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INSIDE THIS ISSUE

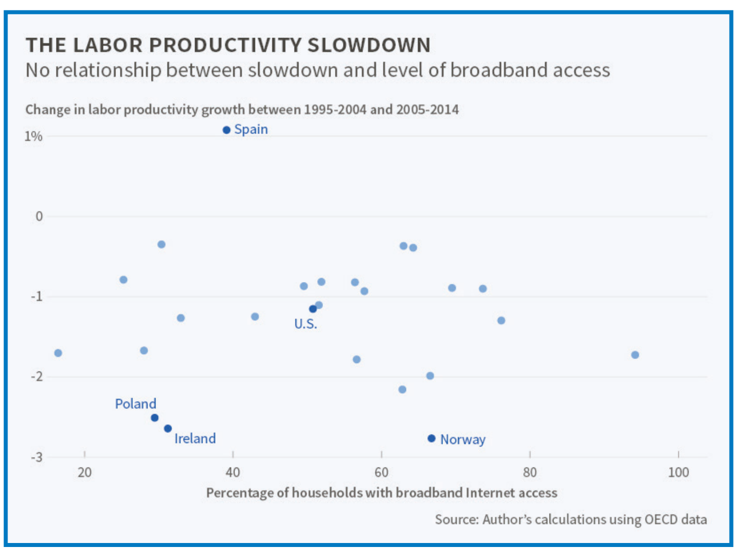
Is the U.S. Productivity Slowdown a Mirage?

Labor productivity in the United States — defined as total output divided by total hours of labor — has been increasing for over a century and continues to increase today. However, its growth rate has fallen. One explanation for this phenomenon focuses on measurement difficulties, in particular the possibility that current tools for measuring economic growth do not fully capture recent advances in the goods and services associated with digital communications technology.

In **Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown** (NBER Working Paper No. 21974), Chad Syverson considers and ultimately rejects the claim that the productivity slowdown is merely an artifact of bad measurement.

Syverson points out that there is a large gap between current estimates of output and counterfactual estimates of what output would have been in the absence of a productivity slowdown. Between 1995 and 2004, for example, labor productivity grew by 2.8 percent per year on average. During the 2005–15 period, the annual growth rate fell to 1.3 percent. Had labor productivity growth continued at its prior pace, there would have been an additional $2.7 trillion in gross domestic product in 2015 — a 15 percent increase. For mismeasurement to explain this gap, it would need to account for $2.7 trillion in unmeasured output, or approximately $21,900 per household.

Mismeasurement of the prices and quantities of digital goods and services cannot account for the decline in the growth of labor productivity.



One reason some analysts believe that labor productivity is understated is that price inflation may be overstated for digital goods and services. If this were the case, information and communications technology (ICT) industries would be growing faster in real terms than the official statistics indicate. Syverson agrees that inflation is difficult to measure for goods whose quality is rapidly improving, but argues that this hypothesis is difficult to square with the fact that — looking both across countries and across states — there is no relationship between the degree of slowdown in labor productivity and the size of an area's ICT sector.

A related way in which measured productivity growth could decelerate would be if output growth became a worse proxy for growth in economic value. This could happen if new goods and services that people value greatly were for some reason sold at low prices, or even given away, as some argue is the case for many ICT products. If consumers spend less money on digital goods but receive greater utility from them, official statistics may show sluggish growth in output even though aggregate welfare is rapidly improving. However, Syverson surveys existing research on the economic value generated by the Internet and concludes that most estimates fall short of the missing $2.7 trillion in output by at least an order of magnitude, and that even the most generous estimates leave two-thirds of the gap unexplained.

Also, Syverson reasons, if many products are being sold at unusually low prices, then measures of total income (which include the wages paid to workers who make these products) should be systematically higher than gross domestic product (which includes consumer spending on such products), even though the two metrics would be equal absent measurement issues. But while total income has been on average higher than gross domestic product lately, it was already higher before the productivity growth slowdown started. Furthermore, total income is not higher for the reason the mismeasurement hypothesis predicts. Instead of there being unusually high labor income because workers are paid to make relatively inexpensive valuable goods, the data show unusually high income from corporate profits, exactly the opposite of what would be expected if companies were systematically underpricing products relative to their true economic value.

Syverson concludes that the productivity slowdown likely reflects a real change in the rate of economic progress.

