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# Rise of Pass-Throughs Understates Labor's Share of Income

Over the last 40 years, labor's share of corporate value-added in the US national income accounts has declined from about 63 to about 58 percent. In **The Rise of Pass-Throughs and the Decline of the Labor Share** (NBER Working Paper 29400), Matthew Smith, Danny Yagan, Owen M. Zidar, and Eric Zwick find that about a third of this decline may be the result of growth in the share of income generated by pass-through businesses in recent decades and in the way the owners of these businesses have structured their compensation.

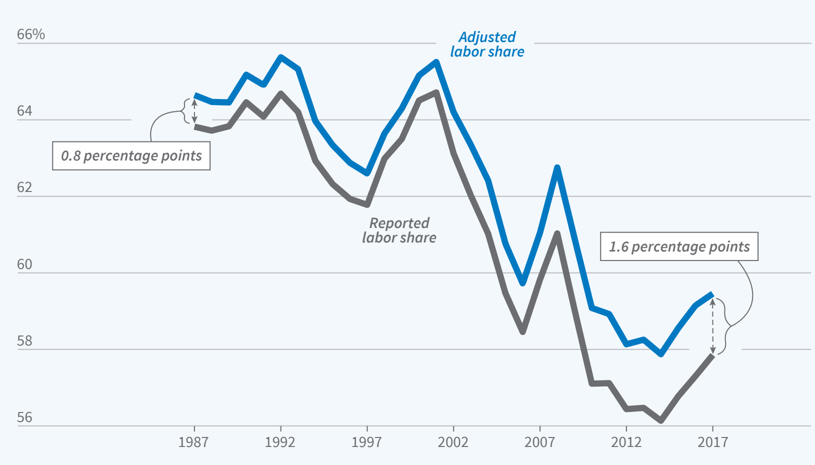
A series of tax changes that reduced personal income taxes and increased the tax burden on non-pass-through C-corporations, starting with the passage of the Tax Reform Act of 1986, increased the incentive for business owner-managers to draw more of their compensation as profits and less as wages. The response of owner-managers to this incentive affected the measured labor share in the national income accounts, but not the underlying command over resources by labor and capital owners.

C-corporations calculate profits after deducting wages, salaries, and allowable expenses. In 2017, they paid a 35 percent corporate income tax on their profits. When C-corporations distribute their profits to their owners as dividends, the profits are taxed again as dividend income. For households, investment income tax rates ranged from 15 to 23.8 percent. High-income C-corporation owner-managers could reduce their total tax burden by 7.1 percentage points by paying themselves wages, with a top federal tax rate of 43.4 percent, rather than receiving dividends, with a top tax burden of 50.5 percent inclusive of corporate and individual income taxes.

> Accounting for growth in pass-through businesses attenuates the decline in labor's share of corporate value-added by nearly a third.

In contrast to C-corporations, pass-through businesses, typically S-corporations or partnerships, do not pay corporate income taxes. Their profits pass through to owners in the year they are earned and are taxed at each owner's individual tax rate. In 2017, high-income S-corporation owners could reduce their total tax burden by 3.8 percentage points by taking their compensation as profits rather than wages. Owner-managers of partnerships receive most of their compensation as profits. These partnerships are predominately service-sector firms in law, consultancy, and financial services that require smaller amounts of capital and have higher labor shares of income than businesses

**Labor Share of Corporate Value-Added, Adjusted for Pass-Through Businesses**




*Source: Researchers' calculations using data from the Bureau of Economic Analysis and the IRS* that have retained the C-corporation form.

To estimate how the growth of the pass-through sector has contributed to the reported decline in the labor share, the researchers reclassified a portion of S-corporation value-added as labor income. The reclassification was based on data from 183,000 firms that switched from C-corporation to S-corporation status between 2000 and 2012. By merging firm-level business income tax returns with owners' W-2 wage payments, the researchers estimate that 1.2 percent of aggregate S-corporation sales should be characterized as labor payments. This change increases the 2017 corporate-sector labor share in the national income accounts by about 0.9 percentage points. Applying a similar adjustment to partnership compensation further increases the adjusted labor share. Overall, adjusting for pass-through growth raises the labor share of corporate-sector value-added by 1.6 percentage points.

The growth of the pass-through sector over time has contributed to a growing disparity between the reported labor share in the national accounts and the adjusted measure, the researchers conclude.

