in particular might be more persistent.

In a recent article, Anne Case and Angus Deaton of Princeton University analyzed mortality rates for U.S. adults. They found that between 1978 and 1998, the mortality rate for non-Hispanic whites aged 45-54 declined about 2 percent per year on average. But between 1999 and 2013, the mortality rate for this group increased about half a percent per year even as mortality rates for other racial and ethnic groups continued to decline. According to their

U.S. Life Expectancy at Birth



NOTE: Data on life expectancy for all races and genders are through 2015; for other categories data are through 2014. “Black” and “white” may include persons of Hispanic origin. The drop in life expectancy in 1918 resulted from the Spanish influenza pandemic.

SOURCE: National Center for Health Statistics, Centers for Disease Control

calculations, had the mortality rate for whites in this age group remained at its 1998 level, nearly 100,000 fewer people would have died; had the rate continued its previous rate of decline, nearly 500,000 fewer lives would have been lost.

Case and Deaton noted that the increase in white mortality they observed was concentrated in individuals with less education. Similarly, in a 2012 article in the journal *Health Affairs*, a team of researchers found large and unprecedented declines in life expectancy for non-Hispanic whites who had not graduated from high school. Between 1990 and 2008, life expectancy at birth for white women without a high school degree fell by more than five years; for men, the drop was more than three years. Life expectancy for blacks and Hispanics with less than a high school diploma continued to increase during this period.

But it's possible that the magnitude of this decline for white high school dropouts was simply the result of changes in the composition of the group of people who have not graduated from high school. Educational attainment for the population as a whole increased significantly over the course of the 20th century. As a result, cohorts of people who have not completed high school have become smaller — and perhaps more disadvantaged — over time.

“Not finishing high school when this is the norm means that those in this group likely had some underlying background or characteristics working against them, such as a high level of disadvantage growing up, early life poor health, or a lack of aptitude for school,” explains Jennifer Dowd of King's College London and the City University of New York School of Public Health. “It could be the case that they have become more disadvantaged, or it could be that they are as disadvantaged as always, but now they're not being averaged into the group with better outcomes.” Either way, Dowd says, comparing groups of people who have not completed high school decades apart is akin to “making an apples to oranges comparison over time, but calling both fruits apples.”

One way to address the problem is to measure relative rather than absolute educational attainment, as John Bound and Arline Geronimus of the University of Michigan, Javier Rodriguez of Mathematica Policy Research, and Timothy Waidmann of the Urban Institute did in a 2015 article. They found that life expectancy for white women in the bottom quartile of the distribution fell 1.2 years between 1990 and 2010, and white men in this quartile experienced a slight increase. (Black and Hispanic life expectancy might be less affected by compositional changes because a larger proportion of blacks and Hispanics do not complete high school, although completion rates for these groups have increased.)

Compositional changes might also have played a role in Case and Deaton's findings. Over the period they studied, the baby boom generation began moving into the 45-54 age group, and the average age of the group increased from 49.3 years to 49.7 years. While this is a relatively small increase, mortality rates increase substantially with age, which could bias a comparison of age-group mortality over time. Andrew Gelman of Columbia University calculated age-adjusted

mortality rates for non-Hispanic whites in this age group and found an increase between 1999 and 2005 and a flattening between 2005 and 2013 — a less dramatic reversal than found by Case and Deaton, albeit still a notable break from the previous trend and from the mortality patterns experienced by other groups. Gelman also found differences by gender: Mortality for non-Hispanic white men increased until 2005, and then began to decline again. But the mortality rate for non-Hispanic white women increased steadily over the period studied.

In a 2016 article in the *Journal of Economic Perspectives*, Currie and Hannes Schwandt of the University of Zurich compared life expectancies and mortality rates by race, gender, and socioeconomic status as measured by county poverty rates. They also found a divergence in mortality patterns for white women. Between 1990 and 2010, mortality rates for all white women aged 20-49 were essentially unchanged, and even increased slightly for women in the poorest counties, compared with continued declines in mortality for other groups. But, Currie notes, it's not all bad news. “Changes to life expectancy for middle-aged white women have been very small and from a low base. At the same time, the gains in life expectancy for young African-American men have been huge over the past 20 years and dwarf those changes.”

Long Live the Rich and Well Educated

Although the mortality rate for non-Hispanic black men ticked up in 2015, in general blacks have experienced large gains in life expectancy, leading to a considerable narrowing of the racial gap. In 1900, white life expectancy was 14 years longer than black life expectancy; by 1970, the gap was seven years, and in 2014, it had fallen to three years. Hispanics tend to have longer life expectancy than both whites and blacks, despite the fact that they tend to be of lower socioeconomic status. (See sidebar.)

A large body of research, dating back to the seminal 1973 book *Differential Mortality in the United States* by Evelyn Kitagawa and Philip Hauser, has documented lower mortality rates and longer life expectancy for people with more income and more education. While estimates vary, studies suggest that a 25-year-old man with a high school diploma can expect to live between two and seven years longer than a man without a high school diploma; the gap for women is between two and six years.

While gender and racial gaps in life expectancy have narrowed, socioeconomic ones have increased. Between the 1980s and 2000, the gap in life expectancy between those with at least some college and those with a high school diploma or less increased by about 30 percent, according to research by Ellen Meara of Dartmouth College, Seth Richards-Shubik of Lehigh University, and David Cutler of Harvard University. (The authors controlled for negative selection by equalizing the share of individuals in the high- and low-education groups.)

Bound, Geronimus, Rodriguez, and Waidmann also found an increase in the education gap when measuring by

relative educational attainment: Between 1990 and 2010, whites in the top three quartiles of the education distribution had much larger gains in life expectancy than those in the bottom quartile.

Similar trends are apparent when comparing life expectancy by income level. In a 2007 article, Hilary Waldron, an economist at the Social Security Administration, found that among men born in 1912 who survived to age 60, those in the top half of the income distribution could expect to live 1.2 years longer than those in the bottom half. For men born in 1941, the gap had increased to 5.8 years. (Waldron's data were for male Social Security-covered workers.) More recently, Raj Chetty of Stanford University and several co-authors studied life expectancy trends between 2001 and 2014. They found that life expectancy at age 40 increased 2.3 years during that

period for men in the top 5 percent of the income distribution but only 0.3 years for men in the bottom 5 percent. High-income women gained 2.9 years in life expectancy, while gains for low-income women were negligible.

Waldron's and Chetty's studies focused on life expectancy at older ages. But Currie and Schwandt also studied changes in mortality inequality for children. Consistent with other research, they found that between 1990 and 2010, mortality rates for older adults decreased more in low-poverty counties than in high-poverty counties, leading to greater mortality inequality. But for children, mortality rates declined much more in poor counties than in rich ones, resulting in less inequality. Given the large body of research demonstrating that childhood health is a strong predictor of adult health, this suggests that today's

The Hispanic Paradox

Hispanics in the United States tend to have longer life expectancy and lower mortality rates than whites (that is, non-Hispanic whites) or blacks (non-Hispanic blacks). In 2014, the most recent year for which the CDC has published life tables by race and ethnicity, life expectancy at birth for Hispanics was about three years longer than for whites and about seven years longer than for blacks. (See chart.) At the same time, Hispanics on average have lower incomes, less education, and are much less likely to have health insurance than whites. Given the strong link between socioeconomic status and health, one would expect Hispanic mortality to resemble black mortality — and to be worse than whites', not better. What explains this so-called "Hispanic paradox"?

In part, it could be a statistical illusion. Mortality rates are derived from two sources: The numerator — mortality — comes from the National Vital Statistics System, which collects information from local death certificates, and the denominator — population — comes from the decennial Census and the American Community Survey. But information about Hispanic origin was not included on death certificates in every

state until 1997, and there is debate about the extent to which death certificates still understate Hispanic origin. In addition, the wording of the Census questions has changed over time, potentially leading more people to identify as Hispanic. If the denominator has become larger over time, while the numerator is underreported, the mortality rate for Hispanics could have decreased without any actual change.

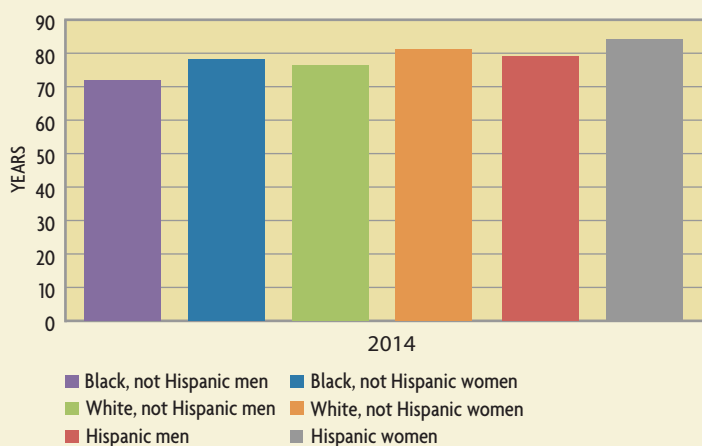
But measurement issues can't explain all of the paradox. Another possibility is that there are self-selection effects, such as a tendency for healthier people to migrate in the first place, or for less-healthy immigrants to return to their country of origin before they die. Numerous studies have attempted to quantify the impact of these tendencies, with mixed results. Even in those studies that do find evidence of selection effects, selection explains a relatively small portion of the Hispanic paradox.

There also are social and behavioral differences. For example, some researchers have proposed that strong family and social ties among Hispanics contribute to better health and lower mortality. And perhaps the greatest factor is differences in smoking rates: Hispanics are significantly less likely to smoke than whites or blacks, and research suggests this could account for at least half, and perhaps as much as 90 percent, of differences in life expectancy between Hispanics and whites, depending on gender and country of origin. Hispanics also have lower death rates from heart disease, chronic respiratory diseases, accidents (including drug overdoses), perinatal conditions, suicide, stroke, and diabetes.

Whatever explains the Hispanic paradox, Hispanic mortality might be less paradoxical in the future. Second-generation Hispanics tend to be less healthy than those who were born outside the United States; if Hispanic immigration rates continue to slow, the health of the population overall could decline. In addition, rates of obesity and Type 2 diabetes have increased among Mexican Americans, which could eventually counteract the advantage of lower smoking rates.

— JESSIE ROMERO

U.S. Life Expectancy by Hispanic Origin



SOURCE: National Center for Health Statistics, Centers for Disease Control

children could experience less inequality in mortality and life expectancy as adults.

A Perfect Storm

Why are today's adults experiencing more inequality in life expectancy? Researchers have studied multiple explanations, but establishing a causal relationship between financial resources or education and mortality risk is a challenging task. In part, that's because the relationship runs in both directions; healthier people are in a better position to work and earn higher incomes in the first place, and those in poor health might have to stop working. In addition, a link between wealth and mortality might exist if poor health reduces a person's assets through high medical expenditures. In the other direction, those with more income and wealth are able to purchase better health care and to purchase it earlier.

With respect to education, many studies have tried to disentangle whether increasing educational disparities are the result of composition or causation. The answer, says Jennifer Karas Montez of Syracuse University, is probably a little of both. "People not graduating from high school today certainly have more disadvantaged backgrounds than people who didn't graduate a hundred years ago," she says. "At the same time, what it means to go out into the world today without a high school credential is much more problematic than it was a hundred years ago. So you have a perfect storm: a more disadvantaged group going out and achieving a level of education that itself confers disadvantage."

Karas Montez adds, "There's really nothing inherently causal about the relationship between education and mortality. The context we're living in shapes that relationship. Do you live in an environment where education opens the door to getting a good job, to having health care, to living in a safe neighborhood? Or do you have some other initial advantages or safety net that make your own human capital less important?"

