Fake news is bad for business

Why it’s so hard to simplify the tax code

Plus:

Fake news is bad for business

Are you ready for personalized pricing?

Companies are figuring out what individual customers will pay—and charging accordingly
“If productivity growth stays where it is, you should be worried. We are going to be considerably poorer than we would be otherwise. We already are.”
If you’re reading this magazine on a flight, you probably know better than to ask the passenger sitting next to you what he paid for his ticket. We are comfortable with the idea that every person flying on a commercial aircraft may have paid a different price to travel to the same destination. Similarly, we all know that we pay slightly different prices for cars, college tuition, and hotel accommodations.

But would you be comfortable extending the same pricing strategy to blenders, bikes, or burgers? By analyzing data from your browser cookies, reward programs, purchase history, and other sources, retailers are moving closer to personalized pricing, customizing prices according to how much individual consumers are willing to pay. Even when sticker prices are fixed, companies already effectively charge people different prices, for example, by only offering coupons to certain customers.

Is that fair? Absolutely, argue Chicago Booth’s Sanjog Misra and Jean-Pierre Dubé in our cover story (page 26). Many people may disagree—after all, in this scenario, companies are gathering your data and potentially using it to charge you more. But personalized pricing may ultimately be good overall, because by tailoring prices to individuals, companies can offer their products to more people—expanding the market to include people who can’t necessarily afford the current sticker price for a product or service but would purchase it if it cost what they could pay.

Whatever your view, the researchers expect the trend to accelerate, given the ease and low cost of collecting data.
The good and bad of blockchain

Immediate relief kept homeowners afloat

How much is vertical integration worth?

A better way to find holes in financial reports

Richard Thaler: Defaults are the best ‘nudge’

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Investors like more-sustainable companies

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Stefan Nagel says not to lean too much on experience

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Why ‘dragon’ children do well in school

Not all ‘pump and dump’ investors are gullible

Higher income, healthier groceries

ARE YOU READY FOR PERSONALIZED PRICING?
Companies are figuring out what individual customers will pay—and charging accordingly

By Brian Wallheimer

Why it’s so hard to simplify the tax code
How complicated tax laws undermine efforts to create a fair, growing economy

By Dee Gill

How poverty changes your mind-set
Understanding psychology may be key to addressing the problem

By Alice G. Walton

The king’s dilemma
A mighty lion considering a hunting holiday receives a lesson in tax repatriation

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Sanjog Misra, Charles H. Kellstadt Professor of Marketing and Neubauer Family Faculty Fellow, builds data-driven models aimed at understanding how consumers make choices and how companies can optimize their decisions. His current research focuses on the intersection of machine learning, causal inference, and scalable decision-making. He presently serves as an advisor to a number of start-ups. (Page 26)

Chad Syverson, Eli B. and Harriet B. Williams Professor of Economics, worked as a mechanical engineer before becoming an economist and credits his engineering background with spurring his research interest in productivity. He serves as an editor of the RAND Journal of Economics and is on the editorial board of several other journals. (Pages 10 and 51)
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THIS READER SPEAKS THE TRUTH
In response to ‘Why we should teach people how to lie’ (Winter 2017/18)

Good article, or am I lying?
—Marc LeBlanc

VOLATILE INCOMES OF THE RICH
In response to ‘Never mind the 1 percent. Let’s talk about the 0.01 percent’ (Winter 2017/18)

The one thing not covered in the article is that the 1 percent and the 0.01 percent of income earners aren’t the same from year to year. [The makeup of the groups] is highly volatile, in fact, and is usually associated with an entrepreneur selling a successful business. Very few have the good luck to replicate that time after time.
—Jason McLane

DOES WORK STILL LEAD TO SELF-WORTH?
In response to ‘As video games get better, young men work less and play more’ (Published online, December 2017)

A good chunk of it is because men no longer wrap their self-worth around their work. I see it a lot here in Oklahoma, where your job is a major part of your identity, and to an extent, self-worth as a man. Now that there are so many other ways to create self-worth, work has become simply a way to make money to support everything else. I think it is good to work hard at whatever you do, be it welding, programming, or beating noobs.
—Julian Studebaker

BITCOIN OR BUST
In response to ‘What’s the fundamental value of a bitcoin?’ (Published online, December 2017, and in this issue on page 72)

Some say “an expert is someone who can tell you exactly how something can’t be done.” It’s surveys like this that make me more bullish on Bitcoin. . . . Disruption doesn’t come easy.
—George Adams

THE MANY CAUSES OF CRISIS
In response to ‘What contributed most to the financial crisis?’ (Winter 2017/18)

#1: Americans who lied when obtaining “no verification mortgages.”
—Wayne Begin
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June 20–21
The good and bad of blockchain

Everything associated with Bitcoin became a little more interesting when the cryptocurrency’s value skyrocketed, doubling in less than a month to more than $17,500 by mid-December 2017. But even though many investors remain skeptical about Bitcoin, blockchain—the open-source code behind it—has drawn interest from a diverse set of household names, including Citigroup, UPS, and Walmart.

Walmart may view blockchain—which was popularized in 2009 by Bitcoin’s anonymous founder—as a way to follow a crate of frozen tilapia from Shanghai to South Dakota. For Maersk, the Danish shipping conglomerate, blockchain could help it confirm that a vital customs form for a cargo ship in Dubai, United Arab Emirates, has been signed. A blogger in Mexico City could rely on the technology to accept low-fee micropayments from appreciative readers in Milan.

But there’s a drawback: blockchains have the potential to increase collusion, according to Chicago Booth’s Lin William Cong and...
Zhiguo He. The researchers’ modeling, part of their research into how blockchains might affect competition, suggests that the way blockchains work as a decentralized ledger involves distributing more information, which could make it easier for competitors to quietly and often tacitly collude to keep prices high, ultimately to the detriment of consumers. But Cong and He propose a few potential remedies.

Blockchain is less well-known than Bitcoin but may have more staying power. Its main functionality is providing “decentralized consensus,” say Cong and He. In most societies and economies, parties in a contract rely on a government, court, or other third-party arbitrator to essentially oversee and enforce rules in private contracts—to provide consensus, as the researchers put it. Blockchain provides that function in a more decentralized manner by generating, storing, and distributing the record of rules and regulations.

Its strength as a bookkeeping method stems from the way records are verified, linked, and stored across a network of computers. In a simplified example, the record of a Wednesday morning sale of 10 bitcoins might be lumped with other transactions made the same day. This block will be verified when a self-selected participant in the chain of transactions—known as a Bitcoin miner—solves a difficult cryptographic puzzle that an algorithm in the source code creates specifically for this block of transactions.

The puzzle for the Wednesday block is partly built on the solution to the puzzle used to verify the immediately previous block, say the one containing all Tuesday transactions. And the Wednesday solution would in turn be employed in a new puzzle to verify a Thursday block. This makes the ledger difficult if not impossible to hack. Altering the Wednesday record cannot be achieved without altering records up and down the chain.

The miners are individuals willing to pour computing power into solving these puzzles in exchange for newly issued bitcoins and users’ transaction fees. The fees are relatively low compared with those of banks or other financial institutions.

There is no official count of Bitcoin miners, and estimates by currency watchers range widely, from 5,000 to 150,000 around the world. The fact that every miner holds an up-to-date record of the chain adds to the technology’s robustness.

This makes for the combination of high security and low fees (for now) that a currency-trading platform needs. For other business applications, the blockchain offers advances on the old ways of doing things.

The Walmart example. For reasons ranging from reputation to protection against liability, the retailer wants to ensure that the tilapia it sells meets certain quality standards. Among other considerations, once-frozen fish should stay frozen until a customer defrosts it itself. Currently, ensuring this requires Walmart to keep tabs on a line of middlemen making strings of promises confirmed by anything from legally binding contracts to handshakes, which is arduous and expensive.

Using the blockchain, however, Walmart could sign contracts directly and in real time with everyone from a fisherman to a wholesale-seafood-market manager, a packager, a US customs agent, and a long-haul trucker. Fees would be minimal, and the paperwork eliminated entirely. The digital contracts would also be tamperproof. As Cong and He highlight, such smart contracting solves the trust issue and encourages other parties to enter and compete in the market. Thanks to the robust system of oversight and enforcement, Walmart can trust that contracts will be executed, even by new companies it hasn’t done business with before. If a company it does business with fails to meet the terms of its contract, the company is penalized, or the contracted fee isn’t transferred.

However, the researchers identify a potential trade-off to these advantages: the possibility of cartel risk. Blockchains won’t necessarily lead to cartels, but Cong and He point out that cartels could arise in certain conditions.

Blockchain idealists would have all transactions stored on one chain—the one that already exists, thanks to Bitcoin. This would create a massive, democratic, stable, and unified public record. But most companies don’t buy into this vision. Critics say this is because they

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**The basics of blockchain**

In its ideal form, blockchain technology enables people to establish an accurate, tamperproof, historical ledger of all transactions. Bitcoin’s original blockchain is the most famous, but there are many others—not only for cryptocurrency but also for agreements such as “smart contracts,” programmed to be executed only under certain conditions, say if a seller delivers by a certain date.

1. A **decentralized network** of record keepers, rather than a central intermediary such as a government agency or bank, maintains the ledger.

2. When two parties want to use the blockchain to record a transaction, they broadcast a request to everyone in the network. **It is combined with other recent transaction requests into a “block.”**

3. Many members of the network—in Bitcoin circles, they’re known as miners—**use powerful computer setups to compete** for the right to add the block to the blockchain.
want to control the chains, keeping out new competitors by using private or “permissioned” blockchains.

Last year, IBM built a blockchain for clearing credit-default swaps, a form of financial derivative. Bloomberg View columnist Matt Levine wrote about a permissioned blockchain being designed for the Depository Trust & Clearing Corporation, an organization that provides clearing and settlement services to the financial industry.

“You and I can’t just walk in and trade derivatives over the new DTCC blockchain,” Levine wrote. “It’s for the big incumbent players who are part of the DTCC consortium anyway. There is no disruption, no disintermediation. The blockchain here is about perpetuating the existing intermediaries, not about replacing them.” In such private blockchains, new entrants would be kept out.

Collusion could arise even in public blockchains, according to Cong and He. In the traditional way of doing things, without blockchains, information is limited, the researchers note. For example, a mortgage broker who loses customers doesn’t have an easy way of knowing whether they are being poached by rivals or whether fewer people are taking out mortgages across the market. As a result, she might try dropping her prices to guard against the possibility that a competitor is luring away customers with better rates. This kind of response increases competition and consumer welfare, the researchers say.

Thus in a world without blockchains, the seller, to gain business, will abandon any tacit agreement to collude that might have previously existed between her and her competitors.

But on a public blockchain, more information becomes available regarding each participant on the chain. Because transactions are verified to reach decentralized consensus, sellers could infer the total number of transactions taking place in the market. So our mortgage seller could know whether she is losing out to a competitor or simply seeing the total customer base shrinking. If it’s an industry-wide decline in demand, she may be less inclined to cut prices. Thus, knowledge made possible by the blockchain could encourage tacit collusion—even though the transaction data is anonymous. Just as “no news is news,” write Cong and He, “even encrypted data are still data.”

One solution to this problem of sellers colluding on a blockchain would be to encourage multiple public blockchains to blossom. The researchers suggest that the least collusive blockchain would win the most transactions, with price-conscious customers veering away from collusive markets, thereby encouraging other blockchains to become less collusive to win customers. If a single blockchain emerged, regulators would have to step in because market forces wouldn’t block collusion, Cong and He say. Regulators might demand access to the source code, or parts of the source code, gaining a scaffolding on which to build data-monitoring systems that analyze transaction and price trends to detect tacit collusion. Effective regulation might involve limiting a seller’s access to information. Our mortgage seller could take part in transactions on the blockchain but would not get to see all the transactions taking place, thus limiting her ability to estimate the size of the total market. In essence, it can be beneficial to separate blockchain users from the miners who are generating decentralized consensus, the researchers argue.

“If sellers can only use the blockchain for signing smart contracts with buyers, then they no longer have access to the aggregate activity information in the relevant market that facilitates collusion,” Cong and He write. Clearly, enough interest in blockchains exists that some of these solutions can be tested. And inevitably new solutions will arise. In the meantime, expect more companies to jump on the bandwagon at least to be part of the hottest new technology on the block.

“Blockchains are not merely database technology that reduces the cost of storing or sharing data,” the researchers write, “but have profound economic implications on consensus generation, industrial organization, smart contract design, and anti-trust policy.”—Rose Jacobs


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4. The miners **race to solve a complex cryptographic puzzle**, which is part of the code required to add the new block to the blockchain. They also check whether the transactions are valid, reconciling them with past records on the blockchain to verify that the funds exist.