*—Linda Gorman*

# How Knowledge of Salary History Affects Wage Offers and Hiring

In response to claims that historical salary differences related to race, gender, or ethnicity may be perpetuated when job applicants are asked to disclose their salary histories, 21 US states have made it illegal for employers to ask prospective employees about their prior compensation. Job applicants in these states may voluntarily disclose previous earnings. Prospective employers may draw conclusions about candidates' unobserved attributes and outside options based on whether they make such disclosures.

In **Salary History and Employer Demand: Evidence from a Two-Sided Audit** (NBER Working Paper 29460) Amanda Y. Agan, Bo Cowgill, and Laura K. Gee study how information on an applicant's salary history shapes wage offers and hiring in the labor market for software engineers. They find that not disclosing salary history decreases salary offers for both men and women.

The researchers created 2,048 fictional job applications based on typical characteristics of software engineering candidates. All applicants were college graduates from roughly equivalent schools with four to six years of experience at well-known firms. Biographical details such as gender, employment at different firms, and whether applicants disclosed their previous salary even when prospective employers did not ask were randomized. The applicants were assigned previous salaries between the 75th and 25th percentile of their prior employer's salary scale for software engineers, as given at Payscale.com in the headquarter cities. A gender wage gap mimicking real-world gaps was built into the applicants by setting female salaries 15 percent lower.

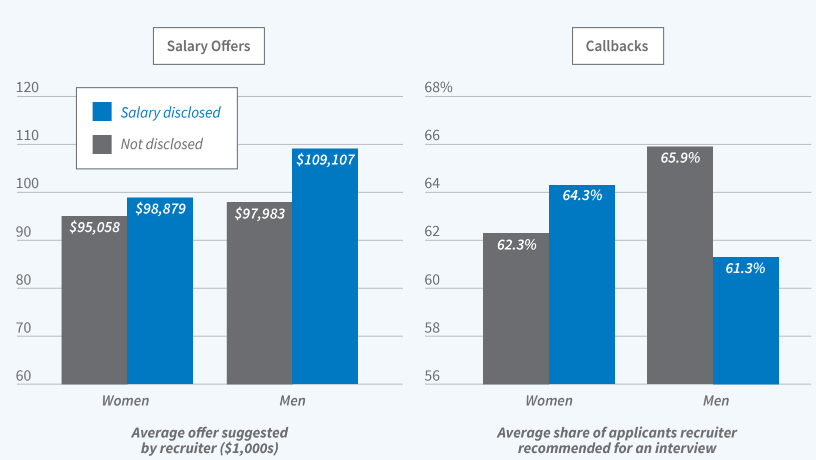
> In 21 states, employers cannot ask job candidates about their salary histories, but employers can nonetheless make inferences based on whether candidates voluntarily disclose them.

Using an intermediary firm to pose as an employer, the researchers hired 256 US-based recruiters to evaluate the job applications. Each recruiter was given eight applications and a detailed job description. They were asked to recommend whether to call a candidate for an interview, an amount for a take-it-or-leave-it salary offer, and the maximum amount that the firm should be willing to pay the applicant. They also estimated the number of competing offers a candidate would receive and the salary offer each candidate would accept. Recruiters were paid their standard hourly rate and received incentive bonuses.

Recruiters made negative inferences about nondisclosing candidates, especially male nondisclosing candidates. On average, recruiters inferred that candidates who did not disclose had salaries at or slightly below the 25th percentile. Applicants below this level were better off not disclosing their previous pay, in the sense that they received higher offers. The fictional applicants who disclosed received higher mean recommended salaries, $103,993 versus $96,521. Recruiters estimated their mean outside offers to be 9 percent higher than those for nondisclosers.

There are many ways

Salary Disclosure and Job Applicant Outcomes by Gender




Source: Researchers' calculations using data from a field experiment involving 2,048 job applications to earn a higher salary; the experiment was designed to measure whether employers notice these distinctions and treat them differently. Some of the candidates came from firms with a high average wage. Some candidates came from lower-wage firms, but were well-paid within their firm's distribution. Some candidates were simply beneficiaries of the gender wage gap.

