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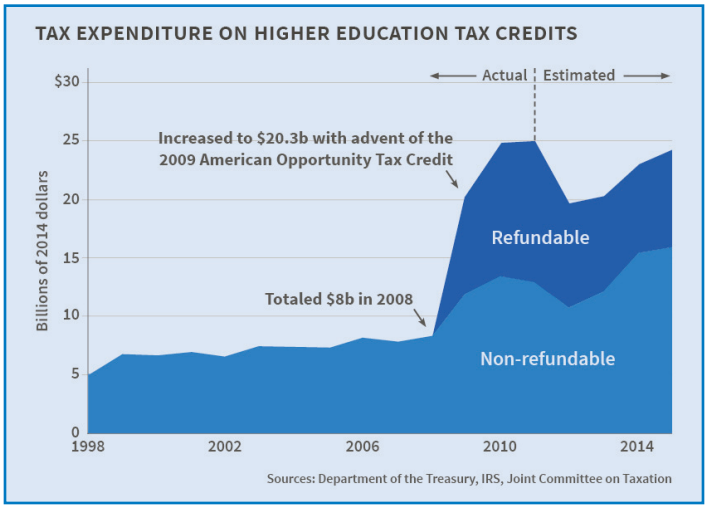
Who Benefits from Federal Tax Credits for Higher Education?

In 2014, the federal government spent about $23 billion on three programs offering tax credits to households paying for higher education. In **The Returns to the Federal Tax Credits for Higher Education** (NBER Working Paper No. 20833), George B. Bulman and Caroline M. Hoxby find that the credits have little or no effect on college-going in the U.S. The credits do not affect whether students enroll at all, whether they attend four-year colleges, how expensive their colleges are, or the scholarships and grants they receive. The authors conclude that the tax credits are primarily "a transfer from some individuals to others."

Researchers find that tax credits for higher education have little or no effect on college attendance; the credits are essentially transfer payments — and not primarily to the needy.

Tax credits for higher education began in 1997 with the Hope Tax Credit and the Tax Credit for Lifetime Learning. In 2009, the American Opportunity Tax Credit (AOTC) greatly expanded both the generosity of the credits and the number of eligible households.

The maximum AOTC is $2,500 per student for each of the first four years of postsecondary education. For each student, the household receives $2,000 for the first $2,000 spent and 25 percent of the next $2,000 spent. Because the AOTC is partially refundable, even a taxpayer who owes no taxes can receive up to $1,000 per student.



Before the AOTC, the tax credits for higher education mainly benefited middle-income households whose incomes were below $120,000 for married joint filers but whose children had a high probability of attending college for which their families paid. The AOTC raised the income threshold (to $180,000 for married joint filers) so that, now, the credits benefit upper-income households as well. Despite the fact that the AOTC is refundable, few of its benefits flow to low-income households because their children are less likely to attend college and, if they do attend, their families are less likely to pay. Instead, Pell and other grants cover much of their college cost.

The authors compare households whose incomes place them just below or above the income eligibility thresholds. Such households differ in eligibility but are otherwise extremely similar. The authors cannot detect any greater college-going among those who are eligible. The authors also investigate whether college-going increased after the introduction of the AOTC among households newly made

eligible for credits. It did not.

The credits are often justified as "paying for themselves" under the notion that they raise educational attainment and consequent earnings. The evidence does not support this justification.

The way the credits work may explain why they do not affect college-going. The authors point out that a family has to pay tuition an average of 9 to 10 months before receiving the credits. A family that struggles to afford college in the first place may thus be unable to benefit from the credits.

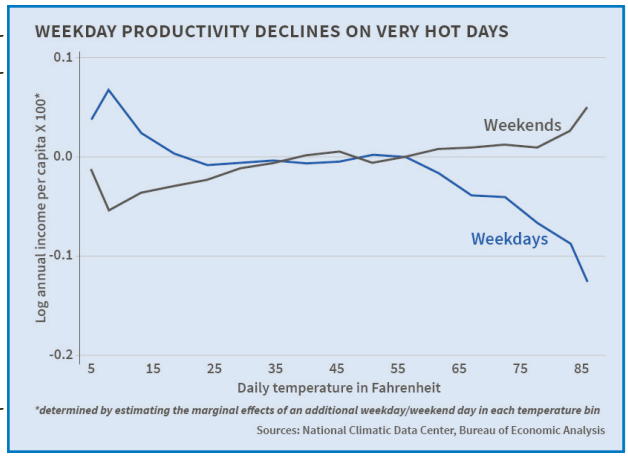
—Linda Gorman

Exploring How Climate Change Affects Conflict and Productivity

Higher temperatures and greater rainfall, both potential consequences of climate change, are linked to increased conflict and declining productivity in two recent NBER studies. Temperature has the greater impact, but rainfall variation also plays a role.