5. The block is added, making the transactions official, and the winning miner receives an award—for example, transaction fees. Everyone in the network updates their copies of the blockchain.
IMMEDIATE RELIEF KEPT HOMEOWNERS AFOAT

DURING THE GREAT RECESSION, the US federal government attempted to stem the foreclosure crisis by rolling out a program to aid homeowners whose mortgages were underwater.

The Home Affordable Modification Program (HAMP), started in 2009, provided relief for struggling homeowners in one of two ways: lower monthly mortgage payments by a mean amount of $680 (about 38 percent of the typical payment) or lowered payments plus a long-term principal reduction that averaged $70,000.

Policy makers had debated which would be more effective, and now data suggest that the former did considerably more to keep homeowners out of foreclosure and boost their overall consumption, according to research by University of Chicago Harris School of Public Policy’s Peter Ganong and Chicago Booth’s Pascal Noel.

HAMP provided payment reductions for the first five years to all participants, and it offered the principal reduction only to certain homeowners. This created a quasi-experimental design, with a control group that did not receive the principal reduction and an experimental group that did. Ganong and Noel focused on modifications performed between October 2010 and March 2015, before HAMP ended in 2016.

Principal reduction lowered default rates by less than 1 percentage point, they find. But that small effect came at significant cost to the government. On the assumption that the banks were unlikely to forgive debt on their own, the government paid them an average of 27 cents for every dollar of principal forgiven. That translated into $10,000 in government spending per principal reduction. The researchers find that the government essentially spent $800,000 on each avoided foreclosure.

“Our data show that mortgage principal reductions, which do not affect short-term payments but substantially reduce long-term obligations, have no significant impact on default or consumption for underwater borrowers,” the researchers write.

Ganong and Noel’s data come from monthly consumer-credit-bureau records that tracked credit-card expenditures and new auto-loan originations, as well as data (scrubbed of identifying information) that incorporated mortgage, credit-card, and checking-account figures for about 30,000 JPMorgan Chase borrowers who received a HAMP modification.

Their analysis suggests that when someone suddenly finds herself short of cash, it can have a significant impact on the likelihood she’ll default on her mortgage, and a sudden loss of income often coincides with missed monthly payments. Yet in terms of credit-card and auto spending, borrowers who received a principal reduction in addition to lowered mortgage payments behaved virtually the same as those who didn’t.

The researchers reason that the short-term payment reductions prompted mortgage holders to spend more, whereas the principal deduction didn’t because it didn’t provide any immediate liquidity.

Homeowners most often default during cases of “double trigger,” when their mortgages are underwater, and they face a negative income shock such as losing a job. The deeper their homes are underwater, the smaller the shock necessary to push them to default. In the wake of the financial crisis, “the borrowers ordinarily most responsive to wealth gains may have found themselves unable to translate increased housing wealth into disposable wealth,” write the researchers.—Ed Finkel

How much is vertical integration worth?

Energy giants once managed production from oil fields to gas pumps. Coke and Pepsi mixed their drinks and distributed them, and carmakers turned ore into autos. While corporate strategists now urge focusing on core competencies and outsourcing the rest, there are still benefits to owning businesses up and down a production chain. Research by Enghin Atalay of the University of Wisconsin at Madison, University of Chicago’s Mary Jaylin Li and Ali Hortacsu, and Chicago Booth’s Chad Syverson seeks to measure the size of these benefits.

Vertical integration can help a company save money, retain control, and reduce risk, depending on the setting, but these effects can be difficult to measure. This is in part because the benefits of trading goods and services among sister units of one parent company rather than with a third-party customer are by their very nature derived from “non-market transactions and . . . costs that aren’t paid,” the researchers write. Avoided legal fees and increased employee know-how, for example, just don’t wind up on an income statement or balance sheet.

To the extent that these data can be gathered at all, a thorough investigation requires that a company open its records for granular analysis. Even if a company were willing to do this, scaling up lessons learned to a wider market could be difficult.

The researchers skirted these challenges by analyzing a US Census Bureau survey of shipments made by 35,000 multiunit companies in 2007—about 4 million domestic transactions in all. They used companies’ decisions about what to ship and to whom as a proxy for the value of keeping a transaction in-house. Because physical distance has been shown to depress transaction volumes, a company’s willingness to send internal shipments far demonstrates that its managers believe they are making up for the distance-related costs by reaping...

Principal reduction lowered default rates by less than 1 percentage point, at a significant cost.

Companies’ stake in their own supply chain

Seeking a way to measure the savings achieved when sister units of a parent company work together within a supply chain, the researchers turned to shipment records and find that companies traveled significantly farther when it was an option to keep business in-house.

The value a company places in sending a shipment to a business unit within its own parent company . . .

. . . is equal to the value of shipping to an outside company—but only if the outside company is 60% closer than the sister business unit.

Among wholesalers and other goods distributors, the shipment distance to the outside company would have to be 66% closer.

Among manufacturers and other goods producers, it would have to be 70% closer.

Among manufacturers with lower tech investment, it would have to be 66% closer.

Among manufacturers with higher tech investment, it would have to be 81% closer.

Atalay et al., 2017

in-house benefits, the researchers reason. Measure the differences in transaction volumes, and you can put a value on these benefits, they argue.

Crunching the data reveals that the advantages perceived by company managers are significant: when companies were able to trade in-house, they were willing to send shipments farther—100 miles to every 40 miles for transactions with independent partners.

Managers in different industries put different values on the benefits of in-house transactions, the researchers find. In industries that ship bulky items such as timber, fertilizer, or animal feed, distance had a bigger impact on transaction volumes than common ownership between shipper and recipient. In industries with high levels of technology investment, groups were willing to send shipments 100 miles for in-house transactions for every 20 miles otherwise.

These figures might add to explanations of why tech leaders such as Google and Tesla are bucking the trend away from vertical integration. The search-engine giant is moving into smartphone manufacturing, and the maker of Tesla electric cars is buying into solar-panel production with its purchase of SolarCity.

Atalay, Li, Hortaçsu, and Syverson calculated the aggregate impact on the economy of vertical integration. They argue that real wages would be 0.2 percent lower in an environment without the advantages of in-house transactions boosting overall trade. Moreover, they say they believe their calculation understates the benefits measured here, reflecting their previous research demonstrating that companies that own multiple parts of a production chain see these benefits as just one small argument in favor of vertical integration.—Rose Jacobs

A BETTER WAY TO FIND HOLES IN FINANCIAL REPORTS

ACCRAUL ACCOUNTING—recording revenues and expenses when they are earned and incurred, rather than when cash is actually transferred—is integral to the accuracy of a company’s financial reports. The primary role of accruals is to help evaluate a company’s economic performance more accurately, but it is difficult to tell when accruals do this job in a trustworthy way.

How well do accruals perform their primary role? Neither practitioners nor academics have developed a good understanding of how accurately accruals measure performance, says Chicago Booth’s Valeri Nikolaev. However, he suggests an approach that could help.

Say a manufacturer delivers a truckload of shirts to a retailer, which won’t submit a payment until the next fiscal quarter. In accrual accounting, the manufacturer would go ahead and recognize the expenses and revenue immediately, before any cash arrives. Accordingly, accrual accounting requires accountants to estimate cash flows associated with revenue and expense transactions, which creates a possibility that accruals are untrustworthy.

Existing accrual-quality measures are of limited use, says Nikolaev, because there’s no obvious way to separate the company’s underlying performance from accounting errors, which could occur due to several factors.

“First, performance measurement requires making assumptions, estimates, and judgments, which give rise to estimation error,” writes Nikolaev. “Second, error may occur because GAAP imposes constraints on what accountants may report. Even if a firm’s management observed true performance, they must follow GAAP measurement rules, which are aimed at the minimization of aggressive accounting, rather than just telling investors what the performance is. Finally, error can arise due to intentional earnings manipulations.”

To identify accounting errors and separate them from performance, Nikolaev introduces a model of accruals that explicitly captures their performance measurement role but allows for the presence of accounting errors. He also introduces an econometric framework that uses a flexible set of assumptions to identify accounting quality and its components.

His model considers institutional properties of earnings, cash flows, and accruals, as needed, as a basis for identifying accounting-quality parameters. For example, if accountants overstate receivables in a given quarter, future earnings should be lower by the same amount. This is a self-correcting effect commonly known as a reversal. At the same time, true performance—untainted by accounting errors in accruals—will generally not exhibit such reversals. Taking advantage of this and other properties of accounting information, Nikolaev’s model can statistically distinguish between performance and accounting error.

Chicago Booth’s Ray Ball and London Business School’s Lakshmanan Shivakumar, among others, have noted that discretionary accruals may tend to accelerate a company’s recognition of unrealized economic losses, but not of gains that arise from changes in expected future cash flows. While this counteracts incentives to overstate earnings, it could potentially make a company’s results appear weaker than they actually are.

Nikolaev says his approach levels out this kind of disparity. His model can account for different treatments of economic shocks—one-time events and other unusual occurrences—to performance. It can also be modified to identify and exclude “income smoothing” and other “managed” or manipulated accrual components.

Nikolaev’s model suggests a way to identify accruals and earnings quality and, in doing so, isolates performance and accounting error. But the researcher says the approach is meant not as the final word in analyzing accounting quality, but rather as a guide for future research.—Marty Daks

There’s no obvious way to separate a company’s underlying performance from accounting errors.

RICHARD THALER: DEFAULTS ARE THE BEST ‘NUDGE’

“In the old system, when you were first eligible for the pension plan, there were a bunch of forms you had to fill out, and you had to decide how much to save and then how to invest. . . . Some people, such as my friend Cass [Sunstein of Harvard], are very ‘form averse’: if Cass has to fill out a form, he’s almost certain not to do it.

What does automatic enrollment do? You get the same pile of forms, but on the top page it says, ‘If you don’t fill these forms out, we will enroll you in the pension plan at this saving rate and in this fund, and you don’t have to do anything.’ That’s what I call a SIF [supposedly irrelevant factor]. It takes a minute or two to fill out these forms, so it shouldn’t matter. Does it matter? Yes. Big time.”

Why most investors don’t know what their true returns are

When academic researchers evaluate the performance of equity investments, they automatically combine changes in the price of an asset with dividends to look at total returns. “These two sources of profit are considered so obviously equivalent that their combination into a single returns variable is typically done by finance academics almost without thought,” write Chicago Booth’s Samuel Hartzmark and Boston College’s David H. Solomon.

Yet investors often miss the dividend component of returns, because the most popular sources of market information don’t display total returns, the researchers find. Brokerage statements, newspapers, and financial websites typically display price changes in nominal or percentage terms, but almost never aggregate and display total returns.

Few investors are thinking or trading in terms of total returns, at least in part because they never actually see them, the researchers conclude. The sources of the most widely reported measures of stock market performance—the Dow Jones Industrial Average and the S&P 500—compute their market index using only price changes of stocks without adjusting for dividend payments. This leads stocks to rise and fall with market price changes—rather than to move with total market return, as economic theory would suggest they should do.

Most investors also neglect total returns when evaluating mutual funds. Instead of comparing a mutual fund’s return to the market’s total return, investors look at percentage changes in a fund’s net asset value, which doesn’t correct for dividends or other distributions such as capital gains. Further, Hartzmark and Solomon find that investors reward funds with net-asset-value changes that beat the S&P 500’s movements—even though the comparison isn’t a good one. Both measures exclude different and important aspects of value: net asset value omits dividends and realized capital gains, while the S&P 500 benchmark calculation omits dividend yield. Yet investors compare these two numbers when evaluating a mutual fund’s performance.

To examine information display, Hartzmark and Solomon dug through thousands of Wall Street Journal issues, examining how the performance of stocks on the New York Stock Exchange was presented from 1890 through 2016. “Prior to 1928, prices were reported, but there was no information about dividends,” write Hartzmark and Solomon. “After 1928 dividend information began to be reported, but separately from price information.” The Wall Street Journal, along with other outlets such as Yahoo Finance, rarely report a combined textbook-performance-return measure for individual stocks, the research finds. Consequently, investors’ perception of a return is distorted.—Alex Verkhivker


Total market return looms in the background

When investors turn to financial news outlets and brokerage statements for information on stocks, they are typically presented with share prices as a default—without meaningful data on dividends, which would give them a clearer picture of total returns. The researchers’ historical look at reinvested dividends illustrates the importance of considering the total return.
Fake news is bad for business

This past September, Facebook CEO Mark Zuckerberg said he’d been wrong to dispute the influence of fake news on the 2016 US presidential election, and research suggests there’s good reason for him to pay attention to the issue. Promoting fabricated news can be bad for business at social-media companies, according to Chicago Booth’s Ozan Candogan and University of Southern California’s Kimon Drakopoulos, whose research suggests that it’s critical for social-media platforms to help users identify fake news—as ignoring the problem could lead to substantially weaker user engagement.