One factor in rising mortality, particularly for whites, could be the opioid crisis. Since 1999, overdose deaths from opioids, including both prescription drugs and heroin, have quadrupled, according to the CDC. The increase in opioid abuse and related deaths has been concentrated among whites, although blacks and Hispanics also have been affected. In addition, while the suicide rate has increased for the population as a whole since 2000, the increase has been much larger for whites than for blacks and Hispanics. Case and Deaton also found that death rates from suicide

and alcohol-related liver disease increased for less-educated whites between 1999 and 2013 but fell or remained flat for blacks and Hispanics. Some researchers have dubbed these "deaths of despair" and suggested that increasing economic insecurity could be to blame. Still, says Currie, "African-Americans have always had higher unemployment than whites. So to see life expectancy continuing to improve for African-Americans over time casts doubt on any simple story about the health effects of economic disadvantage."

In addition, present-day mortality patterns might reflect decisions that were actually made decades ago, such as the decision to start or quit smoking. After the surgeon general released a report on the hazards of smoking in 1964, people with more education were much more likely to quit smoking. In addition, men quit smoking more quickly than women. Less-educated white women in particular continued to start smoking even as other groups were quitting and were slower to quit themselves. And because the negative effects of smoking can manifest themselves long after a person has stopped smoking, current mortality rates could be affected.

"If you see differences in death rates between groups now, you shouldn't necessarily jump to the conclusion that it reflects what's happening to them right now," says Currie. "Some of what you're seeing are the lagged effects of things that happened a long time ago."

On an individual level, public health initiatives targeting smoking, child health, and opioid abuse could lower mortality risk and increase life expectancy for certain groups. But at the societal level, the complicated interplay between income, education, and health makes it difficult to ascertain how or if a given social policy will affect mortality risk. Still, says Dowd, "There is clearly huge scope for understanding how the malleable parts of the human social condition can affect health. Scholars have to keep testing the health impacts of more specific education and other social policy changes to understand what works best to give all social classes the best opportunities for good health."

Policymakers could have good reason to try to reduce mortality rates and mortality inequality. Beyond basic questions of equity and fairness, there may be implications for economic growth. Research suggests that when people expect to live longer, they invest more in their own human capital, making themselves more productive. And at the most basic level, economic growth depends on how many people are working and how productive they are: A healthier society is likely to be a wealthier society. **EF**

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Jonathan A. Parker

Editor's Note: *This is an abbreviated version of EF's conversation with Jonathan Parker. For additional content, go to our website: www.richmondfed.org/publications*

Economists are sometimes pegged as either theorists or empiricists. But often this dichotomy is overstated. Many economists bring together theory and empirical analysis to study a broad range of questions. For Jonathan Parker, this approach is perhaps the defining characteristic of his work.

Parker, the Robert C. Merton (1970) Professor of Finance at the Massachusetts Institute of Technology's Sloan School of Management, uses data in novel ways to better understand a host of economic issues and the theories that underpin them. For instance, the economic stimulus program of 2008 offered the potential to examine the way households respond to an influx of liquidity — and with it, whether people smooth their consumption, as theory would predict. But to realize that potential required developing some investigational tools — in Parker's case, designing surveys for households belonging to the Nielsen Consumer Panel to better understand what they did with the payments they received and why.

Parker has also looked at such issues as whether people can hold incorrect but nonetheless utility-optimizing beliefs; which segments of the income distribution are most affected by economic shocks and how that has changed over time; and whether households respond to good economic news in a proportionate manner to bad economic news. As he says, he's an applied microeconomist, an asset pricer, a macroeconomist, a public finance economist, and a behavioral economist. Which one depends on the question at hand and the methods required to answer it.

Prior to joining the MIT faculty, where he is also the co-director of the Golub Center for Finance and Policy, Parker taught at Northwestern University, Princeton University, and the University of Wisconsin, and he was a research fellow at the University of Michigan. He edits the National Bureau of Economic Research's *Macroeconomics Annual*, serves on the board of editors of the *American Economic Review*, and is a member of the Congressional Budget Office's Panel of Economic Advisers. Aaron Steelman interviewed Parker at his office at MIT in December 2016.



EF: Among your work on economic stimulus programs is a recent paper with Daniel Green, Brian Melzer, and Arcenis Rojas on the Car Allowance Rebate System (CARS) of 2009, popularly known as “Cash for Clunkers.” Could you discuss the empirical findings of that paper as well as potential implications for structuring stimulus programs given what we know from participation in CARS?

Parker: One of the interesting things we saw about that program was that it was massively oversubscribed. The government originally allocated \$1 billion to a three-month program and exhausted that \$1 billion in about a week. It then reauthorized the program for another \$2 billion and still ran out of funds two months early. The other notable thing was that it was a program that provided liquidity. It paid households \$3,500 or \$4,500 to trade in and scrap an old vehicle. And that means it provided liquidity — and really enough liquidity for a down payment. So we wanted to know: Can we link these two, the provision of liquidity and the high take-up rate? Also, there was interesting existing research that had been done on the program, specifically work by Atif Mian and Amir Sufi, which produced a nice aggregate impact measure of the program but nothing at the micro level of how individual households were responding. And I wondered about the reversal of the impact, which is one of their main findings: The program generated sales, but within six to nine months afterward there was no cumulative difference in purchases for people eligible for the program and people who weren't.

We got access to the Bureau of Labor Statistics' Consumer Expenditure Survey data and made a precise measure of eligibility of vehicles based on fuel efficiency and used car value by make, model, and year. We then mapped the program responses to eligibility and the economic subsidy associated with any given car. If you owned a car, the economic subsidy was the program payment minus the value you could get for your car on the used car market. So a car worth \$4,500 on the used car market would get, in effect, no subsidy from the program, but a car worth \$1,000 would get a \$3,500 subsidy. We mapped from car value to the program response to see if people with really junky old cars used the program much more strongly. And indeed we found that to be the case. Typically, about \$1,000 of used car value reduced your probability of participating in the program by about half a percentage point. That suggests the government could have gotten as large a response with slightly smaller subsidies because the program ran out of funds and there was a lot of response from people with moderate-valued vehicles.

EF: But how can you know people's sensitivity to the subsidy in advance?

Parker: Exactly the right question. Because the program ran out of money, it's not a program for which we observe an unconstrained, equilibrium response. Instead, it was a response constrained by the funding amount. So we don't absolutely know; what we do know is that the subsidies were more generous than they needed to be to generate that many sales. And what we also know is, had the subsidy been lower, it probably would have been the people with the lousiest cars who would have traded them in and that would have resulted in less destruction of more valuable used cars. That's all easy to look at and say after the fact. But there was this massive underestimation of the response to the program, and we think that's because of liquidity.

We think that an economic subsidy should generate intertemporal substitution; it's a temporary price subsidy to a durable good. In this case, we figured out how the liquidity dimension could actually be measured separately a little bit from the economic subsidy. The economic subsidy is not the same for everyone, but for most people it is the same as the liquidity provided by the program. But some people have loans on their program-eligible vehicles. If a vehicle is securing a loan, then when it's brought into the dealer and scrapped as part of the program, the household has to pay off that loan, and so they lose some of the liquidity benefit of the program. In our study, we estimate this liquidity effect, separate from the intertemporal substitution effect of the economic subsidy, and we find that the effect of the program was much smaller on vehicles that were securing loans. In fact, it's almost nonexistent. So we find the impact of liquidity to be very strong — it was an accelerant for the economic subsidy in the target population.

We also find very weak evidence consistent with the reversal effect that Mian and Sufi first discovered, which feeds

into the question: Is this a worthwhile sort of program to do? It was a program that caused, at an annual rate, a \$44 billion increase in personal consumption expenditures on durable goods in the third quarter of 2009, which was the quarter in which the recession ended and in which GDP grew by about \$44 billion. And in the previous quarter GDP declined by about \$44 billion. So it looks pivotal. On the other hand, half of the content of the vehicles purchased under the program was imported, so that means that one has to take the number of new purchases and divide by two to get an estimate of the partial-equilibrium impact on demand. So really it wasn't pivotal at moving us from no growth to growth, and also the program seems to have been reversed over six to nine months because there's no cumulative impact in sales. On the other hand, it generated all that spending for a relatively small fiscal cost of only \$3 billion (\$12 billion at an annual rate). But these are all accounting, partial-equilibrium calculations.

For this to be optimal from a stabilization perspective, you need to believe that the government multiplier is much larger in the quarter in which CARS is run than six months later. And this is a period when we are having a slow recovery. So the net benefit of the program is ultimately a general equilibrium question that other people would need to answer, but the hurdle is significant given that one has to see such a significant swing in the size of the multiplier between those two periods. If one wants to do a similar program again, and similar programs have now been run in countries all over the world, our results generally emphasize that the liquidity was a crucial part of the program — not just people substituting over time due to a temporary price subsidy — and as such, our findings relate to the literature on investment tax credits for firms where liquidity also seems to be important.

EF: I would like to go back to some of your earlier work on household financial decisionmaking — in particular, your 2002 *Econometrica* paper with Pierre-Olivier Gourinchas. It seems consistent with the standard life cycle theory of saving and consumption. Would you say that's a fair characterization of that paper?

Parker: From the perspective of today, I think the contribution of that paper is more methodological in some sense. We worked out a framework for taking cohort-level analysis of microdata that had been used nicely before by Angus Deaton and Christina Paxson, Orazio Attanasio, and others, and combined it with a structural model of an income fluctuation problem so as to estimate the parameters governing the behavior of households using a simulated method of moments estimator. That said, as you noted, the model fits the life cycle profiles of consumption and saving with a model in which households differ solely based on their history of income shocks and their age. So age is a major determinant of the propensity to spend. Since then, the research has expanded in many ways to endogenize the choices we made exogenous in that paper or assumed away, including portfolio choice, labor supply, illiquid retirement saving, government

programs, housing, and some very nice work by Mariacristina De Nardi and Eric French and co-authors on retirement. People are also considering the liquidity of different investments now in structural models and stochastic credit constraints, all of which we pushed away, but the method remains a very useful one for evaluating these models.

EF: You've revisited some questions fundamental to life cycle theory in your recent paper, "Why Don't Households Smooth Consumption?"

Parker: In that paper, I use Nielsen Consumer Panel data to design and run my own survey on households to measure the effect of what was then the second of these large randomized experiments run by the U.S. government, the economic stimulus program of 2008. The key feature of that program was that the timing of the distribution of payments was determined by the last two digits of the Social Security number of the taxpayer, numbers that are essentially randomly assigned. So the government effectively ran a \$100 billion natural experiment in 2008, distributing money randomly across time to people, and this policy provides a way to measure quite cleanly how people respond to infusions of liquidity.

The goal of "Why Don't Households Smooth ..." is to provide evidence of the structural model underlying the observed importance of liquidity on household spending behavior. And in theory, while the buffer-stock model might correctly match the behavior, it also might be that people spend expected income gains only when they arrive because of problems stemming from self-control, inattention, inability to plan, some sort of rule of thumb or mental accounting behavior, or the like. So I designed a bunch of questions trying to get at these alternative behaviors. I should clarify that they are not really alternatives, in the sense that they all interact with liquidity constraints.

The first thing I found out is that illiquidity is still a tremendous predictor of who spends more when a predictable payment arrives. But it's not only liquidity. People with low income have a very high propensity to spend, and not just people who have low income today, as would be associated with the standard buffer-stock model. You can imagine a situation where you've had a bad income shock, you happen to have low liquidity, and you spend a lot. But illiquidity one or even two years prior to the payment is just as strongly

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"Why Don't Households Smooth Consumption? Evidence from a 25 Million Dollar Experiment," *American Economic Journal: Macroeconomics*, forthcoming; "Consumer Spending and the Economic Stimulus Payments of 2008," *American Economic Review*, 2013 (with co-authors); "Who Bears Aggregate Fluctuations and How?" *American Economic Review*, 2009 (with Annette Vissing-Jorgensen); "Optimal Expectations," *American Economic Review*, 2005 (with Markus Brunnermeier); "Consumption Over the Life Cycle," *Econometrica*, 2002 (with Pierre-Olivier Gourinchas)

associated with a propensity to spend out of liquidity, as illiquidity at the time of the payment. This same set of people who have persistently high propensities to consume are also the people who characterize themselves as the type of people who spend for today rather than save for tomorrow when I asked them specifically about their type, not their situation. They are also the people who report that they have not sat down and made financial plans.