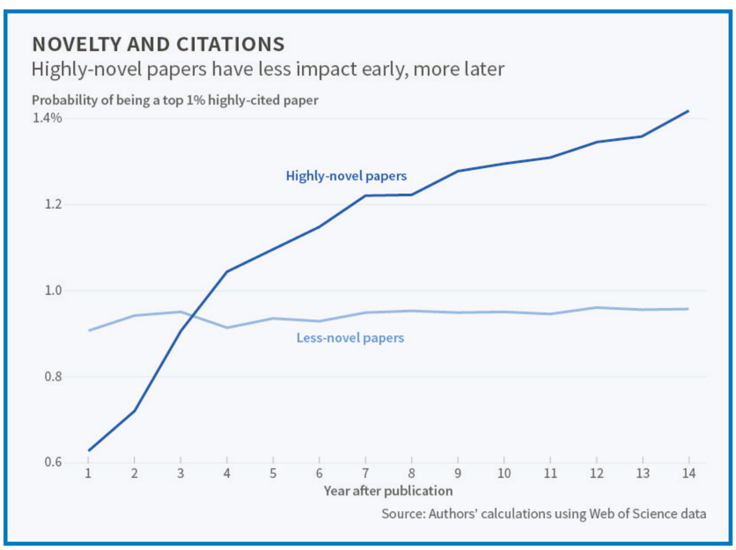
—Andrew Whitten

Bias against Novelty in Science: A Cautionary Tale

Research based on an unusual or novel approach may lead to important breakthroughs in science, but peer evaluators are often overly cautious in evaluating such work, Jian Wang, Reinhilde Veugelers, and Paula Stephan find in **Bias against Novelty in Science: A Cautionary Tale for Users of Bibliometric Indicators** (NBER Working Paper No. 22180). They argue that this excess caution represents a flaw in the traditional means of evaluating research, and that this flaw has far-reaching implications for the allocation of resources.

The researchers define novel research as being based on "the recombination of pre-existing knowledge components in an unprecedented fashion." An outstanding example of such work occurred in the 1950s when Leo Szilard applied his expertise as a nuclear physicist to the field of biology and the cloning of cells. The study finds that novel papers, which represent 11 percent of all papers, are often cited infrequently in research journals for a significant period of time. Because frequency of citation is the standard for evaluating scientific papers, this finding suggests that evaluation of research based on short time windows is biased against novel research.

> Evaluating scientific impact using short citation windows and focusing only on the most prominent journals may fail to recognize the value of novel research.



The study analyzes citation patterns involving Web of Science papers that were indexed in 2001 — some 773,311 research articles across all disciplines. It identifies papers that use new combinations of knowledge pieces, then tracks how soon, how often, and in which fields such research is cited by other publications. The researchers find that novel studies are less likely to be published in high-impact-factor journals, but eventually have a much higher chance of being in the top one percent of highly cited research, and that they are more likely to lead to important follow-up research. But it takes time for this impact to develop.

The researchers argue that classic bibliometric evaluations that focus on citation counts over a relatively short post-publication period and in the most prominent journals can lead to bias against novel research. They suggest that citation-based bias can cause funding agencies to favor "safer" projects over novel ones. Using short time windows for measuring citations and the impact factor of the publishing journal makes it more difficult to marshal support for novel research projects, even though this research is often among the most fruitful of scientific inquiries.

The researchers suggest the use of a wide portfolio of indicators and of time windows beyond the standard two or three years, when bibliometric indicators are used as part of evaluation processes.

They also find that the major impact of novel research comes largely from disciplines beyond its own field. Therefore restricting peer review to scientists solely within the discipline, they conclude, "may fail to recognize the full value of novel research."

— Matt Nesvisky

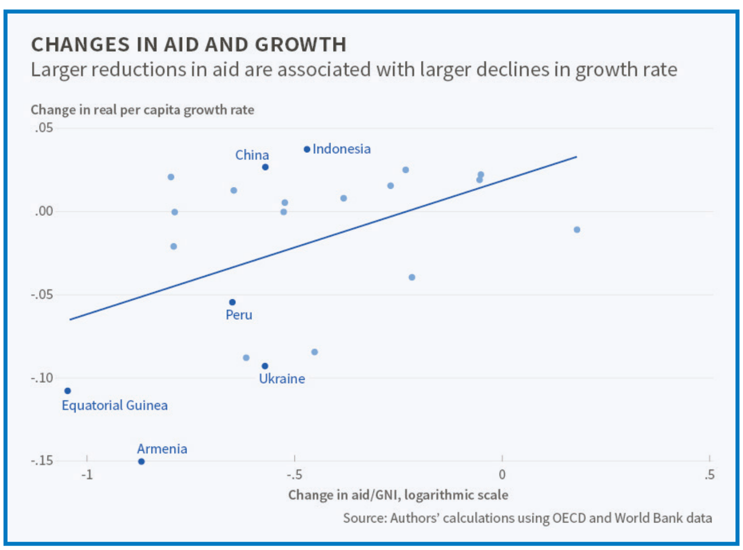
Does Foreign Aid Spur Recipient Countries' Growth?