Many social-media websites struggle to maximize user engagement while minimizing the amount of misinformation shared and reshared. The stakes are high for Facebook, Twitter, and their rivals, which generate most of their revenue from advertising. Viral content leads to higher user engagement, which in turn leads to more advertising revenue. But content-management algorithms designed to maximize user engagement may inadvertently promote content of dubious quality—including fake news.

Candogan and Drakopoulos use modeling to test strategies for striking a balance between these conflicting goals. Their findings suggest that spreading misinformation poses a business risk for social-media platforms, as users might come to believe they can’t trust the information they see.

The researchers’ models assume platform operators can tell the difference between factual and fictitious posts. They demonstrate that engagement levels fall when users aren’t warned of posts that contain misinformation—to levels lower than when users are discouraged from clicking on the dubious material.

In the researchers’ models, clicks fell by more than half when platforms had a “no-intervention” policy. But while the models initially assumed that users were relatively indifferent to misinformation, when users were in fact concerned about engaging with erroneous content, failing to intervene led to an even greater drop in engagement, with the number of clicks dwindling to zero. The research also explored a sample of 4,039 de-identified Facebook users, created as part of a larger network analysis project at Stanford. The Stanford team collected information, including connections, from volunteer Facebook users.

How social-media companies should intervene

The research suggests that Facebook can best mitigate a drop-off in engagement due to fake news by actively warning a selection of users about posts containing misinformation.

Percentage of users in researchers’ model engaging in content on Facebook

Based on how misinformation is signaled to users

![Graph showing percentage of users engaging in content on Facebook based on how misinformation is signaled to users.](image)
“If the platform does not show any effort to help agents discern accurate content from inaccurate, i.e., uses a no-intervention mechanism, significant reduction in engagement can be expected,” Candogan and Drakopoulos write.

The research suggests that providing different messages about a post’s veracity to different types of users can help maximize engagement while significantly reducing fake news. And it identifies two types of users: central users, who are connected to many friends or followers, and noncentral users, who are connected to fewer.

For noncentral users, the pleasure they derive from clicking on the same things as their friends is more likely to be outweighed by a fear of engaging with misinformation. Therefore a platform can achieve high engagement levels by discouraging noncentral users from engaging with possibly inaccurate content while being more hands-off with the rest. On the other hand, platforms that make minimizing misinformation a top priority may find it beneficial to steer both types of users away from inaccurate content.

Candogan and Drakopoulos argue that companies need not bother with such distinctions if users of a network tend to have a similar number of connections. But in highly heterogeneous systems, in which users have personal networks of widely varying size, the warning levels can have a significant impact on engagement, according to the researchers.

This would apply to Facebook, where the average user has 338 friends and the median has just 200, according to the company. Twitter is even more extreme. One analyst estimated in 2013 that the median Twitter user had just one follower, compared with millions for pop star Beyoncé and US President Donald Trump.

A limitation of the research is the models’ assumption that the people using social networks and the algorithms running these networks know whether posts are true, false, or shaded somewhere in between. “This assumption is an approximation to reality, where a platform potentially has a more accurate estimate of the error than the agents,” Candogan and Drakopoulos write.

They suggest that further studies might look into trade-offs between promoting truth and promoting engagement in a dystopic scenario: where no one—neither networks nor users—knows what news is fake and what is real. –Rose Jacobs


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**INVESTORS LIKE MORE-SUSTAINABLE COMPANIES**

**MORE AND MORE** companies are putting resources toward endeavors not meant to directly maximize profits, such as helping the environment or being more socially responsible.

And research by Chicago Booth’s Samuel Hartzmark and Abigail Sussman suggests that most investors are fine with this—on average, investors like companies that are more sustainable.

Morningstar, one of the leading US investment research companies, in March 2016 published sustainability ratings for more than 20,000 mutual funds collectively holding upwards of $8 trillion. Morningstar awarded each mutual fund between one and five globes depending on how sustainable it was deemed to be. Funds with the lowest 10 percent of sustainability scores received one globe, while those with the highest 10 percent received five.

Investors rewarded funds rated high in sustainability and punished those rated low. Between $12 billion and $22 billion flowed out of the one-globe mutual funds, while between $22 billion and $34 billion flowed into five-globe funds, according to Hartzmark and Sussman. The lowest-rated funds were more likely to close altogether after the outflows.

Investors responded to funds rated high or low in sustainability, interpreting five-globe ratings and one-globe ratings as clear positive or negative signals. Meanwhile, investors largely ignored the ratings for funds in between these two extremes, as well as the underlying details that were available about the ratings.

Hartzmark and Sussman find that investors believe more-sustainable companies will experience higher future returns with lower risk, although the researchers don’t find evidence that sustainable companies actually outperform on a risk-adjusted basis. Institutional investors behaved similarly to noninstitutional investors, the data suggest.

“The average market participant in US open-end mutual funds puts a positive value on sustainability,” Hartzmark and Sussman conclude. —Alex Verkhivker


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**Influx of money for high-rated funds**

After Morningstar introduced its rating system, investors rewarded mutual funds with top marks and punished those at the bottom.

Cumulative amount of money investors moved into or out of mutual funds, as a percentage of fund size

- Funds with best sustainability: Five globes
- Funds with worst sustainability: One globe

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Up to $22 billion flowed out of funds that had low ratings for sustainability.

Hartzmark and Sussman, 2017

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**Spring 2018**  Chicago Booth Review  15
Professionals in demand

After Sarbanes-Oxley’s stricter accounting standards for public companies went into effect, CPAs started doing less work for private companies and charging higher fees to nonprofits.

The researchers say there’s a common market for auditors, meaning that public companies, private companies, and nonprofits purchase audit services from a shared pool of CPA firms. The firms have limited resources and, in times of demand shocks, reallocate workers to contracts that provide the highest returns.

Privately held companies are not required to purchase a financial-statement audit, but many nonprofits are, and their pricing data are publicly available. These two things enabled the researchers to observe changes in both the quantity of services purchased and the price paid for audits.

The researchers exploited Section 404 of SOX, which requires a CPA firm to report on the effectiveness of a public company’s internal controls. This regulation effectively increased the demand for accounting services from publicly held companies. The researchers find that privately held companies, in turn, reduced their use of CPA-attested financial reports by 12 percent in just the two years from 2003 to 2005. Instead, they provided their banks with tax returns or internally prepared reports.

Moreover, nonprofits with auditors who became busy complying with Section 404 ended up paying higher audit fees or decided to switch auditors. The research finds fees increased 5 percent, while the probability of switching auditors increased 7 percent. In 2003 and 2009, more than 1,500 nonprofits left the Big Four accounting and audit firms (Deloitte, PwC, EY, and KPMG), a 4 percent decline in market share for nonprofit clients.

—Alex Verkhivker


Change in private US companies’ use of CPAs for financial reports

Percentage points

KEY: Researchers’ confidence intervals

Change significantly different from zero

Change in fees that auditors charged US nonprofit organizations

Percentage points

KEY: Researchers’ confidence intervals

Change significantly different from zero

Duguay et al., 2017
CAN MEDICARE’S HOSPITAL RATINGS BE TRUSTED?

The Centers for Medicare and Medicaid Services runs a website that offers seemingly valuable information about the relative performance of hospitals throughout the United States. The system, known as Hospital Compare (HC), was developed as a handy tool for people trying to figure out which of their local hospitals is best. However, the HC scoring is sometimes woefully inaccurate, research suggests, finding that some of the country’s best hospitals receive unusually low ratings, while many of the smallest hospitals get undue boosts.

This inaccuracy can have serious consequences—if a patient experiencing shortness of breath, for example, seeks out a top hospital but ends up at a lower-quality one with inadequate care, the result could potentially be fatal.

University of Pennsylvania’s Edward I. George, Paul R. Rosenbaum, and Jeffrey H. Silber; Chicago Booth’s Veronika Ročková; and INSEAD’s Ville A. Satopää analyzed data from Medicare billing records for 377,615 patients treated at 4,289 hospitals, and focused on mortality rates after hospital admission for a heart attack, a key indicator of hospital quality. They discover that aggregated HC mortality-rate predictions did not reflect actual mortality-rate patterns in the data.

This miscalibration was most severe for the smallest hospitals, those with the lowest volume of patients and, therefore, less data. Because the HC approach lacks the flexibility to cope with this sparseness, it compensates by adjusting mortality estimates from small hospitals to match the national average, severely underestimating risks at small hospitals, the research finds. This adjustment is at odds with the fact—established by existing research and clear from the Medicare data—that the rate of heart-attack deaths at small hospitals tends to be higher than the national average.

To overcome the deficiencies of the HC method, the researchers developed a Bayesian statistical model for mortality-rate predictions that adds several additional variables, including hospital volume, nurse-to-bed ratio, and the hospital’s technological capability. This model more accurately pinpointed the probability that patients would die within 30 days of a heart attack—and indicated that smaller hospitals in the data set tended to have poorer outcomes. Not all small hospitals performed worse than big ones, but it was the case on average.

Hospital mortality rates depend on the initial sickness of the patients treated, of course. The average mortality rate of 28 percent at small hospitals was strikingly higher than the 12 percent at large hospitals. When the researchers controlled for the health of incoming patients, the average mortality rate at large hospitals rose to 20 percent—but that still left a mortality-rate gap, one undetected by the HC method but closely predicted by the researchers’ approach.

For public reporting, it is essential to adjust for such patient-mix discrepancies, yet the HC method biases all mortality predictions toward the national average. The researchers propose a different way of standardizing, which they say ultimately removes patient-mix differences from comparisons without compromising their method’s ability to reflect mortality-rate patterns in the data.

The researchers say that the US government should increase the accuracy and meaningfulness of HC by adopting a more comprehensive model that incorporates hospital characteristics as variables, and by using their method of standardization to provide more honest hospital-to-hospital comparisons. “Beyond providing a tool to help the public make more informed health-care decisions, such an improved HC can serve as a valuable resource for understanding and improving America’s health-care system,” says Ročková.—Alice G. Walton

The Chicago Booth Review...
The choices that make a downturn worse

In the US housing run-up, which peaked in 2006, banks allowed homeowners to borrow money with few conditions, issuing loans that required little documentation. The assumption was that if homeowners defaulted, rising housing prices would help lenders avoid losses.

In a boom, banks and bond markets make the same types of loans to companies, suggests research by Chicago Booth's Hans B. Christensen and Mark G. Maffett and Booth PhD candidate Lauren Vollon. The researchers focused their work on the European Union’s Market Abuse Directive (MAD) and Markets in Financial Instruments Directive (MiFID), which prohibited insider trading and market manipulation and enhanced consumer protections in the financial-services industry.

From 2000 to 2013, households significantly increased the proportion of their total liquid assets that they invested directly in stock markets in response to the regulations, the researchers find. The MAD measure resulted in a 12 percent increase in average household-equity ownership, and the MiFID legislation, a 5 percent gain.

The researchers also studied foreign investments by mutual funds across member states where the directives were implemented. The findings demonstrate that when a country adopted the directives, mutual funds from other EU nations increased investments in the adopting country by 13 percent.—Alex Verkhivker

Go to Review.ChicagoBooth.edu to read a longer version of this article.


WANT MORE PEOPLE TO INVEST? STRENGTHEN REGULATION

Owning stocks can be good for families and drive economic growth—yet the level of equity ownership, especially outside of the United States, is less than what financial theory would consider ideal.

Improving financial-market regulation could help. Corporate malfeasance erodes trust and deters households from investing in equity markets, but more-stringent regulation may restore investor faith, suggests research by Chicago Booth’s Hans B. Christensen and Mark G. Maffett and Booth PhD candidate Lauren Vollon.

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Sometimes banks are more willing to lend—or buyers, more willing to step in and buy a company from bankruptcy—if a company has high pledgeability. But there’s a downside for managers: pledgeability can make it easier to replace current management with outsiders.

The researchers outline how demand for pledgeability varies with the economy, which leads to a cycle. When the economy is booming and shows no signs of slowing, banks are less concerned about pledgeability and are willing to do business with even opaque companies. In this case, banks issue more covenant-light loans.

In a boom that may not continue, lenders may be somewhat concerned about pledgeability, and a company’s managers have to weigh the trade-offs involved. It is likely, however, that in such times, a company can still borrow more with high leverage and low pledgeability.

And in a bust, lenders demand pledgeability and lower leverage, because the managers’ pledgeability decisions have large ramifications.