What you end up with is that a high propensity to consume correlates with low liquidity, which is useful for theorizing but also presents a little bit of a chicken-and-egg problem. Is it different preferences, objectives, or behavioral constraints that are causing both the low liquidity and the propensity to spend, or is it the low liquidity that is causing the lack of planning and high spending responses? So for many purposes, what I take my findings to mean is that the buffer-stock model is a quite reasonable model with one critical ingredient. The critical difference relative to the way I modeled households

in the 2002 paper with Gourinchas is that I think there's much more heterogeneity in preferences across households. While in that paper we looked at differences in preferences across occupation and industry, I think there's just much more persistence in heterogeneity in behavior, consistent in the buffer-stock model with differences in impatience. Partly I say this because I do not find a big relationship between age and propensity to spend in a number of studies, and partly from the persistence of the high-spending propensities I find in this recent paper. But it's also visible in some sense in even older data. Low liquidity, or low financial wealth, is a very persistent state across households, suggesting the propensity to spend is not purely situational. A lot of it is closer to an individual-specific permanent effect than something transient due to temporary income shocks.

EF: Did people generally understand the magnitude of the 2008 stimulus program prior to receiving payments? And if they didn't, did that show up in consumption patterns?

Parker: In my study, one of the questions I asked people was: So you got this economic stimulus payment, did you expect it? Was it more than you expected? Was it less than you expected? Was it a surprise? First of all, about 80 percent of households got basically what they expected. That means

you're never going to explain the spending response by people being surprised, as say in some versions of an inattention model. That is a nonstarter. Expectations about the program were reasonably accurate, with the important caveat that people may not be answering the survey truthfully. Interestingly, there is a slightly higher propensity to spend, though not statistically significantly so, among those who were surprised and received more than they expected. But there is also exactly the same response among those people who got less than they expected. So it looks more like the people who weren't expecting the right thing are worse at consumption smoothing.

EF: How do you define the distinction between “optimal expectations” and “rational expectations”? What are the differences in the ways agents with each set of expectations tend to behave? And if agents with optimal expectations may make “poorer” decisions, in some sense, how may that ultimately be advantageous or desirable?

Parker: In some sense, the starting point for my work with Markus Brunnermeier came from a number of observations in the social psychology literature that people just tend to be optimistic or overconfident, the type of behavioral biases that lead people to believe they're better drivers than average — that sort of optimism. Looking at the objective functions that we usually consider, the simplest way to maximize the expected present discounted value of anything is to put more probability on better outcomes — simply to be more optimistic. You can see how that can be a source of happiness today. If we think about how good we are at many different things, it's nice to have confidence and believe you're maybe better looking or smarter than you actually are. On the other hand, to the extent that you actually allow yourself these sorts of enjoyable biases, you're likely to make slightly worse decisions. You might leave insufficient time to complete a project, for instance, which would make you worse off.

So the basic idea of that optimal expectations paper is to think of the optimal trade-off between those two — the idea that you will get more expected future utility today by expecting better outcomes, but on the other hand you're going to make some decision errors because of that expectation. It turns out that this sort of a simple trade-off has many interesting implications. The first is basically that you're always somewhat optimistic. The reason is that moving a small amount of probability from, say, the worst state out in the future to the best leads to a first-order gain in expected present discounted value of utility flows of consumption. But a small change in probability causes a small change in behavior, and a small change in behavior from the optimal has very small — second-order — welfare costs. So, overall, the benefits outweigh the costs.

There are also some interesting implications that come from the fact that optimism is situational. For example, when considering investing, one way to be optimistic is to think the stock market's going to go up more than everybody else believes, and to go longer into it. But you can also be

optimistic by shorting the market and believing it's going to crash when everybody else thinks it's going to go up. So when do you short? It turns out that there are conditions under which you will actually invest in an unfair bet if it's positively skewed enough. That gives you a theory that looks like people buying lottery tickets, which are unfair gambles with a very small probability of a very high positive payout. They provide a very nice future state to believe in at a pretty low-dollar cost today. So the observed unfair gambles, lottery tickets, are exactly the sort of unfair gambles that our theory predicts people should prefer. This type of behavior looks like the big short. That's a theme that runs through several of our results: People with optimal expectations want something that has a very high positive payoff to dream about that at the same time isn't very costly to invest in.

There is also a natural nonconvexity in the model, which we didn't expect. When I am more optimistic about a certain outcome in the future, that means I want to buy more consumption in that state of the world. When I buy more consumption in that state, that means I want to be more optimistic about it, which in turn means I want to buy more consumption there. And this natural nonconvexity means that people are going to do something like hold a reasonably well-diversified portfolio and then invest excessively in a particular asset, such as one or two individual stocks. We didn't expect that sort of behavior to pop out, but that's what the model taught us. This leads to our work with Christian Gollier that looked at the conditions under which the model generated disagreement and could raise the return on negatively skewed assets.

EF: How would you describe the changes we have seen in the way high-income and high-consumption households have become exposed to aggregate economic fluctuations over the last 30 years roughly?

Parker: Due to some difficult data issues, I have not really been able to track the consumption of high-consumption households, but in work with Annette Vissing-Jorgensen we have looked at how the labor income of high-income households has changed significantly. What we zoomed in on is that high-income households used to live a relatively quiet life in the sense that the top 1 percent would earn a relatively stable income, more stable than the average income. When the average income dropped by 1 percent, the incomes of the top 1 percent would drop by about only six-tenths of a percent. In the early 1980s that switched, so that in a recession if aggregate income dropped by 1 percent, the incomes of the top 1 percent dropped more like 2.5 percent — quadrupling the previous cyclical volatility. So now they're much more exposed to aggregate fluctuations than the typical income. We also show that decade by decade, as the top income share increased, so did its exposure to the business cycle in the 1980s, 1990s, and 2000s. And as you go further and further up the income distribution, that top share — not just the top 1 percent, but the top 10th of a percent, and the top 100th of

a percent — there's also been a bigger increase in inequality and a bigger increase in the exposure to the business cycle.

EF: What's the story for that?

Parker: First of all, we used to think the income cyclicality was exactly the reverse, because low-income workers would lose their jobs in recessions and high upper-income workers would not. And so while high-income households might get lower raises in recessions, they wouldn't actually go down to zero. Since job losses are concentrated among lower-earning workers, you have much greater cyclicality in overall incomes among low-wage workers. In another paper I did with Annette Vissing-Jorgensen, we looked at cross-country evidence in the recent decades of high inequality. The countries with the biggest earnings inequality were also the countries with the largest high-income cyclicality relative to the average. So what explains these sorts of findings? We thought there were two leading hypotheses.

First, starting around the end of the 1980s, we see the adoption of incentive-based pay for CEOs and other highly placed managers. Incentive compensation over this time rises, and it happens to be that the incentive compensation is not based on relative performance, which would therefore differ out what goes on in the macroeconomy, but instead is based on absolute performance. And in the U.S. case, that could partly be due to simply what counts legally as incentive-based compensation and so is not subject to corporate profits tax. Pay in the form of stock options, for example, counts as incentive-based compensation. Pure salary does not and so is taxed as corporate profits above \$1 million.

The other possibility is that it's purely technological. Something like incentive-based compensation may be a sideshow. The idea is that new information and communication technologies allow the best managers to manage more people, to run bigger companies, and therefore to earn more; the best investment managers to manage more money and to make more for themselves; the best entertainers and performers to reach more people and therefore earn a larger share of the spending on entertainment goods. High earners have become small businesses. While it is not universally true that such a shift to high-volume low-markup profits for the winners necessarily leads to greater cyclicality, it is true for some reasonable functional forms of production.

We do know that increased cyclicality in income among high earners can't come simply from the financial sector. That sector just isn't quantitatively big enough, and you see the increase in earnings share and in cyclicality across industries and occupations. It's not the case that just the top hedge fund managers have become the high earners and they're very cyclical; Oprah is also.

EF: What do you think are the most important unanswered or understudied questions in household behavior and household financial decisionmaking?

Parker: The big one is: Do we need a different model than the canonical stochastic life cycle model with credit constraints to understand consumer behavior? Do we need to introduce inattention or hyperbolic discounting, for instance, to make it richer? My sense is that for a lot of questions so far, the answer is still no, but we now have a few pieces of evidence that in a few places the answer is yes. As we get better data, and we think about questions like credit market equilibria and consumer financial regulation, we have the information to evaluate rich models of behavior and the need for models that are as complete as possible in describing behavior.

In my work, liquidity is first order, consistent with the buffer-stock model. But liquidity almost seems to explain too much. In the Nielsen study that we discussed earlier, people don't spend the money the week before it shows up — they spend it the week it shows up. And it seems like you're going to have a lot of difficulty quantitatively fitting that little foresight into a life cycle model unless people are often literally liquidity constrained, absolutely at their debt limits.

In the Cash for Clunkers program, liquidity mattered critically. One interpretation is that this importance is consistent with the canonical model in which some people lack the liquidity for a down payment. But there is an alternative interpretation. Again, our main finding is that people who have outstanding loans on their vehicles are much less likely to participate in the program, presumably because to buy a new car using the program, they would have to put some cash down along with the payment in order to make the down payment. Such people are much less likely to take advantage of the program than people who don't have loans on their vehicles but instead have unsecured debt, like on a credit card. Sounds like liquidity. But perhaps the people who have the secured debt could walk into the dealer and turn into that other person — that is, use their credit card to buy the car, so they leave the dealer with unsecured debt, just like the other person. In this case, liquidity matters, but maybe not according to strictly the life cycle model with liquidity constraints. Instead, such behavior sounds more like people using heuristics or mental accounts. The big question: In what combination do we need each ingredient — rationality and heuristics? And where do the heuristics come from?

The other question that I think research is really exploring is what equilibria look like for saving and borrowing. What equilibrium supports high-fee mutual funds, index funds, and so on, and how does that change the flow of funds between the corporate and household sector and the pricing of risk? How does the market for lending to households evolve as risk is repriced and interest rates move, and how does this feed back into spending? The interplay between borrowers and lenders in these markets is a very interesting and active area of research because we're getting a lot of the data on mortgages, credit cards, retail investment, and financial accounts. These data are allowing us to look at and understand the equilibria in those markets, which is really fun. **EF**

Reaping the Benefits of the Reaper

Cyrus McCormick may not have invented the reaper, but he was the entrepreneur who made it successful

BY KARL RHODES

Cyrus McCormick spied his archival for the first time in the April 1834 issue of *Mechanics' Magazine*, which published a drawing and description of a mechanized reaping machine patented by Obed Hussey. McCormick immediately wrote a letter to the editor claiming that he had invented a reaper in 1831 based on the same principle as Hussey's machine.

"I would warn all persons against the use of the aforesaid principle," McCormick wrote, "as I regard and treat the use of it, in any way, as an infringement of my right."

McCormick was staking his claim to one of the most important breakthroughs in the mechanization of agriculture.

"Of all the inventions during the first half of the nineteenth century which revolutionized agriculture, the reaper was probably the most important," wrote University of Chicago historian William Hutchinson in his two-volume biography of McCormick in the 1930s. The reaper broke the harvest-labor bottleneck by allowing the farmer "to reap as much as he could sow." This big step toward automation allowed farms to become larger and more productive. In turn, the mechanization of agriculture accelerated industrialization and urbanization as displaced workers migrated more rapidly from farms to factories.