Rising temperature and rainfall are associated with lower productivity and increased conflict, according to recent research.

The poorest countries usually are believed to be most affected by long-term climate change because they have few resources to adapt to changes. But the United States cannot fully escape the economic effects of changes in temperature, according to **Does the Environment Still Matter? Daily Temperature and Income in the United States** (NBER Working Paper No. 20750). Looking at daily temperature changes in U.S. counties over 40 years, the researchers estimate that productivity per individual workday declines 1.7 percent for each 1 degree C (1.8 degrees F) rise in temperature above 15 degrees C (59 degrees F). A weekday above 30 degrees C (86 degrees F) costs a county an average of $20 per person in lost income. Hot weekends have no such effect.



It seems likely that "temperature matters because it reduces the productivity of the economy's basic elements, such as workers and crops," write authors **Tatyana Deryugina** and **Solomon M. Hsiang**. Various forms of adaptation might mitigate effects, but only to an apparently modest degree. Farmers can grow new crops. Homeowners can buy air conditioners. But the study finds that the fall in U.S. income on days above 15 degrees C was largely unchanged between 1969 and 2011. The biggest drop was in farm income. Of the $14.78 in lost per capita income during a warm day (24–27 degrees C) in an average county, all but $3.03 came from lost farm income. This lack of adaptability suggests decreases in income growth if the globe continues to warm.

Using a "business as usual" projection under which policies do not slow climate change, they estimate that warming temperatures could lower U.S. income growth by 0.06 to 0.16 percentage points annually.

Climate change may also increase the risk of conflict, according to **Climate and Conflict** (NBER Working Paper No. 20598), which surveys 55 econometric studies of the connections between climate and conflict. By synthesizing the results of the prior research, this study concludes that there are statistically significant linkages between climate and conflict.

Again, temperature is the major driver. For every standard deviation rise in temperature, the frequency of interpersonal conflict increases by 2.4 percent, the study finds. Interpersonal conflict includes domestic violence, road rage, assault, murder, and rape. Intergroup conflict such as riots, ethnic violence, land invasions, gang violence, civil war, and other political instability goes up even more: an average 11.3 percent for each standard deviation rise in temperature.

Some studies find that cooling in temperate locations during historical cold epochs can also increase conflict. Thus, the effects of temperature may be U-shaped, with deviations in either direction increasing the likelihood of conflict. Extreme rainfall also plays a role in boosting intergroup conflict.

A key question is whether climate causes violence directly or not. Many analysts argue that temperature affects economic outcomes, and that they in turn affect violence. Survey authors **Marshall**

Burke, Hsiang, and Edward Miguel put it this way: "Climatic conditions never cause conflict alone, but changes in climate can alter the conditions under which certain social interactions occur and thus have the potential to change the likelihood that conflict results. The situation is similar to the rise in car accident rates during rainy days. Car accidents themselves are almost always due to some form of driver or mechanical error; however, heavy rainfall may increase the probability of a critical error or the risk that a small error has cascading effects that in turn generate a crash."

"... future anthropogenic climate change could worsen conflict outcomes across the globe in comparison to a future with no climatic changes, given the large expected increase in global surface temperatures and the likely increase in the variability of precipitation across many regions over coming decades," the survey's authors conclude.

— Laurent Belsie

Secular Stagnation: The Long View

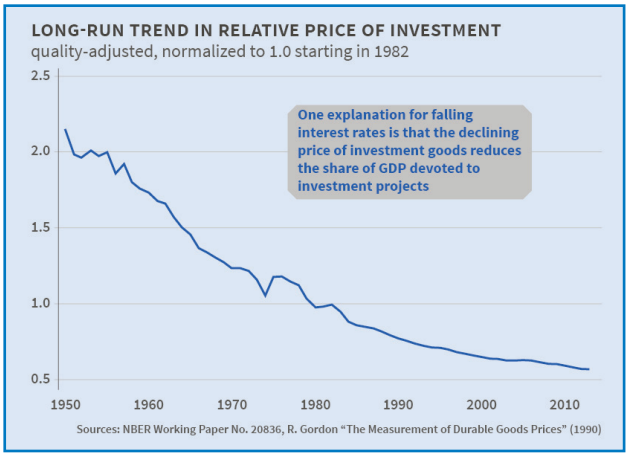
Growth economists are divided on whether the U.S. is facing a period of "secular stagnation" — an extended period of slow economic growth in the coming decades. In **Secular Stagnation: The Long View** (NBER Working Paper No. 20836), Barry Eichengreen considers four factors that could contribute to a persistent period of below-potential output and slow growth: a rise in saving due to the global integration of emerging markets, a decline in the rate of population growth, an absence of attractive investment opportunities, and a drop in the relative price of investment goods. He concludes that a decline in the relative price of investment goods is the most likely contributor to an excess of saving over investment.