If a company has opted to be more pledgeable but goes bankrupt in a bust, its pledgeability could help it finance a sale to an industry insider who will run it—allowing a higher recovery to lenders in bankruptcy. If a company instead opted against pledgeability, industry insiders would have a tough time financing the sale, and the company might get bought up at a low price by outsiders who don’t know much about the industry but are better able to raise financing. Under them, productivity can fall, and this can make a downturn more painful.

However, “while industry outsiders have little ability to operate the asset themselves, this may be a virtue—outsiders have a strong incentive to improve cash flow pledgeability because they do not want to own the asset long term, but instead want to sell the asset back to industry insiders at a high price,” the researchers write. Thus, these outsiders, such as private-equity firms, can replace managers and improve pledgeability until they can flip the company for a profit. But eventually “the incentive to maintain cash flow pledgeability wanes once again,” the researchers write, “and the cycle resumes.”—Dee Gill

A company’s decision about ‘pledgeability’ feeds a cycle of booms and busts

A company can choose how transparent it will be with its organizational structure, accounting, and other practices—one aspect of making the company more or less “pledgeable.” This decision about pledgeability can shape the company’s future.

In this example, a company’s decision to avoid pledgeability leads to a private-equity takeover and a longer recession.

Because the company didn’t make itself pledgeable during the boom, industry buyers have limited ability to borrow against its cash flows. Consequently, their bids are low.

A private-equity firm outbids industry buyers because it can borrow more due to its incentive to increase pledgeability in order to resell the company.

As the economy improves, the private-equity firm looks to sell the company to industry buyers.

Seeking an eventual resale, the private-equity firm makes the company’s organizational structure, accounting, and other practices more transparent.

The focus on pledgeability rather than production extends the industry’s downturn.

The high leverage induces management to neglect pledgeability. Expecting the boom to continue, management sees too little benefit in high pledgeability.

BOOM

Credit starts to loosen, which reduces the cost of borrowing. Management takes advantage of this and chooses high leverage.

The industry is hit by a downturn, affecting the company. Buyers are interested in taking over.

BUST

The economy strengthens, and this is likely to persist. The company’s valuation rises.

Industry buyers purchase the company and improve its productivity.

The company’s pledgeability has improved. Industry buyers can borrow against its cash flows to improve their bid.

RECOVERY

As the economy improves, the private-equity firm looks to sell the company to industry buyers.

Seeking an eventual resale, the private-equity firm makes the company’s organizational structure, accounting, and other practices more transparent.

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Seeking an eventual resale, the private-equity firm makes the company’s organizational structure, accounting, and other practices more transparent.

The focus on pledgeability rather than production extends the industry’s downturn.

Diamond et al., 2017
How do you think the 2007–10 financial crisis and past decade have affected investors?

If one takes a lesson from what we have studied so far, it’s that the financial crisis will broadly influence the overall degree of pessimism people have. This is particularly true for people who were young at the time of the crisis. The younger generation has had the relatively biggest drop when it comes to who’s holding stocks and stock mutual funds. Some of this has been offset by rising stock markets, but the crisis is going to have a long-lasting effect. If a young person has been strongly impressed by only a few years, it can hurt his investing.

This group will also be affected by the decade’s interest rates. Older people may view the low rates in recent years as unusual compared with their experience, but to younger people these low rates may seem quite normal. And the young could well be right. Over hundreds of years, there have been extended periods when interest rates were low for a long time.

There’s a tendency for people to lean too much on what they have seen, as opposed to on the historical record or economic models, or whatever one might use to come to an objective assessment. I grew up in Germany and remember my grandparents talking about the hyperinflation of the 1920s. That’s one of the things that led me to study these sorts of questions. But I’ve learned that it’s important to look at the bigger picture, not just the past five or 10 years—or your own limited experience.
Restricting short selling raises default risks

Short-sellers—who sell borrowed shares on the expectation that prices will fall—are often accused of wreaking havoc on asset prices. Outcry has led regulators to restrict short selling, as they did in July and September 2008, shortly before and after the collapse of Lehman Brothers.

But such restrictions cause investors to pay more for credit, reflecting higher risks, according to Chicago Booth’s Mark G. Maffett and Emory University’s Edward Owens.

Their analysis exploits an experiment conducted by the US Securities and Exchange Commission from 2005 to 2007 in which short-selling restrictions were loosened on a random third of the companies in the Russell 3000 Index.

Maffett and Owens looked at the market for credit-default swaps, financial agreements that protect buyers from default risk in return for a payment stream known as the spread. CDS spreads reflect the likelihood, according to the market, that a company will default.

The researchers find that companies in the SEC program had lower CDS spreads, meaning that credit prices were lower. Companies with fewer short-selling restrictions had spreads that were priced around two-thirds of a percentage point below those of companies not in the program.

The researchers also studied short-selling bans imposed around the globe, examining country-by-country differences in the proportion of a company’s shares that are borrowed relative to market capitalization. They find that more extensive short-selling constraints were correlated with higher CDS spreads. During the periods studied, stocks that were exposed to a ban had CDS spreads significantly higher than at companies not affected by a ban.

Taken together, the analyses by Maffett and Owens suggest that trading restrictions in the form of limits on short selling lead to higher credit prices. “Our evidence suggests that short-selling constraints not only keep public information out of equity prices, but also reduce the incentive to acquire private information,” Maffett and Owens write. Investors and market participants pay more as a result.—Alex Verkhivker

Looser regulations, cheaper credit

Analyzing an SEC experiment that loosened short-selling restrictions for a random group of stocks, the research looks at the companies’ credit-default-swap spreads and finds that they became cheaper than those linked to companies that were not part of the SEC program.


HIGH-YIELD MORTGAGE FUNDS: RISKIER THAN REALIZED?

Since the 2007–10 financial crisis, regulators have cracked down on one of its causes: the securitization of high-risk mortgage loans.

At least for commercial real estate, this void is largely being filled by private-equity firms offering high-yield mortgage loans. However, the instruments remain complex and opaque. It’s unclear whether investors are being fairly compensated for the risks they’re taking, suggests research by Chicago Booth’s Joe Pagliari.

Almost 70 high-yield real-estate-debt funds existed at the start of 2017, Pagliari estimates. Together, these funds, part of the largely unregulated shadow-banking sector, aimed to raise almost $65 billion from institutional investors hoping to profit from debt issued for the portion of a property not covered by a first-mortgage loan.

Such investments are practically the definition of the phrase “high risk, high reward.” Although the funds set targeted returns averaging 14 percent, modeling by Pagliari suggests that one in seven of the highest-risk varieties of this debt will lose some or all of investors’ money.

Pagliari also finds troubling results when modeling a popular practice among high-yield lenders, that of funding these loans with money they themselves have borrowed from other financial institutions. Many high-yield funds try to depress borrowing costs by agreeing to permit these institutions to foreclose on the whole package of loans if one or more of them goes into default. A default can exacerbate a fund’s overall losses and quickly deplete its capital.

One of the main messages for investors is that what might seem like insignificant details can seriously deflate returns, if not worse.—Rose Jacobs

Go to Review.ChicagoBooth.edu to read a longer version of this article.

Few strategies for financial fraud are as broadly familiar as “pump and dump.” Pump-and-dump schemes—in which fraudsters misleadingly tout cheap or penny stocks to lure investors, pushing up the price before selling for huge gains and leaving other investors with significant losses—have featured prominently in films such as The Wolf of Wall Street and Boiler Room. They are fairly ubiquitous offscreen too: at one point, they were estimated to account for 15 percent of all spam email. But though the tactic is well-known and the resulting price distortions well documented, little is known about which investors take the bait.

Research by Chicago Booth’s Christian Leuz, Leibniz University of Hanover’s Steffen Meyer, Maximilian Muhn of Humboldt University of Berlin, Harvard’s Eugene Soltes, and Andreas Hackethal of Goethe University Frankfurt examines who invests in these schemes, and how often. Contrary to the popular understanding that people who invest in such schemes are duped into doing so, the research suggests that some investors actually may seek out these scenarios, perhaps viewing them as analogous to lotteries.

The researchers examined 421 instances of pump and dump from 2002 to 2015 provided by BaFin, a German financial regulator, along with cases they hand collected from searches on German websites and internet forums. They combined data about these schemes with trading records of more than 110,000 investors from a German online bank to see who actually participated. During the sample period, these investors made a total of 29 million trades with an aggregate transaction value of €178 billion.

Of these investors, 6,569 individuals—nearly 6 percent of the sample—collectively made more than 20,000 purchases during the first 60 days of the pump-and-dump schemes that the researchers identified. These individuals invested an average of
The penny-stock gamblers

Analyzing the characteristics of traders who bought stocks that turned out to be pump-and-dump schemes, the researchers find that many of them have a history of risky bets.

On average, each scheme reduced investors’ wealth by €800, generating losses of at least €1.2 million for German online investors. The average investor in the tout schemes was an older, married male not residing in a big city, who had a high self-assessed risk tolerance, the researchers find. Blue-collar workers, retirees, and the self-employed were also more likely to invest in these schemes. But trading behavior, demonstrated by the composition of investors’ portfolios and their past trading patterns, was a better predictor than demographics of who participated: more than 35 percent of pump-and-dump investors were day-trading in penny stocks or were frequent traders with short-term horizons, taking substantial risks and trading aggressively before they participated in the schemes, the researchers find.

“The frequency with which some investors invest in touts as well as the composition of their portfolios suggests that not all tout investors are gullible or fall prey to pump-and-dump schemes,” the researchers write. The observation that some investors may actively search for pump-and-dump schemes underscores the need for regulators, when trying to design more-effective investor protections, to better understand who actually buys touted stocks. Many pump-and-dump stocks trade on over-the-counter or alternative markets that are less regulated than the major exchanges.

For some investors, interventions—such as prompts to take more time before making investment decisions and to think about whether stocks look suspicious—could decrease the likelihood of participating in pump-and-dump schemes. But the researchers warn that these techniques are less likely to work for the subset of investors who intentionally seek out such schemes for the sheer thrill of it and the possibility of big, quick gains.

—Megan E. Doherty


Leuz et al., 2017
Higher income, healthier groceries

Policy makers want to bring grocery stores and other healthy-food retailers to underserved areas. But research by New York University’s Hunt Allcott, Stanford’s Rebecca Diamond, and Chicago Booth’s Jean-Pierre Dubé finds that even when families have access to healthier foods, they don’t necessarily buy them. The researchers worked with data, from the Nielsen Datasets at Chicago Booth’s Kilts Center for Marketing, that include grocery purchases by some 60,000 US households per year and grocery sales at about 35,000 stores nationwide from 2004 to 2015. The evidence suggests that preferences for healthy food, rather than an adequate supply of it, may be driving the nutrition gap between higher- and lower-income households. The findings suggest that policies aimed at nutrition education could be more effective than subsidies and grants meant to encourage building more supermarkets in food deserts.

The relationship between nutrition and income

Lower-income households buy more foods that are sugary and less that are notably healthy, such as whole-grain breads, compared to households with higher incomes. The researchers’ health index, an overall measure of household groceries’ nutrition content, shows that not only did higher-income groups make healthier purchases, but they also improved their health scores at a greater rate in recent years.

Grams of sugar per 1,000 calories purchased

By household income group

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Whole-grain breads’ share of total bread calories purchased

By household income group

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Health index of grocery purchases

Income groups’ change over time:

- 2012–15
- 2008–11
- 2004–07

Households grouped by average annual income:

$25,000

$50,000
People in food deserts still go to supermarkets

Households in US zip codes without supermarkets travel farther to do their grocery shopping, despite arguments by some policy makers and advocates that people in these areas rely on less-ideal options such as convenience stores.

Percentage of households’ groceries bought at supermarkets

- Every household in income group
- Households in food deserts

Why lower-income households buy less-healthy groceries

Demand-side factors rather than supply-side factors explain most of the nutrition gap between lower- and higher-income households. A counterfactual analysis finds that if everyone had the same access to healthy food, with the same prices, the nutrition gap would narrow by 9 percent. But if everyone shared the same food and nutrient preferences, the gap would shrink by 91 percent.

Are you ready for personalized pricing?

Companies are figuring out what individual customers will pay—and charging accordingly

BY BRIAN WALLHEIMER / ILLUSTRATIONS BY MICHAEL BYERS
The introduction of the price tag was a big step forward for American retailing, and you can thank John Wanamaker. In the 1870s, Wanamaker purchased a former Philadelphia railroad depot and expanded his men’s clothing business to include women’s clothing and dry goods. Along with Macy’s in New York and other department stores popping up in major cities, Wanamaker’s Grand Depot revolutionized how people shopped, primarily by placing many different items under one roof. But it went a step further and changed not only where people purchased items but how they paid. It adopted the price tag.