The traditional story of the McCormick reaper begins with Cyrus' father, Robert McCormick, who had been trying to develop a workable reaper for several years at Walnut Grove, the family's plantation in Rockbridge County, Va. After Robert abandoned the project in 1831, young Cyrus started building a reaper based on a different principle. Within six weeks, he successfully demonstrated his machine by harvesting oats at nearby Steele's Tavern.

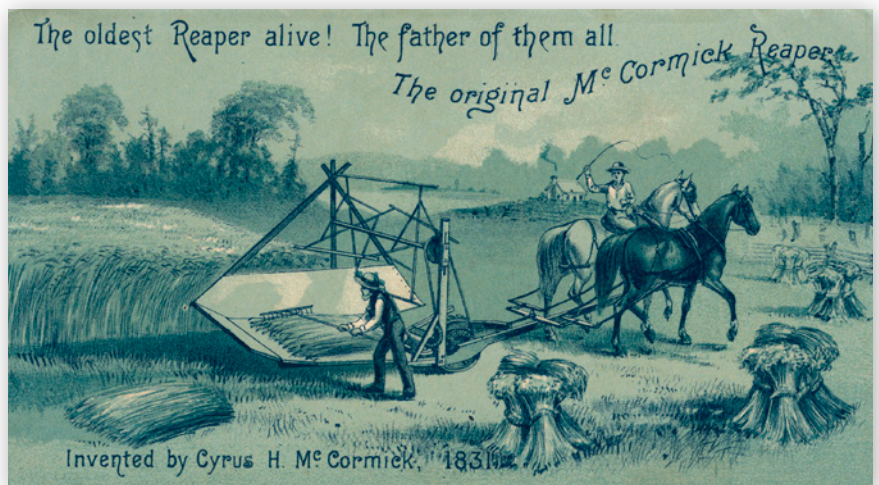
For many years, Cyrus was acclaimed nationally and internationally as the singular inventor of the reaper. But some historians have said that Hussey's contributions may have been just as important — perhaps more important — to the technological evolution of the machine. And as far back as the 1870s, some members of the McCormick family have argued that most of the credit for inventing the reaper should go to Robert McCormick.

But the long-standing debate over who invented the reaper obscures a more important

question, says David Hounshell, professor of technology and social change at Carnegie Mellon University. "From a Schumpeterian perspective, who was the successful entrepreneur who was innovating mechanized reaping in the United States and Europe?"

Joseph Schumpeter, a Harvard University economist who was born one year before Cyrus died, famously highlighted the key role that entrepreneurs play in driving economic development. In his 1912 book, *The Theory of Economic Development*, Schumpeter wrote: "Innovation is the market introduction of a technical or organizational novelty, not just its invention." In this context, the Schumpeterian entrepreneur is the innovator who replaces old ways of doing things with better ways of doing things, a process that Schumpeter would describe later as "creative destruction."

So regardless of who invented the reaper, Hounshell contends that Cyrus was the Schumpeterian entrepreneur whose insights and efforts led to its widespread adoption. As early as the 1840s, Cyrus promoted the reaper with sophisticated use of advertising and publicity. He moved to Chicago in 1847 to better serve the emerging Midwestern market. Then he assembled a large and effective sales network and equipped it with slick catalogs, posters, and other promotional items. He capitalized on international marketing opportunities, and he eventually helped bring state-of-the-art manufacturing to the Midwest.



This illustration from 1887 is typical of McCormick Harvesting Machine Co. advertising that claimed Cyrus invented a reaper that worked well in 1831.

Slow Adoption?

Given Cyrus' entrepreneurial prowess and the obvious utility of the reaper, economists and historians have wondered why farmers were slow to adopt the machine. Hussey patented his reaper in 1833, and McCormick followed in 1834, but farmers didn't start purchasing the machines in large numbers until the mid-1850s.

The traditional explanation for this surge in sales was the rapid rise of global wheat prices during the Crimean War, which limited grain exports from Russia and other nations in the Black Sea region. But in the 1960s, Stanford University economist Paul David offered another primary explanation: He argued that before the mid-1850s, most American farms were simply too small to make reapers practical.

The average farm size was growing, however, as grain production shifted from the East to the Midwest, where arable land was fresh, fertile, and relatively flat. More importantly, the farm-size threshold for the reaper to be practical was declining as the price of labor — relative to the price of reaping machines — increased in the Midwest due to higher demand for workers to build railroads and other infrastructure throughout the fast-growing region, David wrote.

In the 1970s, Alan Olmstead, an economist at the University of California, Davis, agreed that factor prices and farm sizes were important, but he argued that the break-even analysis for purchasing a reaper should be based on the total acreage of grain to be cut by that machine — not just by the grain acreage on the farm of the reaper's prospective owner. Farmers often cooperated to use reapers on multiple farms, a possibility that David had excluded from his model.

Olmstead also faulted David for assuming that there were no significant advances in reaper technology between 1833 and the 1870s. This assumption that the reaper was born fully developed grew into a "historical fact," Olmstead wrote, even though it ignored "extremely knowledgeable historians who emphasized how a host of technological changes transformed an experimentally crude, heavy, unwieldy, and unreliable prototype of the 1830s into the relatively finely engineered machinery of the 1860s."

The idea that the reaper was born fully developed was promoted aggressively by the McCormick Harvesting Machine Co. as part of a long-term branding strategy based on the sole-inventor legend of Cyrus. Over the years, many of the company's distortions and exaggerations came to be accepted as historical facts, according to Daniel Ott, a visiting professor of history at the University of Wisconsin, Eau Claire. In particular, the company claimed that Cyrus' invention "signaled a monumental jump forward in the progress of civilization and the circumstances of farmers everywhere," Ott wrote. But in reality, the McCormick reaper of 1831 was not a monumental jump; it was only Cyrus' first step as the reaper's Schumpeterian entrepreneur.

McCormick vs. Hussey

While the McCormicks were improving their machine at Walnut Grove, Hussey was inventing his mechanized reaper

in Baltimore. He demonstrated his machine during the harvest of 1833 and patented it in December of that year.

He sold at least one reaper in 1834, and by the end of the decade, he was producing as many as 10 per year. In sharp contrast, the McCormicks sold no reapers in the 1830s — except one machine they had to take back from a dissatisfied customer.

Cyrus finally sold two reapers in 1840, but he later admitted that they were not very useful. By then, Hussey's machines were operating in at least eight states, according to Hutchinson. But Hussey's reapers encountered problems, too. "Some farmers complained that Hussey's machine left too long a stubble and others that the cutter clogged in damp grain and would not reap when the stalks were bent away from the knife," Hutchinson wrote. Hussey's sales plummeted in 1840 after his attempts to improve the machine made it worse.

The McCormicks sold two more reapers in 1841, seven in 1842, and 29 in 1843. In June of that year, Cyrus and Hussey demonstrated their reapers in a head-to-head competition on the plantation of Ambrose Hutcheson near Richmond, Va. The judges of the contest wrote that "both [reapers] performed most admirably." They expressed "great reluctance in deciding between them," but they generally preferred the McCormick.

Cyrus sold more reapers than Hussey that year, but the quality of the McCormick reaper declined after Cyrus increased production by selling manufacturing rights. Some of his licensees performed poorly, and the quality of the reapers made at Walnut Grove fell dramatically in 1846 and 1847, probably due to the illness and death of Robert McCormick.

By then, Cyrus was spending most of his time in the Midwest, where demand for reapers was growing quickly. For the rest of the decade, Cyrus focused on the Midwest, while Hussey concentrated on the East. But their rivalry shifted to the U.S. Patent Office in 1848, Hutchinson wrote, as both inventors tried to extend their rights. "The expiration of their monopolies invited new competitors to enter the arena, and the duel of the years 1839 to 1847 rapidly became thereafter a general melee."

True to his word in his 1834 letter to *Mechanics' Magazine*, Cyrus sued many of those new competitors for infringing on his various patents. He didn't win all of those lawsuits, but he seemed to thrive on head-to-head competition — in courtrooms, in wheat fields, and at international exhibitions. In sharp contrast, these contests seemed to wear Hussey down.

"I never experienced half the fatigue in Rowing after a whale in the Pacific Ocean (which I have often done) as I experienced year after year for eighteen years in the harvest field," Hussey wrote in an 1854 letter. "No man knows how much I have suffered in body and mind since 1833, on account of this thing."

A train ran over Hussey in 1860, one year before his patent rights were extended posthumously. Cyrus' rights were not extended, although the reasons for this ruling may have had more to do with politics than the merits of the case, according to Hounshell.

McCormick vs. McCormick

Cyrus lost some legal and political battles, but he won consistently in the marketplace. By all accounts, he was tenacious, innovative, and farsighted as an entrepreneur. Perhaps his best strategic decision was moving to Chicago in 1847. His youngest brother, Leander, joined him there in 1848, and another younger brother, William, followed about one year later.

The brothers manufactured and sold more than 5,000 reapers in 1859, the year when Leander and William became minority partners in Cyrus' company. Hutchinson notes that Cyrus "customarily found harmony impossible with his partners," and his brothers were no exceptions.

After William's death in 1865, Leander and Cyrus quarreled more frequently. Each year, they argued about how many reapers to produce for the upcoming harvest. Cyrus, the risk-taking marketing maven, wanted to expand as quickly as possible in the United States and abroad. Leander, the risk-averse factory superintendent, wanted to grow slowly in the United States. As the company's majority partner, Cyrus always opted for aggressive growth with little regard for Leander's objections. The younger brother also became increasingly frustrated that Cyrus was getting all the credit for the company's success and all the glory for inventing the reaper. Leander started to assert — privately at first — that their father, Robert McCormick, was the true inventor of the machine.

Hutchinson and Hounshell attribute Leander's reaper reversal to jealousy, but Ott believes Leander really was trying to set the record straight. According to Ott, Leander probably tolerated the singular-invention legend for many years because he viewed the story as nothing more than harmless advertising fluff. But Leander's tolerance waned when he realized the company was transforming the legend into "the concrete narrative of the invention of the reaper." In the 1870s, Leander started gathering statements from old friends and relatives back in Virginia to support his claim that Robert had invented the reaper.

Meanwhile, adulation rained upon Cyrus, particularly in France, where he was made an officer of the Legion of Honor and a member of the French Academy of Sciences for having "done more than any other living man for the cause of agriculture in the world."

Back at the factory, Leander was struggling to keep up with Cyrus' aggressive expansion plans and his promises to customize reapers for smaller European markets. Hounshell argues that Leander could not keep up because he had failed to adopt modern manufacturing techniques, including the use of jigs, fixtures, gauges, and single-purpose machines to make interchangeable parts for standardized models. "Leander, whose only experience had been as a country blacksmith from Rockbridge County, Virginia, operated the reaper works as though it were a large country blacksmith shop," Hounshell wrote in his 1984 book, *From the American System to Mass Production, 1800-1932*.

Finally, Cyrus fired Leander and hired Lewis Wilkinson, an experienced mechanic who was well-versed in modern

manufacturing techniques. After training under Wilkinson for one year, Cyrus McCormick Jr. took over as superintendent of the factory and implemented ambitious plans to modernize. Capacity quickly increased to 54,000 machines in 1884 and more than 100,000 machines in 1889.

"Had Leander and Cyrus not had an irreparable fight in 1879-80, the reaper works might not have undergone any notable changes until Cyrus' or Leander's death," Hounshell wrote. Cyrus died in 1884, and Leander died in 1900, but the family feud over who invented the reaper was passed down from generation to generation.

Manufacturing History

True or not, the singular-invention legend was valuable to the McCormick Harvesting Machine Co. — not for patent purposes by the 1880s, but to bolster the company's standing with populist farmers (reaper customers) who tended to hate big business.