With regard to long-term future growth rates, a key point of debate is how to interpret, and project forward, the "Third Industrial Revolution": the computer age and the new economy it has created. Some argue that the economic impact of digital technology has largely run its course, while others maintain that we have yet to experience the full effect of computerization. In this context, Eichengreen looks at the economic consequences of the age of steam and of the age of electrification. His analysis identifies two dimensions of the economic impact: "range of applicability" and "range of adaptation."

Range of applicability refers to the number of sectors or activities to which the key innovations can be applied. Use of the steam engine of the first industrial revolution for many years was limited to the textile industry and railways, which accounted for only a relatively small fraction of economic activity. Electrification in the second industrial revolution, says Eichengreen, had a larger impact on output and productivity growth because it affected a host of manufacturing industries, many individual households, and a wide range of activities within decades of its development.

The "computer revolution" of the second half of the 20th century had a relatively limited impact on overall economic growth, Eichengreen writes, because computerization had deeply transformative effects on only a limited set of industries, including finance, wholesale and retail trade, and the production of computers themselves. This perspective suggests that the implications for output and productivity of the next wave of innovations will depend greatly on their range of applicability. Innovations such as new tools (quantum computers), materials (graphene), processes (genetic modification), robotics, and enhanced interactivity of digital devices all promise a broad range of applications.

> The greater the changes required by new technologies, the author reasons, the more growth may slow in the short run, but once adaptation occurs growth should accelerate.



Range of adaptation refers to how comprehensively economic activity must be reorganized before positive impacts on output and productivity occur. Eichengreen reasons that the greater the required range of adaptation, the higher the likelihood that growth may slow in the short run, as costly investments in adaptation must be made and existing technology must be disrupted.

Yet the slow productivity growth in the United States in recent years may have

positive implications for the future, he writes. Many connected activities and sectors — health care, education, industrial research, and finance — are being disrupted by the latest technologies. But once a broad range of adaptations is complete, productivity growth should accelerate, he reasons. "This is not a prediction," Eichengreen concludes, "but a suggestion to look to the range of adaptation required in response to the current wave of innovations when seeking to interpret our slow rate of productivity growth and when pondering our future."

— Matt Nesvisky

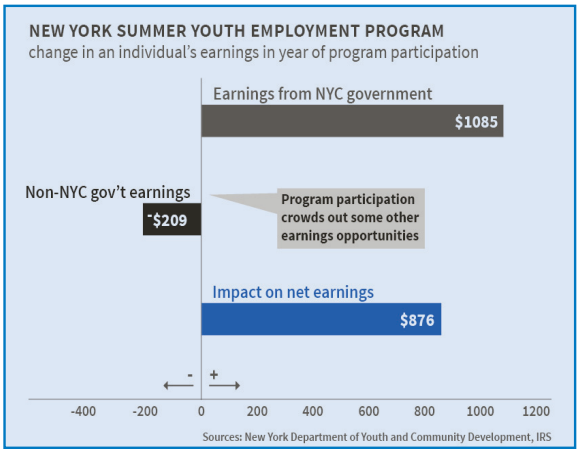
Effects of a Summer Youth Employment Program in NYC

Throughout the United States, public employment and subsidized employment programs attempt to support individuals' labor market prospects. In many cases, these programs focus on encouraging youth employment, and summer youth employment in particular.

Three primary justifications are offered for such programs. One is to provide income support to youth and their families through wages earned in the program. Another is to foster summer work experience that could improve future employment outcomes, particularly for disadvantaged youth who would otherwise have low summer employment rates, or improve educational outcomes. Some feel such opportunities might also help to keep program youth involved in socially productive activities and out of trouble, potentially improving outcomes like incarceration and mortality rates.

In **The Effects of Youth Employment: Evidence from New York City Summer Youth Employment Program Lotteries** (NBER Working Paper No. 20810), Alexander Gelber, Adam Isen, and Judd B. Kessler investigate the effects of summer employment by studying the Summer Youth Employment Program, which is administered by the New York City Department of Youth and Community Development. This is the largest youth employment program in the country. The authors merged youth program administrative data on 294,580 job lottery participants from the period 2005 through 2008 with IRS data on the universe of U.S. tax records, to New York State administrative incarceration data, and to administrative cause of death records from New York City.