Until that point, pricing had involved a dance between clerk and customer. When a customer picked up a shirt and admired it, a clerk had to know how much the product cost the store, the overhead associated with storing it, competitors’ prices, and more. Meanwhile, he had to figure out, was the customer in a hurry and willing to pay more, or had he come prepared to negotiate for a steeper discount?

With more than 100 product counters to staff, Wanamaker didn’t have time to teach employees the fine art of haggling. Instead, he affixed a note to every item in the store with the amount a customer was expected to pay. Other stores soon followed suit, and set prices became the norm for most goods and services.

But almost 150 years later, the system could soon revert back to the method that predated Wanamaker’s innovation, in a sense. With online shopping and data collection, companies are moving closer to being able to once again tailor prices to individual customers. Research suggests personalized pricing could raise businesses’ profits considerably, and companies are exploring the idea—but cautiously, wary of upsetting customers.

Thanks to the internet and mobile devices, companies are already collecting large amounts of data and using those to personalize advertisements they offer customers. Pricing is a next step, says Chicago Booth’s Sanjog Misra. “Personalization of these things is already starting to happen,” he says. And while this raises concern among privacy and consumer advocates, he says people may come around to his view, that “information-based pricing or advertising is the right way to go.”

**The difficulty of setting prices**

A seemingly simple price tag hides the complicated process of setting prices. A low price with thin margins might attract more customers, but each sale will produce little profit. A higher price may draw fewer customers, but each sale becomes more profitable. The optimal option is often somewhere in the middle: a price high enough to generate profits but low enough to be enticing to a large segment of the customer base. Even then, there will be sacrifices. The seller will lose profits from customers who would have purchased the product or service in question for slightly less—and will sacrifice profits from those customers who would have paid more.

If a seller could charge all customers the highest amount they are willing to pay, it would maximize profits while providing the customers with the products they want or need. This was an advantage of haggling, as individualized prices theoretically benefited both businesses and customers.
Even in the age of the price tag, businesses have sought to balance profits with supply and demand. Airlines, for example, adjust prices based on variables, and two people sitting side by side on a cross-country flight may have paid very different prices depending in part on when they purchased their tickets. From there, it’s not a big leap to move toward more customization. Airlines may use a rewards program or the days and times a person flies to determine whether she is traveling for business. If she comes back on a Friday rather than staying the weekend, for example, she’s probably flying on business—and an expense account. The airline might charge a little more.

And an airline doesn’t have to know much about a person to do that. Imagine what it could charge if it also factored in location, income, credit score, number of dependents, or other available information. Many of these data points could be used to suss out how much people will pay for given goods and services.

Economists are intrigued by this idea. And one company’s experience hints at the potential that personalized pricing could have for profits.

How much will customers pay?

ZipRecruiter, which calls itself the fastest-growing online employment marketplace in the United States, was typically, attached to the price tag. The privately held company charges a monthly fee to businesses that want to simplify and accelerate the process of finding and screening candidates for jobs. It posts notices of openings on hundreds of job boards, uses a machine-learning algorithm to identify qualified candidates, and encourages these candidates to apply.

In 2015, the company was still a smallish start-up that had purchased a company where Booth’s Misra had worked. After the acquisition, over coffee, Misra and the company’s COO, Jeff Zwelling, were chatting about prices. At that point, ZipRecruiter charged employers $99 a month, for all levels of services. The amount—which “matched the reach and level of technological sophistication we were offering at the time,” says ZipRecruiter’s CEO Ian Siegel—seemed palatable to customers and earned the company a profit, but Misra’s gut reaction was that $99 a month couldn’t possibly be the best price for all ZipRecruiter customers.

“These companies have incredible human capital for technology, supply chain, and logistics,” says Chicago Booth’s Jean-Pierre Dubé—but they find it difficult to process and internalize opportunity costs when it comes to pricing. Misra sensed that raising prices had a lot of upside potential, and ZipRecruiter was open to experimenting.

The company agreed to work with Misra and Dubé to run a two-part experiment. For one month, in September 2015, new customers coming to ZipRecruiter’s website weren’t charged the standard $99. Instead, they were randomly assigned monthly prices ranging from $19 to $399.

The company asked new customers for a lot of information about their businesses—including the location, company type, and benefits offered. This was all information that could theoretically be used to figure out how much individual customers would be willing to pay. So in a second month of the experiment, some new customers were assigned monthly prices that an algorithm generated specifically for them, ranging from $142 to $399.

In the first month, the researchers observed, doubling the price from $99 to $199 resulted in some customer loss: a quarter of customers whom the company surmised probably would have paid the $99 price declined to subscribe at the higher price. But because every customer brought in more profits, revenues still increased 14 percent, which suggested to the researchers that ZipRecruiter had been undercharging. The results indicated that ZipRecruiter could increase profits by moving to a higher price, and the researchers calculated that the optimal price was between $249 and $399.

But the results also suggested that ZipRecruiter could refine its pricing even further by using the data it collected to determine a maximum price each customer was willing to pay. In the second month—which compared the standard, optimal, and targeted prices—profits increased 84 percent relative to the $99 price. Following the experiment, Misra became an advisor to ZipRecruiter. Dubé has had no business relationship with the company.

This experiment is as close as any company has likely come to charging personalized prices. David Reiley, principal scientist at Pandora and an adjunct professor in the School of Information at the University of California at Berkeley, says companies often run experiments that seek to confirm their own strategies but fall prey to believing correlation is causation. Take experiments involving advertising, for example. “Advertisers may target groups of customers they think are likely to buy their product. Then when they compare people who got an ad to people who didn’t get an ad, they see that the people who got the ad bought more, and they attribute the entire difference to the ad,” Reiley says. “This despite knowing that they are deliberately targeting people who are likely to buy more even in the absence of the ad.”

The ZipRecruiter experiment, by contrast, utilized a significant amount of customer data—doing what economists have long dreamed of but have not had the opportunity to test. “This is pretty
Perhaps the biggest drawback of individualized prices is that they could offend customers’ sense of fairness.

Businesses are wary
Despite the promise of personalized prices, it is likely that many companies will be slow to adopt them, the researchers say. Even ZipRecruiter, having seen the findings, ended up not implementing them—and the reasons help illustrate some of the hurdles.

In general, executives can be reluctant to test new prices, says Reiley. “A lot of decision makers would rather act like they know what’s optimal rather than find out what’s optimal. If you’re making decisions at a firm and you decide to do an experiment, you have to admit that you don’t know the right thing to do.” If a pricing experiment doesn’t work, it’s been a waste of time and has risked upsetting customers. If a pricing experiment does work, it suggests that decisions that led to the original price were wrong. Then “the question becomes: ‘Why were you doing the wrong thing this whole time?’”

In ZipRecruiter’s case, its executives were willing to try new things, but other practicalities got in the way, including a shift from offering a single product to multiple products. That changed all the numbers, so the researchers’ calculations were no longer applicable. “The one downside to price testing with the scientific rigor we applied is that it takes months for the results to bake,” says Siegel. “After we completed the test, we had a pricing model that was right for the business as it had been, but enough factors in the business changed that the model was no longer valid.” He adds that the insights continue to inform the company’s pricing decisions, however. ZipRecruiter ended up moving to a tiered pricing system.

Also, ZipRecruiter’s competitive landscape changed as Microsoft acquired LinkedIn and Google entered the market. A competitor can quickly undercut a targeted price, says Chicago Booth’s Lars Stole. “Once you start doing this, you’ll have companies in different markets matching those prices. You don’t have much market power.”

Another consideration is that customers could learn to game a system of targeted prices. Software can already tell companies if an online customer has been shopping for similar products on competitors’ websites. Companies, knowing this, could extend

amazing work,” Reiley says. “It’s the kind of thing that I’ve advocated for years, but have never seen it done before.”
a lower price to inspire the shopper to buy. But customers could also use this to their advantage. “If I have browser cookies that make it known I went to Walmart first, well, everyone goes to Walmart first to get a lower price,” Stole says. “Wherever that might happen, companies will know that [I’m shopping for the best deal] and will find it difficult to price discriminate.” In the case of ZipRecruiter, a business could theoretically enter all its information and get a quote, then go back and change a few variables to see how it affects the price. Did that happen? “Not that we are aware of,” says a company spokesperson.

Customers could also arbitrage prices. A savvy consumer targeted with a low price could purchase far more of a product than he needs and sell the surplus to another customer who is being offered a much higher price.

Is price discrimination fair?
Perhaps the biggest drawback of individualized prices is that they could offend customers’ sense of fairness. Targeted pricing is a degree of price discrimination. While the word discrimination may sound sinister and prejudicial, both second- and third-degree price discrimination are actually fairly commonplace. Sliding prices based on quantity constitute second-degree price discrimination—for example, a buy-two-get-one-free deal, or a company incrementally charging less for each product as more of the products are purchased. Third-degree price discrimination occurs when customers are segmented and charged different prices, such as when senior citizens receive discounts or when prices differ by location.

“What ZipRecruiter implemented in its experiment was third-degree price discrimination—where any two customers who share the same set of characteristics get the same price,” says Misra. “As the set of characteristics grows, this strategy might approach something more akin to first-degree price discrimination, where every customer gets a unique price.”

Technically speaking, first-degree price discrimination can’t be implemented. “This requires that we be able to measure exactly what an individual is willing to pay,” which is impossible, Misra explains. But anything approaching first-degree price discrimination can still make consumers feel uneasy. (See “When companies ignore price,” previous page.)

“Consumers believe there’s an objective and fixed price for any good on the market and it’s not OK to charge anyone, any time, above that fair price,” says Chicago Booth’s Ayelet Fishbach.

That can lead to a public-relations challenge, or nightmare. In 2000, an Amazon customer noticed that when he deleted his cookies, he could buy a DVD he wanted for $4 less. Amazon CEO Jeff Bezos said the price difference was part of a company test offering random prices to determine an optimal price for products. He said that no customer demographic information had been used to determine the prices served up. Still, Amazon gave thousands of customers refunds, and Bezos apologized.

This was four years before Mark Zuckerberg created Facebook and six years before Twitter launched. A similar pricing situation today could go viral and lead to hashtag boycotts.

“In markets where prices are transparent and customers can easily figure out what other people are paying, that’s where you run the risk of a backlash,” says Dubé.

A related fairness issue is that people feel uncomfortable about targeting if it’s done in a way that takes advantage of customers. In the days of haggling, buyers and sellers were equally matched, using skill and information to help derive the price. But as data
In search of the ideal price

Testing a range of introductory prices for online job board ZipRecruiter, the researchers find that the company could have more than doubled its standard price of $99, increasing revenues despite the smaller number of customers willing to pay more.

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Optimal price in researchers’ model: $280.53

collection has become faster and cheaper, targeted prices derived from thousands of data points put decisions in the sellers’ hands, seemingly tipping the balance of power.

“In general, consumers respond better to differentiated pricing if they feel in control of the process, and if they revisited the purchase they wouldn’t change what they bought,” says MIT’s Catherine Tucker.

And there’s a risk that price discrimination could stray into not just unfair but illegal territory. Say that the parameters used to set prices mean a company ends up charging certain groups more for the same service. Banks are expressly prohibited from discriminating based on race. But what if zip-code data fed into an algorithm served as a proxy for race? The same thing could happen in other industries and algorithms.

“If you don’t put race but you put in zip code, the places where minorities dominate may be treated differently,” Dubé says. If the algorithm finds that companies in zip codes dominated by African American–run companies have a harder time recruiting people than companies elsewhere, it could end up ultimately charging more to African Americans.

Misra argues that the best way to counter this would be for companies to analyze the data to see if they are accidentally discriminating based on race. When he has approached some companies to do this in a research context, he says, the companies have turned him down.

About fairness, Misra and Dubé argue that policy makers, customers, and companies should think more about this. In their view, a single price tag is actually less fair because it restricts the size of the market.

The researchers argue that with targeted pricing, the majority of customers benefit even if a minority of people have to pay more.
Think of a supermarket owner working to set a single, optimal price for a carton of orange juice. The grocer may know that customers are willing to pay between $2 and $5 for a carton and may choose to charge $4, a point at which a lot of people buy the juice, and close to the maximum amount people might pay. But the price will exclude people who don’t have $4 to spare. There might be people who can only afford $3, and who won’t be able to buy the juice.

The researchers argue that price discrimination expands the size of the market and avoids limiting the people who can access a product or service. Under targeted pricing, they argue, the majority of customers benefit even if a minority of people have to pay more. “No consumer likes to know they paid more than anyone else. But that’s not the only way to look at the fairness debate,” Dubé says.

“The targeting of prices broadens the scope of who is able to pay and brings more people into the marketplace,” says Misra. From the perspective of an economist, this expanded market is good for everyone.