The effect of foreign aid on growth is the subject of ongoing debate. It is difficult to determine the effect of aid on growth when aid is an integral part of an economy; there are few "experiments" in the level of foreign aid.

The drop in aid experienced by countries after they cross a pre-defined income threshold provides opportunity to identify aid's impact.

Sebastian Galiani, Stephen Knack, Lixin Colin Xu, and Ben Zou, the authors of **The Effect of Aid on Growth: Evidence from a Quasi-Experiment** (NBER Working Paper No. 22164), argue that there are points on a nation's growth trajectory at which aid inflows drop because of the rules donors use to select recipient countries. They use the substantial changes in aid around this point to evaluate how aid affects growth, and they conclude that aid has a substantial positive effect.

Since 1987, the World Bank's International Development Association (IDA) has defined income thresholds above which countries are generally deemed less needy than poor nations. Other large donors tend to follow the World Bank's lead, and they also reduce funding when nations reach the IDA income threshold. Recipient nations' foreign aid as a share of gross national income (GNI) falls an average 59 percent once they cross the threshold.



The researchers posit that if per capita gross domestic product (GDP) falls after aid is withdrawn, the decline can be used to infer the boost in GDP that the nations received while aid was still flowing in. For the 35 countries that crossed the IDA threshold between 1987 and 2010 — a group that ranges from China to Peru and India to Turkmenistan — they calculate that a one percentage point increase in the ratio of aid to GNI is associated with an increase of about 0.35 percentage points in per capita GDP. They are careful to point out that this is a short-run effect, and that longer-run effects of aid on growth are difficult to measure.

— Laurent Belsie

Labor Supply and the Old Age Assistance Program

Whether government benefits discourage labor supply by individuals 65 and older, and if so by how much, has attracted research interest since the creation of such transfer programs. In **Government Old-Age Support and Labor Supply: Evidence from the Old Age Assistance Program** (NBER Working Paper No. 22132), Daniel K. Fetter and Lee M. Lockwood provide new evidence from a large program expansion during the 1930s. They exploit newly available census data from 1940, which cover a large sample — more than 6 million men aged 55–74 — and also offer precise information on their places of residence.

Over the course of the 1930s, means-tested Old Age Assistance (OAA) was introduced nationwide for adults age 65 and over. In 1940, when Social Security was still in its infancy, 22 percent of Americans 65 and over received OAA.

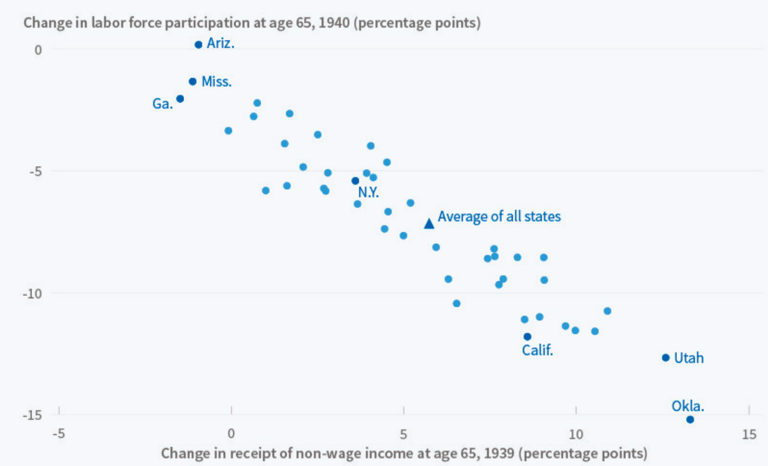
The average annual OAA benefit in 1940 was $232 ($3,615 in 2010 dollars), which amounted to about a quarter of the 1939 median earnings for men aged 60–64. However, states varied widely in their eligibility standards and benefits, with the maximum monthly payout ranging from $15 to $45. The researchers use this disparity to estimate how benefit levels influenced workforce participation.