Employers in the experiment noticed these distinctions and adjusted their beliefs and choices. An extra $1 of reported salary given to men through the gender wage gap increased recruiters' estimated value of the applicant to the firm by only $0.42. By comparison, high salaries earned by working at a high-wage firm or being well-paid within an employer's internal distribution increased recruiters' value of the worker by $0.64 to $0.70 per $1 of salary. The employers in the experiment detected overpaid men and treated them less generously than others with the same salary. However, they did not completely eliminate the gender wage gap.

The researchers conclude that employers see disclosing salary as a positive signal of candidate quality. However, salary history is also a signal of strong competing offers. A disclosure could increase chances of a callback, but decrease chances of getting a high salary offer, conditional on a callback. Candidates, employers and policymakers may thus face tradeoffs using and regulating salary history information.

*— Linda Gorman*

# Incentivizing the Farmers of the Sahel to Harvest the Rainfall

In **Harvesting the Rain: The Adoption of Environmental Technologies in the Sahel** (NBER Working Paper 29518) Jenny C. Aker and Kelsey Jack study the barriers to smallholder farmers' adoption of sustainable technologies. They focus on a technique called rainwater harvesting (RWH) that helps reduce land degradation and restore soil fertility in Niger. Overall, they find that training, which is a low-cost policy intervention, increases the share of farmers adopting the technology by over 90 percentage points. Training matters more than cash incentives for technology adoption; neither conditional nor unconditional cash transfers have any additional effect on the probability of adoption.

In the Zinder region of eastern Niger, where the study was done, the adoption of RWH is low. The researchers consider several potential explanations for this, including the considerable upfront labor investment this technology requires, limited cash-on-hand liquidity, and high discount rates.

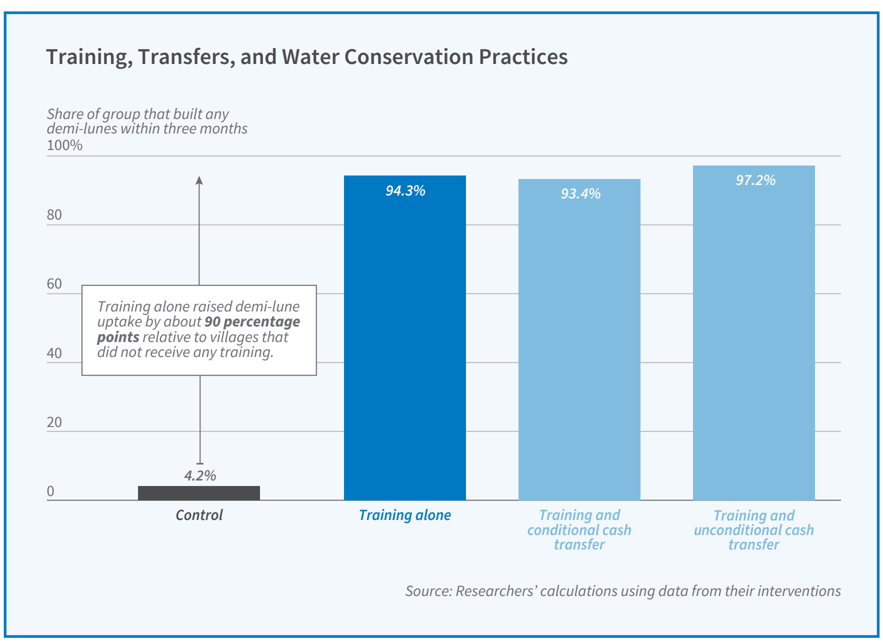
To analyze technology adoption, the researchers assigned small-scale farmers in 180 villages to one of four treatment arms or a control group, with treatments designed to relax specific barriers to technology adoption — specifically, to adoption of demi-lunes, a RWH technique in which berms are constructed in and around crops to collect rainfall and runoff. One treatment arm received only training, which included a session on the technical requirements for constructing demi-lunes. The other treatment arms received some type of cash transfer in addition to training. The treatments were administered during the first year, and the researchers collected data for three subsequent years.

> Simple training can be a cost-effective and scalable way to promote the adoption of profitable and sustainable agricultural technologies.

All four treatments significantly increased adoption in the short and medium term.

In the first year, farmers in the training arm constructed 35 more demi-lunes than did farmers in the control, and those in the other treatment arms adopted significantly more demi-lunes than farmers who received training only in the first year. But by the third year, adoption levels were indistinguishable across treatments. The researchers conclude that training alone was sufficient to explain all of the medium-term impacts on adoption.