**Uneven pricing already exists**

If the price tag represents what’s fair, it is already being compromised. No one expects to pay the sticker price for a car at a dealership, or the same amount as their fellow passengers for an airplane ticket. At colleges and universities, students with means are expected to pay the full cost while others receive what amounts to a discount for the same education. Financial-aid packages are essentially price discrimination. “If we had uniform prices, you could imagine that a lot of poor people would never go to college,” Reiley says.

According to a 2015 report from the National Center for Health Statistics, 8 percent of Americans don’t take medicines as prescribed because of high costs. Some of the most expensive prescription drugs on the market can cost patients more than $70,000 per year. Some customers with financial need can apply for aid or receive discounts on high-priced drugs. But many people are unaware of such discounts, or are unable to secure them. Targeted prices could theoretically bring down the cost of a drug for people who might otherwise be forced to choose between their medication and, say, food.

Tesla, the premium electric-vehicle maker, in 2016 quietly charged varying prices for its Model S sedan. One version of the vehicle had a 75 kWh battery that would allow it to go 250 miles. But for $9,000 less, Tesla could change some code in the car’s computer to restrict the battery to 60 kWh and a range of 210 miles. It also offered 70 kWh options. People who bought one of the cheaper versions could pay for an upgrade later that unlocked the battery’s full potential. With the cheaper prices, Tesla hoped to capture more potential buyers and accelerate the adoption of electric vehicles.

Uber, the ride-sharing giant, has tried out premium pricing. The company is using machine learning to determine what a customer might be willing to pay for certain routes at particular times of the day, Daniel Graf, the company’s head of product, told Bloomberg this past May. Two customers leaving the same place at the same time and going the same distance might pay different prices based on their destinations. (And the customers and company can run into trouble, such as when a rider in December was charged $18,000 to go 11 miles.)

“It’s a technology, but it’s one that is the Holy Grail of its business model: Uber would love to charge everyone a price that’s individualized,” says Harvard’s Scott Kominers, who has written about the company for Bloomberg View. The strategy has some risk, as Uber has competition, but Kominers sees Uber as a company that could potentially walk the tightrope.

“If Uber introduces some new innovation that suddenly raises the prices for half of its customers, and if those customers are savvy, they might all switch to Lyft,” Kominers says. However, “Uber could use prior data to estimate how much you might pay and how likely you might be to respond to slight price increases. They could then, for example, try to price discriminate only to people who won’t switch to Lyft.”

Facebook can already tell if you’ve started but failed to complete a purchase, say, of a pair of shoes, on another site. A rival company can then run ads in your Facebook feed offering the same shoes, but maybe even cheaper. The digital data can follow shoppers into physical stores, as companies are using social media and emails to target chosen shoppers with coupons that shave a few dollars off the price of a product that those customers have come close to purchasing. In the future, says Misra, companies could be more discriminating about what they offer—and perhaps decide not to offer a discount if they know the customer purchases the product on a predictable schedule.

All this might have offended Wanamaker, who reportedly stated that “if everyone was equal before God, everyone should be equal before price.” But Wanamaker’s flagship store in Philadelphia is now a Macy’s, and department stores are struggling. His fortune was built on retail innovation, and if presented with a pricing scheme that could have nearly doubled his profits, it makes you wonder if he would have dismissed it—or given it a chance. - CPD

Why it’s so hard to simplify the tax code

How complicated tax laws undermine efforts to create a fair, growing economy

BY DEE GILL / ILLUSTRATION BY JOEL HOLLAND
And simplifying the tax code ostensibly has bipartisan backing. Both the Bush and Obama administrations advocated for simplification, in reports, as have House Speaker Paul Ryan (Republican of Wisconsin) and Senator Elizabeth Warren (Democrat of Massachusetts). But when the Senate passed a tax bill this past December, there was no postcard. Instead, Democrats pointed to handwritten notes in the margins of the bill as a sign of a madcap construction process going on. Proposals to cut deductions for home mortgages and medical expenses, and tax credits for adoption and education, had been met by pushback. “File Your Taxes on a Postcard? A GOP Promise Marked Undeliverable,” pronounced a New York Times headline shortly before President Trump signed the bill.

What happened? The same thing that always does, suggest researchers. While simplicity is a stated goal, complexity wins the day. Hence companies and individuals will hire accountants to wade through the latest bill, interpret the new rules, offer guidance, and help work through the inevitable corrections and amendments.

And this comes at an economic cost. Research by James Mahon and Chicago Booth’s Eric Zwick, and others, collectively indicates that the complexity leads individuals and companies to fail to take advantage of billions of dollars in offered breaks, many of them presumably intended to stimulate the economy. In this way, complexity undermines what tax incentives are purported to accomplish.

The tax-reform cycle

The US tax code is a master class in convolution. Individuals are taxed at different rates, and they can reduce their effective rate through myriad credits and deductions, which take time to itemize if they choose to do so. Companies’ stated tax rates depend on their structure, and companies, too, have opportunities to change their effective rates.

The Tax Reform Act of 1986 memorably promoted simplicity as one of the three core reasons for pursuing a system overhaul, the others being efficiency and fairness. According to a 10-year analysis of the act by University of California at Berkeley’s Alan J. Auerbach and University of Michigan’s Joel Slemrod, the act “had mixed success in reducing complexity.” It registered some clear wins, such as nearly eradicating the tax-shelter industry, and temporarily eliminating the tax differential between capital gains and ordinary income, “which many tax lawyers had argued was the largest cause of transaction complexity in the pre-TRA86 tax code,” the researchers write. But other changes fell flat. Taxpayers kept paying for professional tax assistance, an indicator of the code’s complexity.

Since then, the calls for simplicity have continued. Some call for simpler but more regressive tax structures such as a retail-sales tax, a value-added tax (which levies a tax at every stage of an item’s production and distribution), or a flat tax.
that would give all individual taxpayers a single rate. But to
date, tax reform has never reversed the complexity trend.
Other than the 1986 act, “I am not aware of any other major
tax legislation that had simplicity as a stated objective, which
makes it unlikely that simplification resulted,” says Auerbach.
 “Indeed, the general movement over the years toward using
the tax system to accomplish various policy objectives,
through the use of so-called ‘tax expenditures,’ has led to
greater complexity.”

Walking away from billions
What’s making the code so convoluted? As Auerbach notes,
politicians have taken to using tax breaks to encourage
employers to hire more people (or at least not fire them), buy
equipment, and otherwise invest in creating jobs. They use
other breaks to push people to pursue education that would
raise their wages, borrow money to buy a home, and send
children to day care while parents work. When these incentives
function as intended, more money flows into the economy
through rising wages and spending, which generates more
funds for the US Treasury at tax time.

But tax breaks only change behavior if people claim these
breaks—and many don’t. The Internal Revenue Service notes
that one in five eligible workers doesn’t take advantage of the
Earned Income Tax Credit (EITC), a program that tax-policy
groups consider effective for pulling low-income families out of
poverty. And, according to the Brookings Institution, there are
only “relatively modest” take-up rates for the Saver’s Credit, the
Child Tax Credit, and the American Opportunity Credit, which
is up to $2,500 cash toward college tuition.

Mahon and Zwick find that companies, too, are leaving
money with the government. They look at the carryback,
a permanent tax break in the US code designed to act as
an ongoing economic stabilizer. The

When a refund might not be worth it
Companies let the government keep billions of dollars in carrybacks,
which are tax breaks benefiting those with net operating losses.

US corporations that claimed a carryback refund of at least $1,000
1998–2011

1.2 million
Number of times corporations
had a year when they were eligible

465,699
Times they actually took
the refund, claiming
a total of $187 billion

... out of a possible
$357 billion

Mahon and Zwick, 2017
Some companies may simply not want to risk complications, or add to their accounting expenses, by filing claims.

Companies that hired certified public accountants and attorneys to prepare and file their taxes were more likely to file carryback claims. Compared to a 37 percent claim rate for all eligible filers, 42 percent of eligible companies that hired an outside attorney filed carryback claims, and the figure was 45 percent for companies that hired CPAs.

And more sophisticated preparers also seemed more likely to file claims. Older preparers and accountants who had bigger client bases were more likely to seek carryback refunds. Preparers who worked for themselves were less likely to.

Big companies generally hire sophisticated preparers, so Mahon and Zwick studied claim patterns of smaller companies that were both eligible for multiple carryback claims between 1998 and 2011 and had switched tax preparers during these years. To minimize the possibility that a corporate management change led to changes in tax strategies, the researchers focused findings on switches that occurred when the tax preparer either died or moved at least 75 miles away.

The researchers conclude that characteristics of the tax preparer mattered as much to the decision to file a carryback claim as intrinsic characteristics of the company itself, such as asset and loss size. More sophisticated preparers—which the researchers identified in part as those who had more official training, experience, and clients—filed more claims.

Meanwhile, large companies’ actions were also affected by tax issues not directly related to carryback claims. Companies that paid the corporate alternative minimum tax, for example, were considerably less likely to claim a carryback refund. Technically, the alternative minimum has nothing to do with the carryback—it’s meant to ensure that profitable corporations pay some tax even after deductions, and it’s irrelevant for most small and midsize corporations. However, a carryback claim adds to the accounting time required for an alternative minimum filing. Separate accounts are required for regular tax and alternative-minimum calculations, including accumulated stocks of carrybacks, which can alter the ultimate size of a potential refund.

Thus the decision not to file carrybacks was driven not by the carryback provision itself, but by broader tax-code complexity, the researchers conclude. The companies that claim the alternative minimum may simply decide they don’t want to risk complications with this filing, or add to their accounting expenses, by also claiming carrybacks. And other companies only filed claims when sophisticated preparers guided them to do so.

Complications decades in the making

While Mahon and Zwick focused on corporations, other studies find that tax-code complexity also reduces take-up of provisions aimed at individuals. Taxpayers underreact to or even ignore new tax laws when incentives are complex, even when the potential gains are high, according to a 2015 study by University of Oxford’s Johannes Abeler and MIT’s Simon Jäger.

In an experiment run by Abeler and Jäger, each participant could earn a payment for sliding icons on a screen into position.
One group was told they would receive a piece rate, and pay a steadily increasing tax, for each correctly positioned icon. A second group was given the same job with the same piece rate but with more-complex incentives and tax rules—they had 22 rules versus two. Before the task began, every study participant decided his or her optimal number of completed sliders.

New incentives, identical in each group, were added in subsequent rounds. Subjects who started with the more complex system were less likely to react well to the new benefits don’t have the intended effects.

While follow-up notices of any kind boosted claims, a notice with a simplified layout significantly boosted take-up, the researchers find. “Small changes to the design and simplicity of these forms can induce large responses among otherwise intractable populations,” notes Bhargava. “The share who fail to claim these valuable benefits could be significantly reduced by clearer, shorter, and simpler forms.”

But current take-up rates indicate that the EITC has yet to fulfill its potential as a social-welfare tool that can help minimize poverty and promote a healthy economy. And the research collectively suggests that the effects of many tax incentives are likely muted. Forecasters—whether predicting the number of families who will collect food subsidies, or the number of jobs that a corporate tax break will create—generally assume that people and companies act in their own best interests, but if complexity prevents them from doing so, the benefits don’t have the intended effects.

This leads to a predictable cycle. When benefits don’t have the intended effects, lawmakers put more benefits and incentives in the code. Yet these additional benefits and incentives make the code more complex, so people and companies don’t claim them. And this further undermines what the benefits are there to do. But it leads to a clear takeaway: to effect economic change with tax laws, it would help to make the laws simpler.

This assumes, however, that economic change is the intended goal. “There is some argument for complexity,” says Stanford’s John H. Cochrane, who is also a distinguished senior fellow at Booth. “By making a tax advantage available but very obscure, the government can give it to a narrow group that really cares and count on others not figuring it out. . . . I call it price discrimination by needless complexity.”

What about that bipartisan support for simplification? Overstated, suggests Auerbach. The goal of a simpler code ranks “right up there with motherhood and apple pie,” he says, “as long as it’s an abstract objective.”

Go to Review.ChicagoBooth.edu to see citations for research mentioned in this article.
The proportion of the global population living on less than $1.90 per person per day has fallen—from 18 percent in 2008 to 11 percent in 2013, according to the World Bank. In the United States, however, the poverty rate has been more stubborn—41 million people lived below the country’s poverty line in 2016, about 13 percent of the population, nearly the same rate as in 2007. Recent policy initiatives haven’t meaningfully reduced that rate. House Speaker Paul Ryan (Republican of Wisconsin) indicated this past December that the government would make fighting poverty, but also welfare, which many Republicans believe is a failed policy, a priority in 2018.

US lawmakers have expressed frustration when investments such as welfare programs don’t pull people out of poverty. “I believe in helping those who cannot help themselves but would if they could,” said Senator Orrin Hatch (Republican of Utah) this past December, when explaining his views on government spending. “I have a rough time wanting to spend billions and billions and trillions of dollars to help people who won’t help themselves, won’t lift a finger, and expect the federal government to do everything.”