The introduction of OAA benefits led to changes in labor supply behavior precisely at age 65, and the changes varied substantially across states. For men aged 55–64, workforce participation patterns were similar across states. This pattern broke down for those 65 and older. States with more generous OAA programs experienced larger reductions in workforce participation. The researchers estimate that OAA programs reduced the labor supply of men aged 65–74 by 5.7 percentage points, or by nearly half the 1930–40 national decline for that age range.

Old Age Assistance, a means-tested benefit program introduced during the 1930s, accounted for nearly half of that decade's decline in labor supply for men aged 65–74.

Comparison between state-specific labor force participation rates in 1930 and 1940 provides further support for the importance of OAA. In 1930, before the introduction of OAA, labor force participation for those 65 and older was similar in states that would later implement generous OAA programs and in those that would offer less assistance. Over the subsequent decade, the participation rates diverged. The researchers also compare states that offered assistance to non-citizens with those that did not. Where non-citizens were eligible for OAA benefits, their labor force participation declined; where they were not, it did not.

OLD AGE ASSISTANCE REDUCED LABOR SUPPLY IN 1940



Source: Authors' calculations using 1940 Census data

As might be expected with a means-tested program, workforce participation declined most sharply among those with limited job prospects and less education. More than 40 percent of those who went on OAA had been jobless or employed in work relief programs that targeted individuals who otherwise would have been jobless.

Extrapolating from their OAA findings, the researchers estimate that the expansion of Social Security accounted for at least half of the increase in retirements between 1940 and 1960. They conclude that "government old-age support programs can have large effects on labor supply."

— Steve Maas

The Gambler's Fallacy

A coin flip comes up heads three times in a row. What are the odds that it will be heads on the next toss?

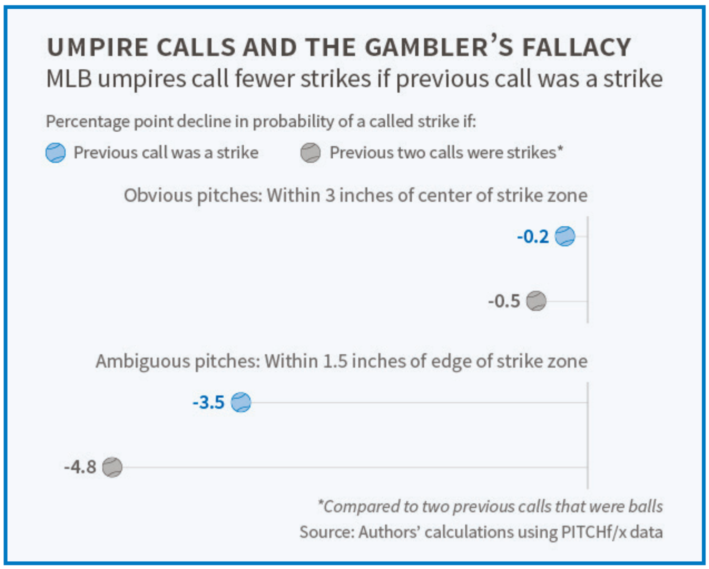
A rational decision-maker knows that they are 50-50. But it's easy to succumb to the belief that streaks don't occur by chance. This common misperception is known as the gambler's fallacy. In **Decision-Making under the Gambler's Fallacy: Evidence from Asylum Judges, Loan Officers, and Baseball Umpires** (NBER Working Paper No. 22026), Daniel Chen, Tobias J. Moskowitz, and Kelly Shue find that in a number of different settings, individuals have a slight bias against deciding the same way in successive cases. The researchers find, for example, that the odds that a judge rejects an asylum seeker are 3.3 percentage points higher if the judge has approved the previous case, all else being equal. They also note that the likelihood that judges are influenced by a prior decision increases with the length of the sequence of positive or negative rulings and the similarity of the previous cases.

The researchers also study loan officers in India. The officers were asked to review loan application files that had already been processed, and to make recommendations about whether to approve the loan. They faced different incentive schemes, which placed different degrees of emphasis on an accurate assessment. Because the files had been reviewed previously, the authors could evaluate the quality of the officers' decisions by examining the actual performance of the loan and exploring whether recommended loans on average were performing better.

A bias against deciding the same way in successive situations can affect whether a foreigner is deported, a business gets a loan, or a batter strikes out.