To justify its higher prices, the company began to portray Cyrus Sr. as a heroic farmer whose mechanical genius had made him a great benefactor of mankind in general and farmers in particular. According to the ever-expanding legend, Cyrus Sr. fed the hungry around the world (by making bread cheaper) and elevated farmers from simple sodbusters to sophisticated managers of employees and capital.

Ott documented these exaggerations in his 2015 dissertation, *Producing a Past: Cyrus McCormick's Reaper from Heritage to History*. Ott argued that the company used the sole-invention legend to draw parallels between the populist "labor theory of value" and the company's "technological surplus value ideology." The propaganda reached a crescendo at the 1893 World's Columbian Exposition in Chicago, where a large banner over the company's exhibit proclaimed that "all harvesters of to-day are based upon the features C.H. McCormick invented and built in 1831." McCormick's competitors quickly complained that this claim was patently false, and the Inventors' Congress, an international group that was acting as the exhibition's jury, "forced the McCormick Harvesting Machine Company to take down all of its placards claiming inventive priority," Ott wrote.

Undaunted, Cyrus Jr. lobbied the U.S. Treasury Department to get his father's image printed on the \$10 silver certificate. Treasury Secretary John Carlisle embraced the idea and unveiled an engraving of the proposed new currency in 1896. But he pulled the plug on "McCormick money" after the company's competitors vigorously challenged the story that Cyrus alone had invented the reaper.

This time, the challenge to the singular-invention legend was more public and more damaging to the company's reputation, according to Ott. This embarrassing loss of prestige came at a difficult time. Grain prices were falling, farmers were struggling, and the company's farm machinery sales were dwindling. After waging a five-year price war, the company merged with its four largest competitors in 1902 to form International Harvester.

The merger agreement called for J.P. Morgan and Co. to manage International Harvester for 10 years, but when the McCormick family wrested control of the company away from the other partners in 1912, Cyrus Jr. reasserted the legend to help fend off federal antitrust charges. The company never got Cyrus Sr.'s image printed on currency, but a depiction of a mid-19th century reaper graced the back of the Federal Reserve's first \$10 note in 1914.

Entrepreneurial Power

Separating fact from fiction in the Cyrus McCormick legend is difficult — if not impossible — because there are no contemporary accounts of what happened at Walnut Grove during the harvest of 1831. Most of that early history is based on the recollections of Cyrus himself and other highly partisan participants and observers — many of them taking sides (sometimes switching sides) in patent disputes

and the McCormick family feud.

But based on overlapping information from sources cited by both sides of the family, it seems likely that Cyrus and Robert both contributed to the McCormick reaper of 1831. And so did their slave, Jo Anderson, and so did a local blacksmith, John McCown. It also seems possible that Cyrus and Robert obtained knowledge of previous attempts to develop a practical reaper.

“One thing we know about the evolution of technology in general is that almost never does an important technology come out of the blue,” Hounshell says. “There are always precedents. There are always theories that lead up to a breakthrough invention.”

The more important question, according to Hounshell, is who supplied the entrepreneurial power that brought the reaper into common use? And the answer is clearly Cyrus McCormick. **EF**

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WHY AREN'T MORE WOMEN WORKING? *continued from page 14*

One reason for this, they wrote, is that the most robust predictor of whether a woman will return to work late in life is whether she had work experience early in her career. So the fact that labor force participation is high for young women — and that more and more of these women are college educated — suggests that, over time, they will return to the workforce when they are older.

Whether — or how much — diminished female labor force participation is a drag on U.S. growth is something economists will continue to debate. In a 2015 report, the OECD estimated that if American women caught up to men in this respect by 2025, this could increase GDP growth by 0.5 percentage point a year. But many scholars

caution that, on the other side of the ledger, it's hard to quantify the economic contribution of unpaid work such as care-taking and household chores that is done by people not in the labor force. Accordingly, such estimates may not be clear-cut. Blau is among those, and she cautions that the question of economic impact isn't a “strictly mechanical” one.

“The broader question is whether people with skills and education are contributing to the economy as much as they can or want,” Blau adds. “You need to factor in the reasons for nonparticipation. And here, the data suggest the United States is not offering the fullest opportunity for women to contribute.” **EF**

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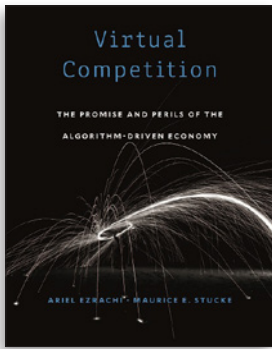
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The Web Taketh Away



VIRTUAL COMPETITION: THE PROMISE AND PERILS OF AN ALGORITHM-DRIVEN ECONOMY

BY ARIEL EZRACHI AND MAURICE E. STUCKE
CAMBRIDGE, MASS.: HARVARD UNIVERSITY PRESS, 2016, 248 PAGES

REVIEWED BY DAVID A. PRICE

From its earliest days of commercial use in the 1990s until today, the web has been almost universally viewed as a boon to consumers — practically like Santa Claus. It makes the competing sellers of an item easy to find and makes comparison shopping trivial, certainly next to the old-world alternatives of schlepping from store to store or making phone calls. In the consensus view, the hypercompetitive markets that result from the web's landscape mean more choices and lower prices. From a consumer's perspective, at least, what's not to like?

Plenty, say Ariel Ezrachi and Maurice Stucke. Ezrachi, a professor of antitrust law at Oxford University, and Stucke, a law professor at the University of Tennessee, argue in their book *Virtual Competition* that the web may giveth unto consumers, but it also taketh away. In particular, they contend, our affection for online shopping has obscured a number of latent dangers that the web poses to competitive markets and consumer welfare. Foremost among these are invisible collusion, price discrimination, behavioral discrimination, and what they call the “frenemy” dynamic.

Collusion, according to Ezrachi and Stucke, can flourish in the world of online commerce in several ways. First, intentional cartel behavior is easier among online competitors, in part because online prices are highly visible — which means conspiring firms can monitor each other reliably and automatically. Second, the rise of firms like Uber, which sets the prices of numerous independent agents, means that a swath of sellers — such as Uber's drivers — do not compete with each other on price. It's a legal form of price-fixing. (To be fair, Uber itself broke a governmentally organized cartel of sorts; the regulated taxi drivers with whom Uber drivers share the road don't compete with each other on price, either.)

Ezrachi and Stucke also foresee threats to competition from the use of increasingly sophisticated pricing algorithms, which autonomously set prices for the firm's offerings at their optimum levels. Even without any explicit direction to refrain from undercutting rivals, the algorithms might well arrive at such an outcome. “No one will be tempted to improve their products, lower prices, or enter new markets,” they argue, “because others will immediately detect and punish this initiative.”

In addition, online commerce opens new frontiers for price discrimination, in Ezrachi and Stucke's view — that is, charging different consumers different prices for the same product based on their willingness to pay. Airfares that vary with the date of purchase are an example. Online sellers can readily use a consumer's buying history, web behavior, and other personal information to achieve more perfect price discrimination. While the authors acknowledge that price discrimination can be economically efficient, they believe it may be unfair to consumers and may enable large, established firms to erect barriers to entry.

Ezrachi and Stucke are also concerned by what they call “behavioral discrimination,” by which they mean using human biases to steer consumers' buying behavior. (Others have called it “nudging.”) One example they give is a travel booking site leading some users toward more expensive hotels by placing them higher in search results. Another is that of companies artificially increasing the complexity of buying options to make comparison shopping harder. Much as price discrimination has a venerable history in the brick-and-mortar world, behavioral discrimination is a descendant of the “motivational research” vilified by Vance Packard in his 1957 bestseller *The Hidden Persuaders*.

Finally, the authors warn of anti-competitive behavior among frenemies, firms that cooperate in some areas of activity and fight in others. In particular, the rise of so-called super-platforms, companies that provide platforms for other platforms — in the way that Apple and Google provide a platform for Uber's ride-sharing service within their phone operating systems, or Amazon provides a platform for third-party sellers — may lead to suppression of competition. For example, if Apple enters the ride-sharing business itself in some fashion, it may wish to use its power over its phone operating system to make Uber's life more difficult.

While Ezrachi and Stucke's account is highly readable and carefully researched, one does feel some cognitive dissonance when shifting from the pages of their book to the actual online world. Simply put, if the largest online commerce firms are in fact exercising significant market power in the economic sense, they aren't acting like it. There can be little doubt that markets with major online players have become more competitive rather than less with the advent of the web. The financials of many of these firms also seem inconsistent with the idea that they are exercising great market power. Amazon, for instance, has a lower net profit margin than Walmart.

Ezrachi and Stucke might argue that the online firms are just engaging in temporary strategic behavior. Maybe. But without a way to tell the difference, their argument remains speculative — even if it's interesting speculation. **EF**

Social Networks and Economic Outcomes: Evidence from Refugee Resettlement Programs

BY SANTIAGO M. PINTO

Many of an individual's decisions are influenced by the group of people with whom he or she interacts. Friends, neighbors, classmates, co-workers, and other social contacts are believed to play a fundamental role in one's decision to study, work hard, or commit a crime. They are also thought to play a role in outcomes such as the likelihood of finding a job. Identifying and quantifying such effects is challenging, however.

Economists have adopted different approaches to studying how interactions through social networks affect individual outcomes. Traditionally, the neighborhood has been used as the unit of analysis, on the assumption that the neighborhood is where most social interactions happen. Recent work has studied neighborhood effects by relying on information collected from refugee resettlement programs. The idea is that the social and economic prospects of newly arrived refugees, such as the probability of finding a job, can be attributed to the neighborhood characteristics where the refugees end up residing.

Robert McKenzie, a visiting fellow at the Brookings Institution, has observed, "Refugees don't just come to nations; they move to cities." Cities play an undeniable role in the resettlement of refugees and on their long-run social and economic prospects. This statement, however, can be narrowed down even further: Refugees actually move not only into cities, but also into neighborhoods.

Most refugee resettlement programs around the world are intended to help refugees make a smooth economic transition into their new communities. Understanding how social interactions operate is, therefore, key to evaluating the effectiveness of those programs. Insights from the research on neighborhood effects are valuable to the extent that they may contribute to the design and implementation of effective immigration and refugee policies. This has become an extremely sensitive issue considering the number of individuals fleeing their home countries worldwide has recently reached record numbers.

Quantifying the Effect of Social Networks

The social and economic outcomes for refugees who settle in new locations in a country depend on a variety of forces. Recent academic work has focused on the influence of social interactions at the neighborhood level. A long strand of the literature has examined how neighborhood characteristics affect labor market prospects, education and health outcomes, and criminal activities of residents.

For researchers, identifying and quantifying the effects of social interactions on individual behavior are made more

difficult by multiple causation. Any attempt to do so must take into account the fact that households with different characteristics commonly sort themselves into different types of locations. Suppose that one would like to examine whether residing in a deprived neighborhood (for example, a neighborhood with a high unemployment rate) affects a resident's labor market opportunities. To quantify the impact of the neighborhood on individual outcomes, the researcher has to take into account that this type of neighborhood might attract individuals with characteristics that would make him or her less likely to find a job. For instance, individuals who select to reside in those high unemployment neighborhoods may tend to be low-skill workers or are already unemployed. If this is the case, poor neighborhoods and poor labor market outcomes will be positively associated. But it is not necessarily correct to conclude that neighborhood characteristics are the cause of the poor outcomes. In order to assess how the neighborhood affects individual outcomes and to determine the precise causality, an exogenous or random allocation of individuals across neighborhoods is required.