> Participation decreases the probability of incarceration and mortality, which has important implications for analyzing the net benefits of the program.



The investigators find that youth program participation results in increases in average earnings and in the probability of employment in the year of program participation. Per person earnings average $1085 during the year of participation. There is modest contemporaneous crowd-out of earnings from jobs that are not associated with the program — an earnings decline of $209. Those who won the lottery had a 71 percentage point greater probability of employment than those who did not. Participation causes a moderate decrease in average earnings for three years following the program and has no impact on college enrollment. Participation also decreases the probability both of incarceration and mortality, outcomes that have important implications for analyzing the program's net benefits. The decline in the probability of incarceration is 0.1 percentage points — about a 10 percent reduction relative to the baseline incarceration rate. The decline in the probability of mortality is 0.08 percentage points — about a 20 percent reduction relative to the baseline mortality rate. Under standard cost-benefit analysis, the benefits from the reduction in mortality are very large — certainly at least of the same order of magnitude as the combined costs of the program.

The authors point out that as more years of data from youth program participation accumulate, it will become possible to investigate longer-term impacts of the program on cause of death and arrest experience. They also suggest that it would be of interest to use a randomized design to investigate whether the type of job into which an individual is placed has an effect on subsequent earnings and on career trajectories.

— Les Picker

Glass Ceiling, Paper Floor: Gender Differences Among Top Earners, 1981–2012

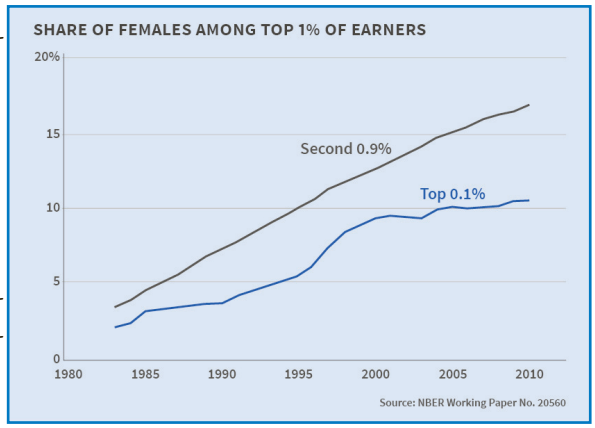
Individuals in the top 1 percent of the income distribution in the United States earn 15 percent of all pre-tax income and pay 40 percent of all individual income taxes. In **The Glass Ceiling and the Paper Floor: Gender Differences Among Top Earners, 1981–2012** (NBER Working Paper No. 20560), **Fatih Guvenen**, **Greg Kaplan**, and **Jae Song** explore how the gender composition of this group has changed over the last three decades.

While the share of top earners who are women has been small throughout the period being studied, the authors find that over time women have become better represented in the top earnings group. Once in this group, women have a much greater chance of staying there today than 30 years ago. This suggests that women are shoring up what the authors describe as the "paper floor" through which a substantial number of top earning women used to slip back into lower-earning brackets.

When earners were ranked by their average earnings over the 1981–85 period, women made up 1.9 percent of the top 0.1 percent and 3.3 percent of those in the next 0.9 percent of the distribution. By comparison, when earners were ranked by their average earnings in the 2008–12 period, women represented 10.5 percent and 17 percent of those groups. In 1981–85 there were 50.6 men for every woman in the top 0.1 percent, compared to 8.5 in 2008–12. This change does not appear to be the result of rising earnings by some members of the cohorts that were in the labor force in the earlier period, but rather is attributable to a greater share of women in the top-earning ranks of younger cohorts.

The authors caution that those identified as top earners based on short-horizon measures like annual earnings may not correspond to top earners based on lifetime labor market experience. Lifetime top earners have faster earnings growth between ages 25 and 43 than other groups, and the gender gap among top earners is largest among the 30-year-olds. The authors observe that this is consistent with the hypothesis that "career interruptions for family reasons explain a substantial portion of the top earnings gender gap."

> While still small, the share of top earners who are women has increased over time, and women's chances of falling out of the top group have declined.



The data suggest that only 7 to 9 percent of the increase in the female share in the top percentiles is due to increased female labor force participation. The similarity of gender composition of groups of top earners across industries suggests that the increase in female top earner membership is an across-the-board phenomenon.

The data set for the study was a 10 percent sample of the Social Security Administration Master Earnings File from 1981 to 2012. This file contains all of the information reported by employers on employee W-2 forms each year. The authors' sample was limited to people aged 25 to 60 who had annual earnings of at least $1,885, as measured in 2012 dollars.