They also find that adoption occurred through a combination of hiring labor and reallocating household labor, that the interventions had significant positive impacts on agricultural production and land use, and that there were significant adoption spillovers within villages. Farmers in treated villages were 50 percentage points more



Source: Researchers' calculations using data from their interventions likely to have a neighbor adopting demi-lunes than farmers in control villages.

There are several possible reasons why training was so effective. First, it may have made farmers aware of the existence of the technology. Second, by providing relevant technical advice, it may have increased farmers' knowledge of how to better construct demi-lunes. Third, organizing farmers into groups during the training may have facilitated social learning during and after the training. It is also possible that the training had an impact on motivation or social norms.

The findings suggest that training can be a cost-effective and scalable means of promoting the adoption of profitable and sustainable agricultural technologies.

—*Lauri Scherer*

## German Consumption-Tax Cut Boosted Spending during Pandemic

To increase aggregate demand during economic downturns, central banks have historically cut interest rates to increase consumer spending. But when nominal rates are at or near the zero lower bound, unconventional means by monetary or fiscal authorities may be needed to jump-start the economy. Cutting the value-added tax (VAT) or other sales taxes is one such option. This change in the tax on consumption can be implemented quickly and relatively easily, and unlike an increase in transfer payments, which can be saved, it is a direct inducement to greater spending.

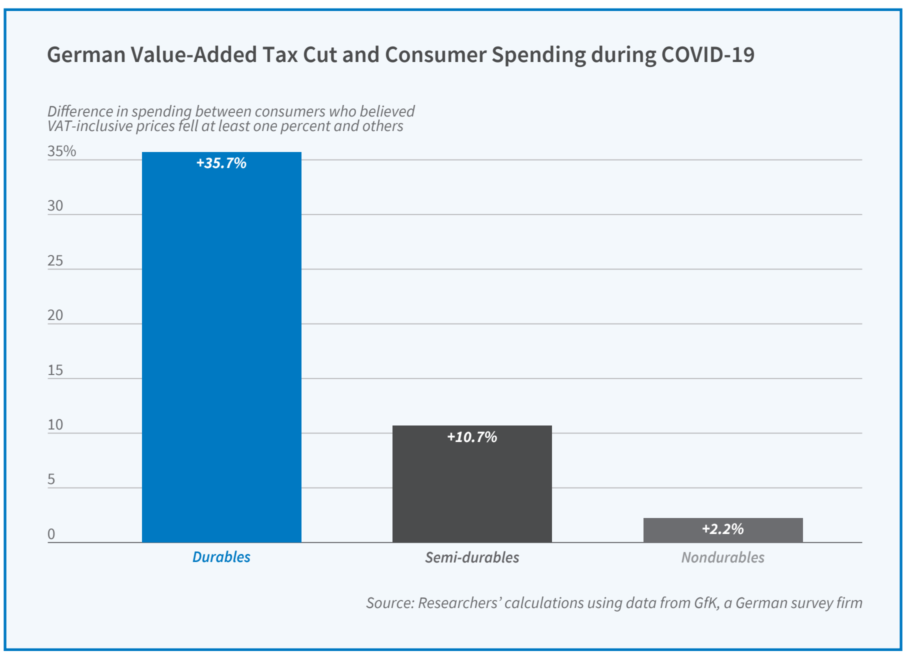
In **A Temporary VAT Cut as Unconventional Fiscal Policy** (NBER Working Paper 29442), Ruediger Bachmann, Benjamin Born, Olga Goldfayn-Frank, Georgi Kocharkov, Ralph Luetticke, and Michael Weber examine the effects of a temporary and unexpected VAT cut in Germany in the second half of 2020. They find that spending on durable goods rose substantially. Spending on semidurable and nondurable consumption goods also rose, but by substantially less. This policy had a progressive effect, as young and middle-aged households with low net worth took the most advantage.

Germany's VAT is a federal tax. A standard rate of 19 percent applies to roughly half of what Germans buy, while a reduced rate of 7 percent is charged on about a fifth of consumption. In June 2020, in the midst of a pandemic and facing a recession, Germany cut the standard VAT rate to 16 percent and the reduced VAT rate to 5 percent. The cuts were effective July 1 through December 31.