To overcome this problem, some novel research has used data collected through "social experiments." In a social experiment, individuals or households are randomly assigned into two groups: a group that receives the treatment or participates in the program under study (the treatment group) and another group that does not (the control group). An advantage of this kind of approach — for example, when evaluating the effect of neighborhoods on outcomes — is that the assignment of individuals is random, so the differences across neighborhoods where people reside can be reasonably viewed as exogenous. The experiment thus minimizes the chances of observing outcomes influenced by the fact that some types of individuals or households may prefer a neighborhood with certain characteristics.

Two main types of social experiments have received most of the attention. The first one is the Moving to Opportunity (MTO) experiment. MTO is a federal housing voucher program targeted to low-income households residing in poor neighborhoods. This program offered housing vouchers to randomly selected households residing in poor areas to pay for their housing rents. Those vouchers, however, could only be used in low-poverty neighborhoods. The experiment was conducted in five cities (Baltimore, Boston, Chicago, Los Angeles, and New York) from 1994 to 1998, and it intended to study the social and economic effects on low-income households from moving to low-poverty neighborhoods.

Other research has used data collected from refugee

resettlement programs. The idea is that since locations are not selected by refugees, the assignment of refugees across different locations is exogenous. The conclusions of this research on refugee resettlement may not only help in the design and improvement of policies concerning refugees, an issue that has received a lot of attention in the last couple of years worldwide, but also shed light on how social networks and neighborhoods affect individuals' outcomes in general.

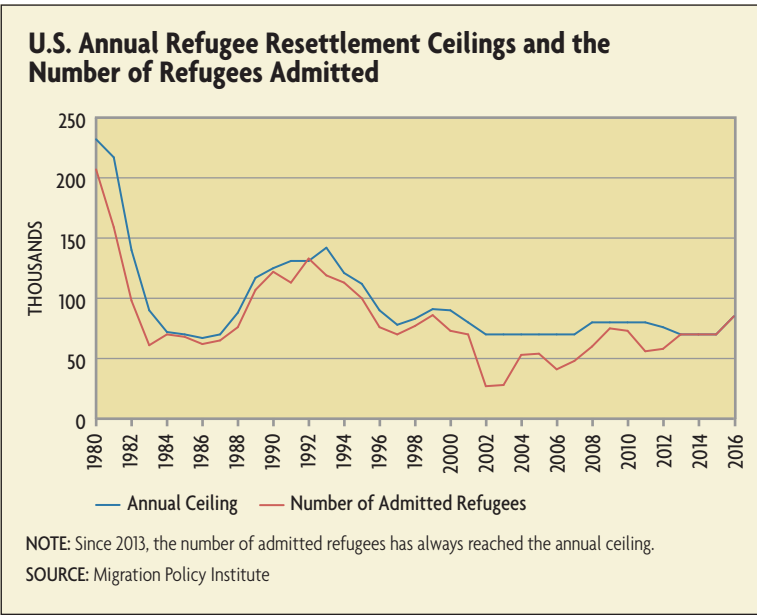
Refugee Resettlement Programs in the United States

The design and implementation of refugee resettlement programs vary across countries. In general, programs usually provide temporary assistance to newly arrived refugees and provide support throughout the settlement process. The main feature of most programs is that the assistance is intended to help refugees achieve self-sufficiency and become integrated members of the community as soon as possible. After receiving this initial support from the host government, their economic success will, among other things, be tied to the characteristics of the place where they end up residing. An appropriate evaluation of refugee resettlement programs should, therefore, take neighborhood effects into consideration.

In the United States, the Refugee Act of 1980 sets the foundation of the federal refugee resettlement program. This program determines eligibility for refugee status, establishes admissions procedures, defines the type of assistance granted to refugees, and provides guidelines concerning the resettlement process. The United States has historically led all nations in accepting and resettling refugees. Since the beginning of the European refugee crisis in 2015, however, other countries have been obligated to assume a much more important role.

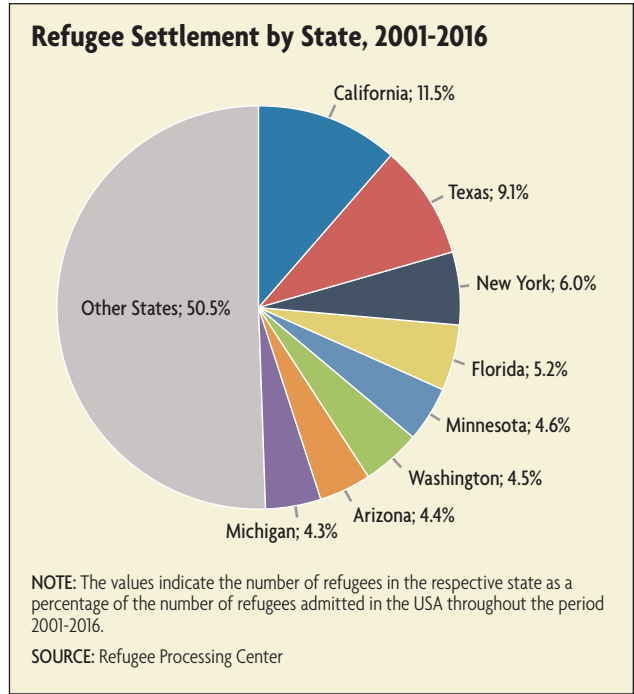
A maximum number of refugees are allowed to enter the United States every year. This ceiling is determined by the president in consultation with Congress. The highest annual ceiling was set at 231,700 admissions in 1980. This number has changed through the years for a variety of reasons, including worldwide population migration, worldwide economic conditions, and domestic political factors. From 2001 until 2015, the ceiling has fluctuated between 70,000 and 80,000. In 2016, it was raised to 85,000, and the proposed ceiling for 2017 is 110,000. The number of actual arrivals has generally fallen below the ceiling; since 2013, however, it has always reached the established maximum. (See chart.)

Federal law requires that refugee resettlement locations should be decided by the federal government in consultation with state and local governments. The federal government currently works with nine agencies to provide assistance to refugees throughout the resettling process. These agencies, jointly with their local affiliates, determine the best locations for the newly arrived refugees. The settlement decisions are



typically driven by factors such as the number of refugees already present in the community and family reunification motives. Other indicators that describe the community's capacity to absorb refugees are also taken into account. The latter includes availability of affordable housing, health and educational services, and employment opportunities.

From 2001 to 2016, approximately 890,000 refugees were admitted into the United States. Eight states received almost 50 percent of the total number of refugees in that period. California and Texas are by far the two largest refugee hosting states, receiving 11.5 percent and 9.1 percent, respectively, of total refugees. The list continues with New York, Florida, Minnesota, Washington, Arizona, and Michigan, each state accounting for about 4 percent to 6 percent of the total number of refugees. (See chart.) In the Fifth District, North Carolina has hosted about 3 percent, while Virginia



Fifth District Refugee Admissions by City, 2001-2016

Number	Maryland		North Carolina		Virginia	
	City	Percent	City	Percent	City	Percent
1	Baltimore	46.2	Charlotte	26.6	Richmond	17.0
2	Silver Spring	20.9	Greensboro	17.0	Charlottesville	13.7
3	Riverdale	5.0	Raleigh	15.7	Roanoke	11.7
4	Frederick	2.6	High Point	12.5	Harrisonburg	9.4
5	Hyattsville	1.8	Durham	7.9	Falls Church	7.4
6	Rockville	1.6	New Bern	7.3	Hampton	5.9
7	Hagerstown	1.4	Asheville	2.3	Newport News	5.5
8	Columbia	1.2	Wilmington	1.9	Alexandria	5.2
9	Gaithersburg	1.2	Carrboro	1.7	Fredericksburg	2.9
10	Elkridge	1.2	Chapel Hill	1.2	Arlington	2.1
Total		83.0		93.9		80.9

NOTE: The values indicate the number of refugees in the city as a percentage of the number of refugees who settled in the state during the period.

SOURCE: Refugee Processing Center

and Maryland have received about 2 percent of total refugees during the period. The percentages for South Carolina, West Virginia, and Washington, D.C., are negligible.

The assignment of refugees across cities within each of the states in the Fifth District that have hosted the largest number of refugees widely differs during 2001-2016. (See table.) In Maryland, almost half of the refugees resettled in the state have located in Baltimore, while the assignment of refugees in North Carolina and Virginia seems to be more dispersed across cities. Charlotte (with almost 27 percent) and Richmond (with 17 percent) attract the highest proportion of refugees in North Carolina and Virginia, respectively, but they are followed in each case by Greensboro (17 percent) and Charlottesville (13.7 percent).

Occasionally, state and local officials have opposed the resettlement in their districts. For instance, a number of state government officials have recently indicated they will not allow the settlement of Syrian refugees in their states. It should be noted, however, states that have historically accepted large number of refugees (such as California, New York, Washington, and Pennsylvania, among others) have assured their continued participation in resettlement programs. Moreover, there seems to be conflicting opinions declared by state governors and city officials. In fact, many cities in states that oppose the new admission of refugees advocate for a higher participation in resettlement programs and welcome even larger number of refugees into their cities.

Further opposition to refugee resettlement has recently emerged at the federal level. President Trump has sought to suspend the admission of refugees; at press time, the legality of that measure is a subject of litigation.

Neighborhood Effects on Labor Market Outcomes

Part of the literature on refugee resettlement focuses on how the characteristics of the community affect labor market outcomes for newly arrived refugees. Immigrants, and particularly refugees, tend to concentrate in certain areas and reside in enclaves. Such location decisions may have both positive and negative implications regarding labor market outcomes. On one hand, labor market prospects may improve because individuals may share information about job opportunities with other network members more effectively. On the other hand, living in an enclave may reduce the incentives to acquire certain required skills (for example, the development of language skills) to become fully integrated into the host's labor market.

Early work by Per-Anders Edin and Olof Aslund of Uppsala

University and Peter Fredriksson of Stockholm University examined which of these two effects tends to dominate. In a 2003 article in the *Quarterly Journal of Economics*, they looked at the extent to which ethnic concentration in a city affects earnings of refugees from the same country of origin residing in those areas. They used data from a refugee settlement program implemented in Sweden between 1985 and 1991. The conclusions of their analysis suggested that as the size of the ethnic concentration rises, earnings increase as well. In fact, they showed that earnings increase more for low-skill individuals.

Yet their results indicated that the effect on earnings actually depends on the "quality" of the enclave: Individuals who belong to an ethnic group with higher earnings or higher self-employment rates have a higher return from residing in the enclave. Those who belong to enclaves that have a lower than average level of earnings may actually experience a negative impact on earnings.

More recent work by Anna Damm of Aarhus University investigated a similar issue using data on a refugee resettlement program in Denmark. Her main objective was to examine whether residing in a deprived neighborhood negatively affects labor market outcomes for refugees. In a 2014 article in the *Journal of Urban Economics*, she found that after accounting for residence sorting, such an effect is nonexistent. Her work concluded, along the same line as Edin, Fredriksson, and Aslund, that the quality of the network, rather than its size, is more important for explaining individuals' labor market outcomes. In fact, the probability that a newly arrived refugee finds a job improves as the employment rate among co-nationals who reside in close proximity is higher.

Lori Beaman of Northwestern University provides an alternative view in which the effects of a larger network might depend on the specific structure and composition of the network. Beaman developed a model that captures how information is transmitted through the network. She used data from refugee programs administered by the International Rescue Committee that assigned refugees across various cities in the United States during the period 2001-2005. When examining the labor outcomes for recently arrived refugees, she found that their labor market outcomes (described mostly by the probability of employment and the level of wages) tended to be worse when the number of network members resettled in the same year or one year prior is larger.

Beaman found, however, that the outcomes are better for newly arrived refugees when they interact and participate in networks with a larger number of members with longer tenure in the United States. One possible interpretation of this result is that newly arrived refugees compete for the same type of jobs with other refugees that have recently relocated into the United States. As a result, this latter group might not find it beneficial to share and transmit information to the newly arrived refugees about job opportunities through the network. On the other hand, more tenured members, typically members who already have an established job, would feel less threatened by the arrival of new refugees, and they would behave more cooperatively.