In 2012, an individual had to earn at least $291,000 to be in the top 1 percent and $1,018,000 to be in the top 0.1 percent. For the five-year period 2008 to 2012, average earnings of $282,000 put an individual in the top 1 percent and earnings of $918,000 put an individual in the top 0.1 percent. The 2012 sample mean and median incomes were $51,000 and $35,000, down from the five-year averages of $53,000 and $38,000. Between 1981–85 and 2008–12, five-year average earnings grew by 139 percent for the top 0.1 percent, 63 percent for the top 1 percent, and 22 percent for the remaining 99 percent.

The authors conclude that a "dramatic increase in the persistence of female top earners has been an important factor in accounting for the rise in the share of females among top earners."

The degree of persistence at the top of the earnings distribution has increased over time for both men and women. In 1981, the chance that a woman in the top 0.1 percent of the earnings distribution would drop out of the top 1 percent in the next year was 64 percent. For women in the top 1 percent but not the top 0.1 percent, the analogous probability was 74 percent. For men, the comparable probabilities were 24 and 43 percent. In 2012, by comparison, the chance that a woman who was in the top 0.1 percent in 2011 fell below the top 1 percent was only 8 percent, compared with 7 percent for men. The corresponding probabilities for men and women in the top 1 percent, but not the top 0.1 percent, were 32 percent and 26 percent, respectively.

—Linda Gorman

Measuring Consumer Valuation of Limited Provider Networks

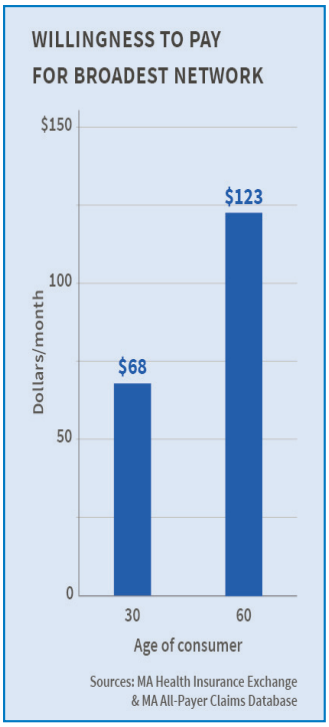
Consumers have long been known to focus on policy prices and on the ability to keep their current physicians when choosing health-care insurance plans.

In **Measuring Consumer Valuations of Limited Provider Networks** (NBER Working Paper No. 20812), **Keith Marzilli Ericson** and **Amanda Starc** find that many consumers also put a high value on having the broadest possible provider networks and that 60-year-olds are willing to spend significantly more than 30-year-olds for broad networks. Consumers also put a high premium on access to "star" hospitals when selecting plans.

Previous studies have explored the preferences of health-care insurance customers, but consumers, through their public and private employer-sponsored plans, often don't have a choice among provider networks. As a result, there's been little evidence about how much employees value different types of networks and the hospitals affiliated with them. This is particularly important today with the introduction of the 2010 Affordable Care Act's health insurance exchanges, which allow customers to pick and choose among coverage levels, prices, competing networks, and other factors. The authors note that many believe the networks can steer customers toward lower-cost providers, thereby reining in growth of health care costs.

The authors measured network values by examining data from the exchange established by Massachusetts' landmark health-care reform program, which was implemented late last decade and which served as a general model for the Affordable Care Act's own public exchanges. With data from the Massachusetts All-Payer Claims Database and the Massachusetts Health Insurance Exchange, they used two measures to determine network values: overall consumer demand for hospitals within networks and consumer choices when selecting from competing network plans with posted prices on exchanges.

Older people value having the broadest possible network more than the young do, and everyone values "star" hospitals.



The results indicated that the size and scope of hospital networks not only were predictive of consumer decisions, but also that the influence on these choices varied by age. The authors found that 60-year-olds valued the broadest network approximately $1,200 to $1,400 per year more than the narrowest network. In comparison, 30-year-olds valued the broadest network by only about half as much.

In addition, the authors explored whether consumers appeared to value the presence of a large "star" hospital in a network. They illustrate their findings with the case of the Harvard-affiliated Massachusetts General Hospital in downtown Boston. They conclude that a 30-year-old was prepared to pay $32 per month more for a plan which included that hospital. This finding is consistent with the notion that "star" hospitals have a recognizable brand and are able to command premium prices. "Star" hospitals are valued by consumers above and beyond the overall network measure, the authors found.

—Jay Fitzgerald

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