Under a flat incentive scheme which rewarded approvals regardless of loan quality, officers — who rejected many loans despite the incentive, perhaps out of intrinsic or reputational motivation — were eight percentage points less likely to approve the loan currently under review if they had approved the previous loan. This bias became much less significant under plans with stronger incentives for accuracy.

Turning to baseball, the researchers analyze major league umpires. They examine 1.5 million called pitches, when the batter did not swing, between 2008 and 2012. They control for a wide array of factors, such as pitch count; pitch spin and acceleration; the relative importance of the at-bat to the outcome of the game; and whether the batter was on the home team. They rely on data compiled by the PITCHf/x system, which tracks the speed and trajectories of pitches in every major league stadium.



They find that umpires were 1.5 percentage points less likely to call a strike if the previous pitch was a called strike. The bias toward an opposite call was also significantly more pronounced when the previous two calls were the same.

Do umpires use subsequent calls to make up for calls they regret? The researchers find that, if anything, umpires were less likely to make an opposite call following an incorrect call than after a correct one. They conclude that "[F]airness concerns and a desire to be equally nice to two opposing teams are unlikely to explain our results."

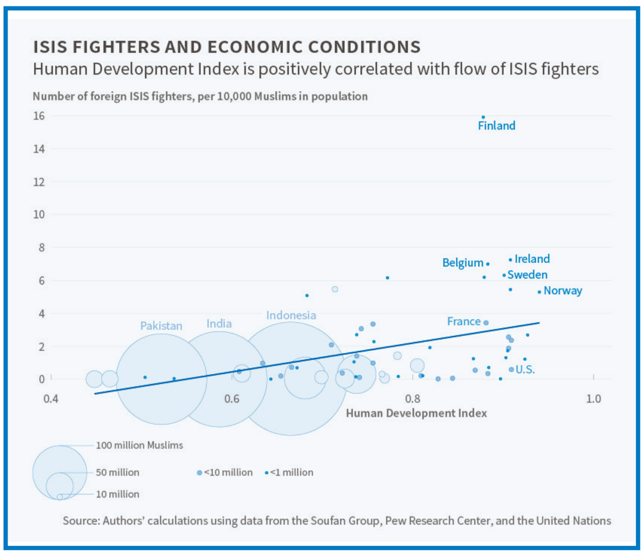
The researchers discover that the gambler's fallacy tends to be more evident following longer streaks of decisions in the same direction and when the previous cases have similar characteristics and occur closer in time. It is less evident among more experienced decision-makers.

— Steve Maas

Where Are ISIS's Foreign Fighters Coming From?

As of December 2015, approximately 30,000 fighters from at least 85 countries had joined the Islamic State of Iraq and Syria (ISIS). Although the great majority of ISIS recruits come from the Middle East and the Arab world, there are also many from Western nations, including most member-states of the European Union, as well as the United States, Canada, Australia, and New Zealand. Thousands of fighters from Russia and hundreds from Indonesia and Tajikistan also have joined. ISIS's recruitment of foreign fighters is a global phenomenon that provides the organization with the human capital needed to operate outside the Middle East.

In **What Explains the Flow of Foreign Fighters to ISIS?** (NBER Working Paper No. 22190), Efraim Benmelech and Esteban F. Klor explore how country characteristics are associated with ISIS recruit flows. They discover more about what does not motivate the foreign fighters than what does.



> Many come to the Middle East from countries with high levels of economic development, low income inequality, and highly developed political institutions.

They find that poor economic conditions do not drive participation in ISIS. Rather, the number of ISIS fighters from a given country is positively correlated with that country's per capita gross domestic product and its place on the Human Development Index. Many foreign fighters originate from countries with high levels of economic development, low income inequality, and highly developed political institutions.

Other factors that explain the number of ISIS foreign fighters are the size of a country's Muslim population and its homogeneity. A country's political characteristics are not correlated with the number of ISIS fighters it produces. Foreign recruits into terror organizations come largely from prosperous, ethnically and linguistically homogeneous countries.

Building on previous research that suggests that recruitment is driven by religious and political ideology, the researchers find that the more homogeneous the host country is, the more difficulties Muslim immigrants experience in their process of assimilation. This social isolation seems to induce radicalization, increasing the supply of potential recruits.

Although the researchers are unable to determine precisely why people join ISIS, their results suggest this difficulty of assimilation into homogeneous Western countries and ISIS's appeal to impressionable youth through its sophisticated propaganda machine and social media are major contributors.

— Les Picker

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