Neighborhood Effects on Education and Criminal Behavior

Other work focuses on different aspects of neighborhood effects, such as their impact on education outcomes and the likelihood of engaging in criminal activities. In a paper published in the *American Economic Journal: Applied Economics* in 2011, Aslund, Edin, Fredriksson, and Hans Gronqvist found that the “quality” of the network connections helps to explain the education performance of refugees, in line with the conclusions of their previous research that focused on labor market outcomes. Specifically, their work showed that education outcomes, measured by students’ school grades, improve when the proportion of highly educated peers in the same local ethnic group is higher. They also showed that the positive effects are more important for those kids who arrived in the neighborhood when they were younger (less than 7 years old).

Research by Anna Damm and Christian Dustmann of University College London studied the connection between the level of crime at the neighborhood level and the probability of individuals later engaging in criminal

activities. They concluded, using data from the refugee settlement program implemented in Denmark, that the exposure to neighborhood crime during childhood influences the criminal behavior of individuals as adults. More precisely, they found that as the percentage of convicted criminals residing in a neighborhood rises, it becomes more likely for male refugees assigned to that neighborhood to engage in crime later in life. This effect is not observed for females, though.

Effect of Refugee Dispersal Policies on Earnings

Some countries, such as the United Kingdom, Germany, and Sweden, follow strict settlement policies that restrict the locations where newly arrived refugees can reside. One of the main goals of those policies is to reduce the concentration of refugees in a small number of densely populated cities. This objective is presumably based on the idea that higher concentrations of refugees in an area may reduce the level of integration and assimilation of immigrants.

Moreover, it has been claimed that refugees tend to impose, at least initially, a heavy fiscal burden on recipient cities. A discussion paper from the Brookings Institution prepared by Bruce Katz, Luise Noring, and Nantke Garrelts reviewed the recent refugee experience in Europe. The report highlighted the fact that refugees often disproportionately locate in a small number of cities. Such a settlement pattern has created important local fiscal imbalances, since the cities ultimately bear the cost of educating and integrating the newly arrived refugees into their communities. Refugee dispersal policies may be viewed as a way of spreading out and sharing the fiscal burden among several localities.

A few papers that evaluate the effectiveness of refugee policies suggest, however, that dispersing refugee immigrants across cities may have a detrimental effect on refugees. Edin, Fredriksson, and Aslund, in a 2004 study, found that settling refugee immigrants away from denser areas results in an important long-run earning loss for those immigrants. The goal of dispersing refugees, they concluded, is attained at a significant cost for the refugees, hurting their ability to become self-sufficient.

Many countries are making a great effort to deal with the rising number of displaced individuals around the world. Understanding the factors that determine the long-run outcomes of refugees, including their self-sufficiency and degree of integration in the host country, is key to evaluating the effectiveness of refugee resettlement programs. The academic research reviewed above may provide some guidelines on how to design and implement these policies. **EF**

STATE DATA, Q2:16

	DC	MD	NC	SC	VA	WV
Nonfarm Employment (000s)	778.1	2,707.1	4,315.9	2,045.5	3,908.1	764.2
Q/Q Percent Change	0.4	0.6	0.3	0.6	-0.1	0.6
Y/Y Percent Change	1.5	2.0	2.1	2.6	2.0	-0.2
Manufacturing Employment (000s)	1.2	106.4	458.4	239.4	228.9	47.1
Q/Q Percent Change	0.0	-0.5	-0.4	0.9	-1.2	-1.1
Y/Y Percent Change	9.1	2.6	-0.4	1.6	-1.7	-1.2
Professional/Business Services Employment (000s)	163.9	438.3	613.0	274.8	714.0	66.2
Q/Q Percent Change	0.8	1.0	1.4	3.6	-0.6	-0.6
Y/Y Percent Change	1.3	2.2	4.8	5.6	3.0	-0.7
Government Employment (000s)	242.4	503.4	725.1	363.9	712.5	156.4
Q/Q Percent Change	1.0	0.2	0.2	0.3	0.1	2.8
Y/Y Percent Change	1.9	0.0	0.6	1.2	0.1	2.9
Civilian Labor Force (000s)	397.3	3,172.4	4,866.0	2,313.9	4,215.8	781.3
Q/Q Percent Change	1.1	0.1	0.8	1.1	-0.7	-0.6
Y/Y Percent Change	2.5	0.9	2.4	2.8	-0.2	-0.4
Unemployment Rate (%)	6.1	4.5	5.1	5.6	3.8	6.2
Q1:16	6.5	4.7	5.5	5.6	4.1	6.4
Q2:15	7.0	5.2	5.8	6.1	4.5	7.1
Real Personal Income (\$Bil)	46.3	314.0	383.6	176.2	406.7	61.6
Q/Q Percent Change	0.9	1.0	0.7	0.7	0.6	-0.1
Y/Y Percent Change	3.1	2.6	3.2	3.4	2.3	-0.6
Building Permits	1,315	5,596	15,114	8,833	8,280	779
Q/Q Percent Change	0.0	59.7	31.6	29.6	26.7	53.0
Y/Y Percent Change	0.0	14.6	6.4	-0.6	-4.5	-12.7
House Price Index (1980=100)	795.4	446.1	340.0	346.9	433.6	230.7
Q/Q Percent Change	2.1	1.2	1.7	1.5	1.7	1.7
Y/Y Percent Change	8.9	2.7	5.1	5.6	3.0	1.6

NOTES:

- 1) FRB-Richmond survey indexes are diffusion indexes representing the percentage of responding firms reporting increase minus the percentage reporting decrease. The manufacturing composite index is a weighted average of the shipments, new orders, and employment indexes.
- 2) Building permits and house prices are not seasonally adjusted; all other series are seasonally adjusted.
- 3) Manufacturing employment for DC is not seasonally adjusted

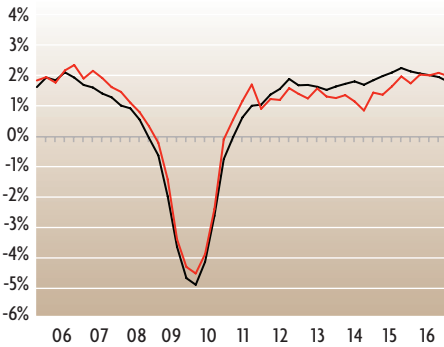
SOURCES:

Real Personal Income: Bureau of Economic Analysis/Haver Analytics.
 Unemployment Rate: LAUS Program, Bureau of Labor Statistics, U.S. Department of Labor/Haver Analytics
 Employment: CES Survey, Bureau of Labor Statistics, U.S. Department of Labor/Haver Analytics
 Building Permits: U.S. Census Bureau/Haver Analytics
 House Prices: Federal Housing Finance Agency/Haver Analytics

For more information, contact Michael Stanley at (804) 697-8437 or e-mail michael.stanley@rich.frb.org

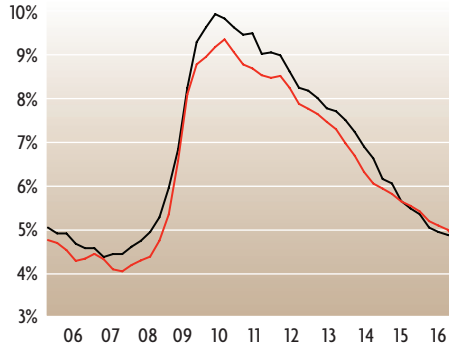
Nonfarm Employment

Change From Prior Year
Second Quarter 2005 - Second Quarter 2016



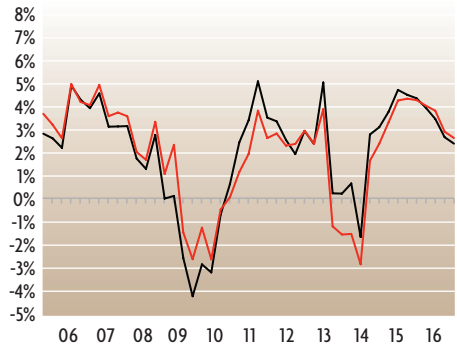
Unemployment Rate

Second Quarter 2005 - Second Quarter 2016



Real Personal Income

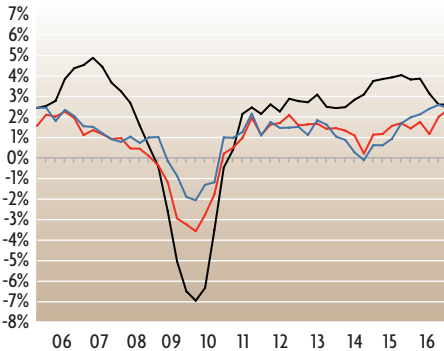
Change From Prior Year
Second Quarter 2005 - Second Quarter 2016



— Fifth District — United States

Nonfarm Employment Major Metro Areas

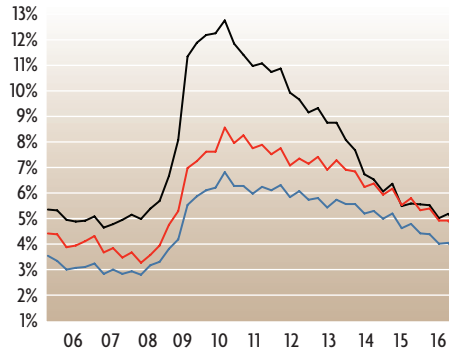
Change From Prior Year
Second Quarter 2005 - Second Quarter 2016



— Charlotte — Baltimore — Washington

Unemployment Rate Major Metro Areas

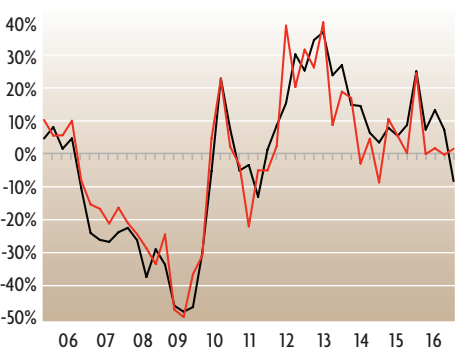
Second Quarter 2005 - Second Quarter 2016



— Charlotte — Baltimore — Washington

Building Permits

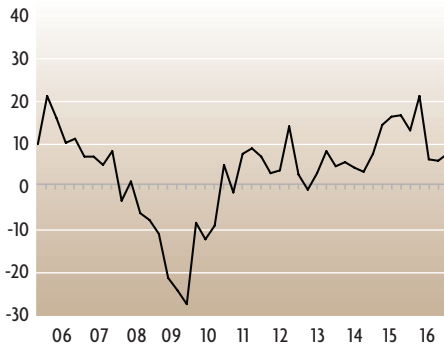
Change From Prior Year
Second Quarter 2005 - Second Quarter 2016



— Fifth District — United States

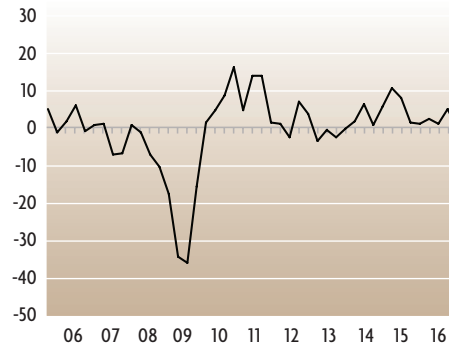
FRB—Richmond Services Revenues Index

Second Quarter 2005 - Second Quarter 2016



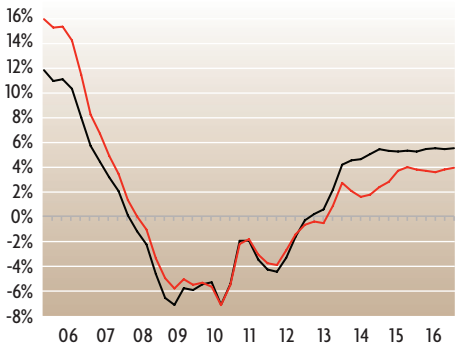
FRB—Richmond Manufacturing Composite Index