Hatch’s statement reflects a common view that removing government support would force many poor people to improve their conditions themselves. Without welfare and government assistance, would able-bodied people find a job, get an education, stop buying lottery tickets, and focus on paying bills?

Not quite, indicate researchers, whose work is telling a different story of poverty. Contrary to the refrain that bad decisions lead to poverty, data indicate that it is the cognitive toll of being poor that leads to bad decisions. And actually, decisions that may seem counterproductive could be entirely rational, even shrewd. The findings suggest that to successfully reduce poverty, it would help to take this psychology into account.

What drives ‘bad’ decisions
In a 2013 study published in *Science*, researchers from the University of Warwick, Harvard, Princeton, and the University of British Columbia find that for poor individuals, working through a difficult financial problem produces a cognitive strain that’s equivalent to a 13-point deficit in IQ or a full night’s sleep lost. Similar cognitive deficits were observed in people who were under real-life financial stress. Theirs is one of multiple studies suggesting that poverty can harm cognition.

But it was the fact that cognition seems to change with changing financial conditions that Chicago Booth’s Anuj K. Shah, along with Harvard’s Sendhil Mullainathan and Princeton’s Eldar Shafir, two authors of the *Science* paper, were interested in getting to the root of. They suspected that poverty might essentially create a new mind-set—one that shifts what people pay attention to and therefore how they make decisions.

“Some say you really have to understand the broad social structure of being poor, and what people do and don’t have access to,” says Shah. “Others say that poor individuals have different values or preferences. We stepped back and asked: ‘Is there something else going on?’”

To test the idea, the researchers designed experiments that stripped away money and put other resources in demand. In one such study, the researchers had participants play variants of the popular games *Wheel of Fortune*, *Angry Birds*, and *Family Feud*, looking for how scarcity affected players’ attention. “Rich” people in these constructs had more chances to earn points, so more time to play the game. “Poor” people had fewer chances.

In the *Wheel of Fortune*-style game, the researchers measured how cognitively fatigued the players became. Logic would predict that rich players would be more fatigued, since they were allowed more turns to make more guesses. Instead, the researchers observed that poor players, having received fewer tries to guess at the answers, were more fatigued, having put more effort into each guess.
For the poor, the thought of money is never far away.

In fact, just as you focus on your own name amid the din of conversation, poorer people might tune into the finances of things more readily, according to ongoing research by Chicago Booth’s Shah, University of British Columbia’s Jiaying Zhao, Harvard’s Mullainathan, and Princeton’s Shafir.

In one experiment, the researchers had participants look briefly at a list of words that were either related to money or to men but contained neither the word “money” nor “man.” (See “What’s on your mind?” this page.) The researchers then asked the participants to recall as many words as they could.

Poorer participants looking at the money-related list were more likely than wealthier participants to say that “money” was on the list. Income didn’t appear to affect how people responded to the other list.

“Everyone regularly deals with most of the items on the money-related list,” write the researchers. “But strikingly, wealth affords us the luxury to see those items—rent, phone, grocery—as largely disconnected. For poorer participants, however, that list takes on a different texture. The items are all associated with prominent financial concerns, strongly related to the one concept that is not there but is often remembered: Money.”

In another experiment, the researchers asked participants from a range of income levels to imagine different scenarios in which they encountered some unexpected activity, such as ending up at a fancier-than-expected restaurant with a group of friends. What kinds of thoughts were most likely to come to their minds? Poorer participants, more often than wealthier ones, mentioned cost-related thoughts. And the thoughts were intrusive. Thinking about receiving bad medical news, poorer participants worried about impending treatment costs. Thinking about driving routines, they had trouble suppressing thoughts about transportation costs. The research collectively suggests that poverty shifts a person’s focus and attention. And once thoughts about money emerge, they’re difficult to suppress.

In an Angry Birds-style game in which people tried to shoot targets, rich players were given more chances to train a virtual slingshot on a target. Poor players, given fewer attempts, spent longer lining up their shots, and many scored more points per shot than rich players. For all the extra shots rich players had, they didn’t do as well, proportionally. “It seems that to understand the psychology of scarcity, we must also appreciate the psychology of abundance. If scarcity can engage us too much, abundance might engage us too little,” the researchers write.

In some ways, scarcity appears to make people better problem solvers. In these game versions of the world, says Shah, the players randomly assigned to be poor focused on what was concrete and in front of them. And that’s what happens in real life, too, write Shah, Mullainathan, and Shafir. When money is tight, “the very lack of available resources makes each expense more insistent and more pressing. A trip to the grocery store looms larger, and this month’s rent constantly seizes our attention. Because these problems feel bigger and capture our attention, we engage more deeply in solving them.”

Unfortunately, one way to solve the problem in the short run is to borrow, which can backfire. In the experiments, when poor participants were allowed to borrow resources, that borrowing undid some of the advantages of scarcity. When the researchers looked at performance as a function of borrowing, they find that poor players often borrowed more than they should have, and performed better when they weren’t permitted to borrow. Poverty led to wise decision-makers who knew when to borrow, which can backfire. In the experiments, when poor players were not allowed to borrow, they performed as well as their wealthier counterparts. Just as the Angry Birds players spent more time lining up a shot, people with actual financial concerns might also make better, more focused decisions, closer to what economists consider ideal.

The researchers asked real people of various socioeconomic strata if they were willing to travel an extra 30 minutes to save $50 on a $300 tablet. Some said they were. But when asked if they’d drive that far to save the same amount on a $1,000 tablet, some of the respondents changed their minds. Their answer depended on their income.

Many people were, irrationally, more likely to say yes when buying a $300 tablet rather than a $1,000 one. But that response was more common among wealthier people. For poorer individuals, the cost of the tablet often didn’t matter—regardless of the price, they were just as likely to travel for the discount.

That’s the correct financial decision, according to traditional economics—to drive the extra distance no matter the original cost. Saving $50 is the same regardless of the amount of the item in question. But wealthier participants saw the savings in relative terms, noticing the percentage savings. By contrast, poorer participants thought in absolute terms. To them, $50 saved was $50 to spend on groceries or the electric bill.

The same pattern showed up in experiments that involved smaller and larger amounts of money or other rewards. Even calories fit the pattern: people who were dieting, and therefore in a scarcity mindset, recognized that an order of McDonald’s fries was just as fattening whether thought of in terms of daily or weekly calorie intakes. But people who were not dieting were more swayed by context. Once again, scarcity prompted the more accurate decision.

**Trade-offs become real**

Shah, Mullainathan, and Shafir looked further into how poverty affects decision-making, and find that poor people may evaluate trade-offs better than their wealthier counterparts. Just as the Angry Birds players spent more time lining up a shot, people with actual financial concerns might also make better, more focused decisions, closer to what economists consider ideal.

The researchers asked real people of various socioeconomic strata if they were willing to travel an extra 30 minutes to save $50 on a $300 tablet. Some said they were. But when asked if they’d drive that far to save the same amount on a $1,000 tablet, some of the respondents changed their minds. Their answer depended on their income.

Many people were, irrationally, more likely to say yes when buying a $300 tablet rather than a $1,000 one. But that response was more common among wealthier people. For poorer individuals, the cost of the tablet often didn’t matter—regardless of the price, they were just as likely to travel for the discount.

That’s the correct financial decision, according to traditional economics—to drive the extra distance no matter the original cost. Saving $50 is the same regardless of the amount of the item in question. But wealthier participants saw the savings in relative terms, noticing the percentage savings. By contrast, poorer participants thought in absolute terms. To them, $50 saved was $50 to spend on groceries or the electric bill.

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**Put it into practice**

If people in poverty are making smart decisions considering the situation, how could that be recognized and better encouraged? There may be ways to help people when they’re facing potentially expensive borrowing decisions. For example, Chicago Booth’s Marianne Bertrand and University of California at Berkeley’s Adair Morse studied high-interest payday loans and find that people made better decisions when the interest rate was expressed in terms of dollar amounts, namely the cost they’d pay over three months. “We’d explain this by saying that a dollar amount is a lot more concrete,” says Shah. “You can think about exactly what you’d have to give up to pay off the loan.”

“Program designers and policy makers often suffer from a failure to accurately take the perspective of the people they are trying to help,” says Chicago Booth’s Christopher J. Bryan. “They design programs that would be appealing to people if they had the luxury of being able to devote careful thought and attention to considering them. But poverty imposes a heavy attentional ‘tax’ that prevents people from devoting that kind of thought to new opportunities, so program uptake is low.”

Bryan was the lead author of a policy paper that recommended new strategies to policy makers and other relevant parties based on recent findings. Among other things, he and his co-researchers advise that an effort be made to reduce the up-front cost of future-oriented behaviors. For example, they point out that in a study by researchers at the World Bank, Harvard, and Yale, giving kids free

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**Make every shot count**

Using a video-game scenario to test the influence of scarcity, the researchers find that people with limited chances performed better.

**Measure of performance in Angry Birds-style video game**

- Poor” players given a small number of shots
- “Rich” players with five times as many shots

<table>
<thead>
<tr>
<th>How well they did vs. the average (z-scores)</th>
<th>Worse</th>
<th>Better</th>
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</thead>
<tbody>
<tr>
<td>Borrowing extra shots allowed</td>
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<tr>
<td>Not allowed</td>
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Shah et al., 2012
Even for people who are not in poverty, financial pressures can affect decision-making—and some companies are taking steps to address that. Financial worries affect a person’s ability to function and focus, especially at work, according to a survey conducted by Bank of America Merrill Lynch. Polling 1,200 employees at companies of all sizes and all over the United States, the company finds that 56 percent of people were stressed about their finances. Of these, 53 percent said that their financial stress affected their ability to concentrate at work.

The company argues that financial planning would help the situation, prodding employers to offer additional resources to increase “financial wellness” and reduce financial stress. Forty percent of people polled said they wished their employers would take a more active role in assisting with financial planning, and 85 percent said they’d participate in an employer-provided financial education program.

Northwestern Mutual, for its part, recently partnered with a neuroscience research firm to understand more about what’s going on in the brain when people make financial decisions, with and without an adviser.

To see what areas of the brain are involved in financial decision-making, they hooked participants up to an EEG machine, which measures brain activity, then had them imagine scenarios that included making choices about investing in a child’s college fund or devising a budget after a divorce. The participants were sometimes given additional information to guide them in making their decisions. The results suggest that the brain is less stressed when help is offered: signals in the brain associated with calm decision-making were 21 percent higher when participants had more financial advice. Conversely, signals that indicate attention were 20 percent higher when the participants were not given any additional help, suggesting that these participants’ brains were working harder to process the information. The takeaway, says Northwestern Mutual’s Rebekah Barsch, is that having assistance can make a big difference in a person’s perception of financial stress.

This aligns with what Chicago Booth’s Abigail Sussman has suggested in her own policy work as part of the Behavioral Science and Policy Association’s working group on financial decision-making, a consortium of academic researchers. In 2017, the group released a report outlining some of the behavioral variables that may contribute to consumers’ poor financial decisions, and describing what companies can do to help customers make better ones.

One suggestion: lenders should be more transparent and make information easier to understand. A credit-card company could notify customers before a charge is added to their account, or provide online tools to help customers understand how interest accrues. For instance, visualizations could illustrate how compound interest works, and calculators could show the total cost of a purchase under various repayment plans. Similarly, the researchers suggest that the Consumer Financial Protection Bureau might create a tool for people applying for mortgages, showing the best type of mortgage based on the individual’s data, as well as her projected risk of defaulting. Companies act in their own interests, but “it’s generally not in the company’s best interest to have all of their customers defaulting,” says Sussman. To some extent, she says, “they’re interested in helping.”

Go to Review.ChicagoBooth.edu to see citations for research mentioned in this article.

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school uniforms boosted school enrollment in Kenya by more than 6 percentage points. Similarly, researchers at Stanford, Harvard, and the University of Toronto, in conjunction with H&R Block, find that offering US students assistance with their applications for federally funded college student aid has been shown to increase enrollment in college by 24 percent.

The researchers urge service providers to weigh price and inconvenience carefully, particularly when offering health-related services, which many people may forgo if the cost or the distance is too great. A program in Uganda brought health products such as water-purification tablets and antimalarial drugs to people door-to-door, which removed the issue of making people travel to get these products. That simple step to counter the inconvenience of seeking out products and services had an effect. “It can sometimes be better to charge a small fee and make a service very convenient than to charge nothing for a very inconvenient service,” write the researchers. In this case, the cost of delivery was included in the price of the products.