The researchers utilized two surveys to determine whether households changed their behavior in response to the tax rate cuts, and if so, which ones did. The first, in July, asked consumers what they knew about the VAT cut and about their plans for spending on durable goods. While nearly all of those polled knew about the tax cut, only about 60 percent knew rates would go back up in January. These well-informed households were the most likely to alter the timing of purchases to take advantage of the tax savings. Following the VAT rate cut, the share of households reporting that they planned to increase their durable goods purchases in the second half of 2020, relative to a year earlier, rose by more than 10 percentage points.

When Germany temporarily cut its value-added tax rates, aggregate consumer spending rose by 34 billion euros, mostly on durable goods.

The second survey, conducted in January 2021 after the VAT cut was over, asked about households' durable consumption spending when tax rates were low. The researchers point out that consumers who did not perceive that the tax cuts lowered tax-inclusive prices had no incentive to adjust the timing of their purchases. However, two-thirds of those surveyed reported that they believed that the VAT relief reduced consumer prices by at least 1 percent. These households spent 36 percent more on durables than households that did not believe the lower tax rates were reflected in price reductions. A similar comparison using scanner data found that for semidurables and nondurables, the spending increases were smaller, 11 and 2 percent respectively, for those who believed that the tax cuts were passed through.




The pandemic-induced cut in VAT rates pushed consumption toward durables. The researchers estimate that durables spending rose by 21 billion euros, and that overall spending rose by 34 billion euros. The rate of spending reached its peak right before the tax cut ended. Despite the increased spending, the German government still lost about 7 billion euros in revenue.

Part of the VAT cut's success was its simplicity. The extra spending on durables was not driven especially by households that reported being financially literate or having long planning horizons for saving and consuming. Instead, bargain-hunters — consumers who said they shopped around or were particularly sensitive to price, and younger households with relatively weak financial situations — accounted for most of the boost.

*— Laurent Belsie*

# Remote Schooling and Standardized Test Scores

Students who spent a higher fraction of the COVID-19 pandemic receiving in-person instruction performed significantly better on standardized tests in the spring of 2021 than those who were taught mostly remotely, according to a study of scores in 12 US states.

In **Pandemic Schooling Mode and Student Test Scores: Evidence from US States** (NBER Working Paper 29497), Clare Halloran, Rebecca Jack, James C. Okun, and Emily Oster further report that the fraction of students achieving passing grades fell more in districts with greater shares of minority students and students receiving subsidized lunches.

Pass rates among students in all types of learning environments were lower in the spring of 2021 than in previous years. The average decline in math scores was 14.2 percentage points. For students who were fully in person for the 2020–2021 school year, the decline was smaller, 4.1 percentage points. The average decline in English Language Arts was 6.3 percentage points, but it was 3.1 percentage points among those taught fully in person.

The study found a wide disparity in the decline in pass rates among the dozen states surveyed: Colorado, Connecticut, Florida, Massachusetts, Minnesota, Nevada, Ohio, Rhode Island, Virginia, West Virginia, Wisconsin, and Wyoming. It ranged from a 32 percentage point drop in the math pass rate for Virginia students to a 2.3 percentage point drop in the English pass rate in Wyoming. These numbers may understate the decline in pass rates because test participation was down in 2021, particularly among students from groups that have historically scored lower, according to the researchers.

Pass rates on spring 2021 math and English tests fell among students in all types of learning environments, but the decline was greatest in districts with more remote instruction.