Second Quarter 2005 - Second Quarter 2016



House Prices

Change From Prior Year
Second Quarter 2005 - Second Quarter 2016



— Fifth District — United States

METROPOLITAN AREA DATA, Q2:16

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
Nonfarm Employment (000s)	2,653.5	1,402.2	106.1
Q/Q Percent Change	2.0	3.0	3.5
Y/Y Percent Change	2.4	2.3	0.9
Unemployment Rate (%)	3.7	4.6	4.5
Q1:16	4.0	4.8	4.8
Q2:15	4.5	5.5	5.7
Building Permits	7,742	2,087	253
Q/Q Percent Change	51.0	52.6	27.8
Y/Y Percent Change	7.9	-13.5	-18.1

	Asheville, NC	Charlotte, NC	Durham, NC
Nonfarm Employment (000s)	185.8	1,134.0	301.2
Q/Q Percent Change	1.7	1.9	1.3
Y/Y Percent Change	1.6	2.6	1.7
Unemployment Rate (%)	4.0	4.8	4.5
Q1:16	4.3	5.1	4.9
Q2:15	4.8	5.6	5.1
Building Permits	608	4,458	1,045
Q/Q Percent Change	37.9	9.7	-22.5
Y/Y Percent Change	-3.0	-10.8	37.9

	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
Nonfarm Employment (000s)	361.0	598.5	121.5
Q/Q Percent Change	1.3	1.5	3.5
Y/Y Percent Change	1.3	3.2	0.9
Unemployment Rate (%)	5.1	4.3	4.8
Q1:16	5.6	4.6	5.3
Q2:15	6.1	4.9	5.6
Building Permits	1,017	4,201	509
Q/Q Percent Change	79.4	99.9	28.5
Y/Y Percent Change	80.0	17.4	57.1

NOTE:
Nonfarm employment and building permits are not seasonally adjusted. Unemployment rates are seasonally adjusted.

	Winston-Salem, NC	Charleston, SC	Columbia, SC
Nonfarm Employment (000s)	259.9	342.4	393.1
Q/Q Percent Change	0.8	2.3	1.1
Y/Y Percent Change	0.7	2.4	2.6
Unemployment Rate (%)	4.8	4.7	5.0
Q1:16	5.2	4.8	5.1
Q2:15	5.6	5.3	5.6
Building Permits	635	2,013	1,232
Q/Q Percent Change	130.1	36.7	26.4
Y/Y Percent Change	18.0	16.4	-13.6
	Greenville, SC	Richmond, VA	Roanoke, VA
Nonfarm Employment (000s)	409.2	672.4	163.1
Q/Q Percent Change	1.5	1.3	1.0
Y/Y Percent Change	2.2	3.7	1.3
Unemployment Rate (%)	4.8	3.8	3.6
Q1:16	4.9	4.1	3.9
Q2:15	5.5	4.8	4.6
Building Permits	1,448	1,403	N/A
Q/Q Percent Change	40.2	31.1	N/A
Y/Y Percent Change	-6.2	1.7	N/A
	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
Nonfarm Employment (000s)	773.2	123.0	142.4
Q/Q Percent Change	2.3	2.0	2.3
Y/Y Percent Change	0.6	-0.7	0.9
Unemployment Rate (%)	4.4	5.7	6.1
Q1:16	4.6	6.4	6.7
Q2:15	5.1	6.8	6.5
Building Permits	1,907	61	45
Q/Q Percent Change	26.6	27.1	0.0
Y/Y Percent Change	3.6	-12.9	-44.4

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Immigration and the Economy

BY JOHN A. WEINBERG

In 1854, an editorial in the *Philadelphia Sun* worried that “the enormous influx of foreigners will in the end prove ruinous to American workingmen, by reducing the wages of labor to a standard that will drive them from the farms and workshops altogether.” Similar arguments have been heard throughout the United States’ history, and are heard today. Concern about the effect of immigration on native citizens’ wages and employment, as well as the potential burden on public services, is understandable. But the extensive economic literature on the subject suggests these concerns may be overstated, and that immigration on net has positive economic effects.

It’s true that the share of the population born outside the United States has increased significantly in the past half century, from less than 5 percent in 1970 to about 13 percent today, including those who immigrate both legally and illegally. (The peak was nearly 15 percent in 1890.) There’s also been a shift in immigrants’ country of origin since national quotas were eliminated in 1965: In 1960, 84 percent of immigrants were from Europe or Canada. Today, more than three-quarters of immigrants are from Southeast Asia or Latin America — 28 percent from Mexico alone.

Still, the number of unauthorized immigrants from Mexico fell by more than a million after the 2007 peak of 6.9 million, according to estimates based on Census data. That contributed to a drop in the total number of unauthorized immigrants from all countries, from 12.2 million in 2007 to 11.3 million in 2009. At least through 2014, the most recent year for which data are available, the unauthorized immigrant population was relatively flat, while the number of authorized immigrants continued to increase.

How do unauthorized immigrants affect net spending on public services? Looking at a large number of studies, the answer appears to be not much. It’s estimated that between 50 percent and 75 percent of unauthorized immigrants pay income taxes using either an Individual Tax Identification Number or a false Social Security number. They also pay property taxes; about one-third are homeowners, while others pay indirectly through rent. Combined with sales taxes, these payments help to offset federal, state, and local expenditures. And when immigrants’ descendants are included in the analysis, the net fiscal impact may actually be positive. Researchers also have found that immigrants pay more into Social Security and Medicare than they receive in benefits, which may be especially important as the U.S. population continues to age.

Unauthorized immigrants, who generally lack health insurance, do impose costs on hospitals, which are obligated to treat all emergency room visitors. But this arguably points to broader flaws in our health care system, rather than to an immigration problem per se.

While many people think of immigrants working in less-skilled jobs, in fact, U.S. immigrants are over-represented at both ends of the skill distribution. About one-third of STEM workers with a Ph.D. are foreign born, as are about 40 percent of workers without a high school diploma. And while there is a great deal of concern that immigrants — less-skilled immigrants in particular — take jobs away from natives, much empirical work shows that immigrants have little effect on native employment. Immigrants, especially those with less education, are more likely to compete with other immigrants than with natives of the same skill level.

The effect on natives’ wages also is small and in some cases slightly positive. This might seem counterintuitive — basic supply and demand would suggest that wages go down when there are more workers. But natives’ wages can increase to the extent that less- and more-skilled jobs are complements. For example, an increase in the supply of construction workers increases the relative demand for construction managers, and over time, natives tend to move into these higher-skill jobs. In addition, immigrants are consumers as well as workers, which can raise the local demand for labor.

Immigrants also increase the supply of, and lower the prices for, some services, which boosts the real income of natives. And those working in higher-skilled occupations contribute to long-run productivity gains and increased innovation; immigrants patent at about twice the rate of natives and may have positive spillovers on natives’ innovation. And more generally, faster population growth, whatever the source, tends to be associated with faster productivity growth over time. In addition, the aging population means that the growth rate of the labor force is slowing, and the working-age population is declining as a share of the total population, which contributes to slower per capita GDP growth. More working-age immigrants could help counteract this.

Of course, in the short run, there can be negative effects on some native workers. But labor market disruptions due to immigration are for the most part modest relative to the disruptions that regularly occur in dynamic markets. And like other disruptions, such as technological change, immigration also brings long-term economic benefits. These benefits to the host country — not to mention the benefits to the immigrants themselves — suggest that the most efficient way to address the distributional effects of immigration is not with barriers but rather with workforce development policies that help both current and future generations build up their own human capital and expand their labor market opportunities. **EF**

John A. Weinberg is senior vice president and special advisor to the president at the Federal Reserve Bank of Richmond.

NEXT ISSUE

After the Foreclosures

Millions of people lost their homes between 2007 and 2014. Damage to a consumer's credit takes seven years to clear — so the homeowners caught up in foreclosures during the worst of the mortgage crisis now have the damage to their credit behind them. Observers expected a wave of "boomerang buyers" at this point, but homeowners affected by the crisis have been slow to return to the housing market.

Self-Driving Trucks

Self-driving cars are getting the attention now, but self-driving trucks are also on the way. What does this mean for labor markets? Truck driving is perhaps the largest occupation in which non-college-educated workers can attain middle-class earnings. According to Bureau of Labor Statistics estimates, some 1.8 million Americans make their living as heavy and tractor-trailer truck drivers.

Small Colleges

Small private colleges are under increasing strain as more students opt for an urban learning environment — especially where job opportunities are more plentiful. For instance, Sweet Briar College recently teetered on the verge of closure until its alumnae launched a successful financial rescue effort. Observers are asking whether small colleges continue to make economic sense. In the Fifth District, several schools are trying to buck the trend by re-inventing their mission and their business model.

Economic History

"A child lives in a lead world," wrote a physician in 1924. Although that lead world was known to be highly toxic by the early 1900s, it would be nearly eight decades before the United States banned consumer uses of lead paint. Throughout lead paint's history, children of lower socioeconomic status have been at greater risk of poisoning.

District Digest

Business creation has been subdued recently, with new startup activity remaining well below pre-recession levels. Within the Fifth District, which regions and sectors have seen the greatest dampening in startup activity, and what are the underlying factors that may be bringing down new business formation?

Interview

Janet Currie of Princeton University on access to health care and safety net programs, the economic and health effects of pollution, and how prenatal exposures and socioeconomic differences affect child and adult health.

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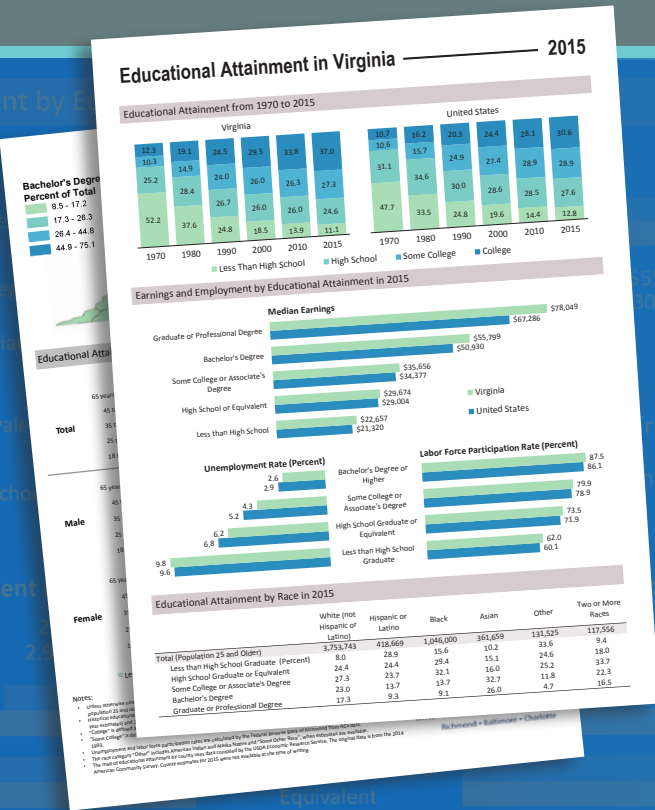
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NEW

Regional Report on Educational Attainment



Each year, the Census Bureau interviews more than 2 million people for the American Community Survey. This survey collects data on demographics, employment, education, and other personal characteristics from the nation's population. A new report from the Richmond Fed uses this information to look at earnings, unemployment, and labor force participation by educational attainment throughout the Fifth District, with breakdowns across race, sex, age, and geographic area.

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