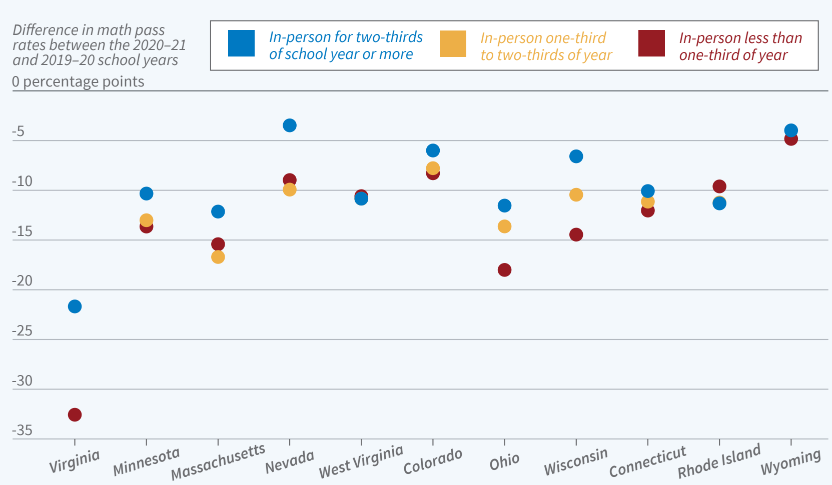
A more refined picture of the impact of remote learning emerges after considering the demographic makeup of school districts. Racial and ethnic composition correlates with pass rates on the English Language Arts exam, but not with those on the math test. Extrapolating from their findings, the researchers estimate that a hypothetical district with no Black or Hispanic students would experience a 4.3 percentage point drop in the pass rate for English Language Arts if it moved from fully in-person to exclusively hybrid or virtual learning. For a district in which half the students are Black or Hispanic, the analogous pass rate is projected to fall 9 percentage points.

The researchers also relate declines in pass rates for the English test and, to a lesser extent, the math test to the economic well-being of students in each district. For a hypothetical district with no students receiving subsidized or free lunches, they predict that moving from fully in-person learning to fully hybrid or virtual instruction would reduce the pass rate for math and English tests combined by 2.9 percentage points. In a district in which all students are eligible for subsidized or free lunches, they predict that the same instructional change would reduce the pass rate by 10.3 percentage points.

Large urban school districts with a higher share of Black and Hispanic students were more likely to rely on hybrid or virtual instruction. These districts also averaged lower pre-pandemic baseline test scores. The researchers acknowledge that test scores are but one measure of academic performance, but they conclude that virtual or distanced schooling modes cannot support student learning in the same way as in-person schooling.

*— Steve Maas*

Mode of Schooling during COVID-19 and Change in Math Test Scores




Source: Researchers' calculations using the COVID-19 School Data Hub and state-level testing data

# ‘At-Home Capital’ Attenuated COVID-Related Output Losses

The COVID-19 pandemic reduced total economic output by an average of 13 percent between the first and second quarters of 2020 across the United States, the United Kingdom, Spain, France, Italy, Germany, and Japan. In **“Potential Capital,” Working from Home, and Economic Resilience** (NBER Working Paper 29431), Janice Eberly, Jonathan Haskel, and Paul Mizen calculate that this large output decline is substantially smaller than one might have predicted from pre-pandemic productivity patterns and the sharp decline in at-work labor and capital utilization. The difference is accounted for by the rapid rise in remote work and the significant amount of business output that it generated.

Analyzing national labor hours and energy-use data, the researchers find that while traditional workplace output fell in early 2020, gains in at-home output partially offset this decline. “At-home capital,” which they also call “potential capital,” such as home office space, computers, and the internet, when paired with at-home labor, facilitated at-home output. They estimate that a 1 percent increase in this capital increases total output by between 4 and 14 percent, similar to prior estimates of the impacts of office-based information and communication technology (ICT).

Remote work rose more in industries with a higher share of capital in ICT before the pandemic, highlighting the potential role of technological investment in building economic resilience. The researchers estimate that 8 to 14 percent of GDP during the trough of the COVID recession was attributable to this technological resilience. If at-home capital had not been deployed as effectively during the pandemic, for example if internet access had been more limited than it was, or video conferencing technology had not been as successful, pandemic-related shutdowns could have produced significantly larger losses in economic output.

> Access to home office space, home computers, and the internet, when paired with at-home labor, substantially trimmed the output losses associated with business closures.

While these findings inform the economics of the COVID-19 period itself, they have potentially long-lived implications for the future of production and work. If work-from-home (WFH) was productive during the pandemic, will it remain prevalent when office work is once again feasible? The answer must hinge in part on the ability to substitute at-home tasks for traditional workplace tasks. To the extent that WFH was motivated by elevated workplace costs like required safety precautions, the level of WFH may drop as the pandemic recedes and these costs fall.

The researchers analyze industry-level data from the UK to estimate the substitutability of at-home tasks for at-work tasks. They estimate that in a number of industries, at-home tasks are very good substitutes for at-work tasks. This raises the prospect of remote work remaining prevalent even as some at-work expenses recede with the pandemic.

—*Lucy E. Page*