The researchers also recommend taking into account the timing of incentives—and they advise to avoid offering them when money is tight and people are consumed with the pressing need to budget what little they have to meet basic needs. In India, where sugarcane farmers are paid annually after the harvest, farmers’ attention scores were the equivalent of 10 IQ points higher than just before the harvest, when farmers were relatively poor, according to data from the 2013 Science study mentioned earlier.

Offering subsidies or other incentives when people are more receptive to and have the spare capacity to consider them, such as after a harvest or a payday, may make a difference over the long run. One effort, in Tanzania, asked people to sign up for health insurance at cashpoint locations right after payday, and the timing led to a 20 percentage point increase in health-insurance use.

Introducing cognitive aids can help address the limited capacity for attention that may constrain people in poverty. In one study, it helped to show farmers research regarding the most productive ways to plant their crops. When poor, stressed, and in a scarcity mind-set, farmers had a harder time taking in the information. “This result has nothing to do with the intelligence of the farmers,” writes Bryan’s team. “A fact is only obvious if the observer has the spare attentional capacity to notice it.”

They also suggest that reminders, in the form of text messages or stickers, can be effective. Such gentle pushes—for instance, to take medication on schedule—can help people remember to do what they may otherwise forget, since other duties and obligations may compete for attention.

For those who design and implement antipoverty initiatives, it’s important to recognize that while scarcity can help people focus on costs and benefits, it can also cause stress that shifts attention and steals cognitive bandwidth. A big step forward would be to understand these psychological limits that poverty imposes and make some policy tweaks, write the researchers, to “substantially improve the impact they have on the poor.”
THE KING'S DILEMMA

The mighty king of the jungle looks over the feast his subjects have brought him.

But something is amiss!

WHERE ARE ALL THE ZEBRAS AND IMPALAS?!

I think I have an idea, Your Highness, if you promise not to eat me!

Who are you?

I'm Professor Rimmy Etomy of Chicago Booth!

I took a look at taxes in the United States with Stanford's Lisa de Simone and Joseph D. Piotroski. I think our research is applicable to your situation!
I'm not interested in the politics of men. How does this relate to me?

See that shadowy land just outside your kingdom?

Egad! Those cowards are living outside of my territory! But why? There's so little grass there!

Corporations in the US have $2.6 trillion stashed overseas to avoid taxes. You've been eating so many baby zebras, they chose to keep their young on that island!

Well, I will declare a hunting holiday! For a whole month, my pride will only eat one herbivore a week!
That might not go as smoothly as you think! The 2017 tax bill attempts such a holiday, but look back to 2004, when Congress lowered the tax rate on foreign-earned income from 35 percent to just 5 percent for a yearlong tax holiday. As a result, corporations brought $312 billion back to the US...

Excellent, excellent. Billions of delicious zebras—I mean billions of dollars.

But after your holiday ends, do you plan to increase hunting?

Of course! My pride can’t live on one meal a week for very long! Once the zebras are fattened up and living in my kingdom, we’ll start feasting again. This hunting holiday is just a one-time deal, you see.
There’s your problem. It’s hard to make one-time policies and have everyone believe they are one time only.

Our data suggest that after the 2004 tax holiday, companies most likely to benefit from another tax holiday moved more of their money overseas.

Additionally, in 2008 and 2011, in response to the recession, Congress introduced bills for new tax holidays. Each time there were rumors of a new holiday, companies moved even more money away from the US. The more the company would benefit from a holiday, the more money it moved.

As you can see, one-time-only policies often have effects opposite what was intended. If you want the zebras and impalas to come back, you have to commit to eating fewer of them all the time!

I see. What would I replace their meat with? Unless I ate...

...my economic advisors!

Oh no!
Capitalism is the engine of prosperity. Capitalism sows the seeds of its own demise. Could both be right?

Join Chicago Booth’s Luigi Zingales and Georgetown’s Kate Waldock for Capitalisn’t, a biweekly podcast exploring what’s working, and what isn’t, about capitalism today.

Subscribe through Apple Podcasts, or stream the latest episodes at Review.ChicagoBooth.edu/capitalisnt or capitalisnt.com.
Slow productivity growth is costly. There’s cause for hope.

If you think about your own daily life, you can find a lot of plausibility for the notion that things are speeding up. After all, how often do you use a search engine such as Google—which is much more now than just a search engine, but also an atlas, a shopping mall, a library, and a suite of office software, among other things? How often do you use social networks such as Facebook and Snapchat? How often do you use Grubhub or Amazon to perform transactions faster and more conveniently?

You can ponder all the time you spend on these things, and all the great things they do for you that you couldn’t do 20
The productivity slowdown is indeed widespread: it’s occurring in 29 of 30 countries in the Organisation for Economic Co-operation and Development.

Eventually, we did see the computers in the productivity statistics. Around the mid-1990s, productivity accelerated again, up to about 3 percent per year. It stayed there for a decade before slowing down again. It hasn’t yet picked back up.

So the 1.2 percent average annual productivity growth we’ve been experiencing since the mid-2000s is less than half of what it was in the decade prior, and is slower even than the 20-year slowdown from 1974 to 1994. Despite what seem like incredibly rapid changes in technology, we don’t see technologically driven growth in the data, and in fact we see the opposite pattern. Since economic growth requires productivity growth, if we don’t figure out why this is happening and how to fix it, we won’t get sustained increases in GDP per capita.

The slowdown I’m describing might sound small: 1 percent or 1.5 percent per year doesn’t seem like much. But if you compound that over multiple years, it really adds up. Suppose the slowdown after 2004 hadn’t happened, and we kept going with the same average productivity growth that we saw from 1995 to 2004. That would mean GDP in 2017 would have been, conservatively speaking, $3 trillion higher than it was. That’s $9,200 per capita.

That’s roughly $9,000 for every one of us, or $24,000 per household, that we do not have because productivity growth slowed down. Just a decadelong slowdown of 1.5 percent per year adds up to real money. If it continues for another 10 years, we will be missing a third of potential economic growth. In other words, GDP would be two-thirds of what it would be otherwise. You’re talking about real differences in people’s standard of living.

What’s causing the slowdown?
So it’s reasonable to ask, how can we have these great new technologies, yet they’re not showing up in the productivity statistics? One answer is that maybe technology isn’t moving as fast as we think. If robots really were taking over our jobs, you should see output per worker go way up—we’d have fewer workers because robots would be making everything we were making before—but that’s not happening.

Some people have said, “OK, that’s not what’s really going on. What’s going on is we don’t measure output very well.” The idea is that what’s lagging is not technological progress, but our ability to measure it. New products or services aren’t being captured in the way we measure output, so productivity growth looks smaller than it really is.

It’s not an implausible argument. To measure GDP output, we look at total expenditures on all goods and services. But what do I spend when I take a picture on my phone? What do I spend when I go online and search on Google? Or while away a couple of hours on Facebook? I’m not paying anything. I’m presumably getting value from that.

A brief history of productivity
There have been four periods of broad productivity growth trends since the end of World War II. We had a period of brisk labor-productivity growth in the first 25 postwar years, averaging 2.7 percent per year. In other words, for a quarter of a century, the value of production of every worker hour rose 2.7 percent per year. That means, in a sense, free stuff: every year, we got 2.7 percent more things out of the same worker inputs than we got the year before.

Then there was a slowdown for 20 years, from 1974 to 1994, when productivity growth fell to 1.5 percent per year. This was a period that included the rise of the personal computer and the integration of new technologies in a number of industries, and as is the case today, people were wondering why productivity growth slowed down. In the late 1980s, MIT’s Robert Solow famously said, “I see computers everywhere, except in the productivity statistics.”

years ago, and easily conclude that business is speeding up. But if you look at the American economy, things aren’t speeding up for one important measure: productivity growth. In fact, by historical standards, productivity growth is pretty slow.

You can think of all productivity measures as ratios of output to input. The most common one you hear about is labor productivity, or output per worker hour. This is the one that economists have been following the longest, and we have good confidence that we measure it as well as we can. It’s also where technological progress ought to show up: these new technologies ought to let us make great new things without having to put new resources into the production of those things.

Making better things using the same amount of resources, or making the same things using fewer resources, is, in the end, where economic growth comes from. If this phenomenon is taking place, you should see it in the data reflected as productivity growth. The problem is, if you go look for it in the United States, you don’t find it. Productivity growth hasn’t stopped altogether, but since the mid-2000s, the rate of growth has fallen considerably. Since then, the US has been averaging about 1.2 percent growth per year in productivity, but to understand that number, we need some historical context.

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good or service, but it’s not showing up in the data. So some people argue that if we could just measure the flow of fun people have, or the enjoyment they receive from these products and services, it wouldn’t show this slowdown that we see in the statistics.

I tested this theory, which I call the mismeasurement hypothesis, in a recent study. The premise of the study is that even if we can’t trust the productivity data, the mismeasurement hypothesis ought to have some implications about things we can measure, so let’s look at these things and see what they tell us. I did four analyses to look at the question in different ways, and each time, I found evidence that mismeasurement is not what’s behind the apparent slowdown in productivity growth.

Comparing growth across economies

First, let’s look at whether this slowdown has happened outside the US, and moreover, whether the size of slowdowns across economies is related to the importance of information technology–related goods. The mismeasurement hypothesis implies that countries where IT stuff is more important should have more mismeasurement, so we ought to see a bigger slowdown in these countries than in economies where tech is less important.

The productivity slowdown is indeed widespread: it’s occurring in 29 of 30 countries in the Organisation for Economic Co-operation and Development, which is basically made up of the wealthy economies of the world. If you compare average productivity growth in the period 1995–2004 to the period after 2004, in all but one of those 30 cases, productivity growth is slower in the latter period. Productivity growth has also slowed in most of the emerging economies of the world—such as China, Brazil, and Russia—though for these countries it started a bit later.

Is the size of the slowdown related to the importance of IT goods in these economies? We can gauge that importance using both supply-side and demand-side measures. On the supply side, we can look at the share of the country’s GDP that is accounted for by production from IT-related industries. On the demand side, we can measure the importance of IT-related products using the broadband-penetration rate in the country in the mid- to late 2000s.

If we compare the size of each country’s slowdown to the importance of information-communication technologies in that country’s economy, as a share of total production, there is no relationship.

<table>
<thead>
<tr>
<th>IT industries’ share of value added</th>
<th>OECD countries’ GDP</th>
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<tbody>
<tr>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td>2%</td>
<td>10%</td>
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<tr>
<td>4%</td>
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<td>10%</td>
<td>2%</td>
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<tr>
<td>12%</td>
<td>0%</td>
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Change in labor–productivity growth

Similarly, if you compare each country’s productivity-growth slowdown to the fraction of households in that country with broadband access, the relationship is again zero.

<table>
<thead>
<tr>
<th>Share of households with broadband in OECD countries</th>
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<tbody>
<tr>
<td>0%</td>
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<tr>
<td>20%</td>
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<td>40%</td>
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<tr>
<td>60%</td>
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<tr>
<td>80%</td>
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<td>100%</td>
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Change in labor–productivity growth

There just does not seem to be any systematic relationship between the size of the slowdown of productivity growth and the importance of IT products in a country’s economy, which is a strike against the mismeasurement hypothesis.

Pricing IT

Next, let’s look at the work of other researchers who have said, “Well, we’ve got a way to get at, through the side door, what the value of these technological goods are.” We can take their methods, put in new data, and see whether we can get a feel for what the value of these IT-related goods might be. There are about a dozen or so carefully done studies that attempt to put a value on technological goods, so do any of them arrive at a value anywhere near $3 trillion?

In short, no. These studies typically produce figures in the neighborhood of $100 billion–$200 billion in the US. That’s not pocket change, but it’s nothing compared to the $3 trillion of output that is missing because productivity growth has slowed. The highest estimate comes from Chicago Booth’s Austan D. Goolsbee and Stanford’s Peter J. Klenow, who calculate that the total consumer valuation for these products might be in the neighborhood of $850 billion. That’s twice as large as the second-largest estimate, but still not even a third of the way to our missing $3 trillion. What’s more, the studies to which I’m referring are estimating the total surplus created by these products—this includes revenues, which are used to calculate GDP, but also consumer surplus, which isn’t.

Implications of mismeasurement

As a third analysis, let’s take the missing $3 trillion at face value and say, “OK, let’s suppose that $3 trillion really does exist, and we just missed it in our statistics.” What would that imply about what’s happened if we did measure it? Let’s wave our magic wand, say we’re not missing that $3 trillion anymore, and then ask ourselves whether we believe those numbers once we’ve added that $3 trillion back in.

According to what we can measure, IT-related industries in the US produced $1.4 trillion in total value added in 2015, the latest year for which data are available. That’s up from $900 billion (adjusted for inflation) in 2004, so we’ve had measured growth in the production of IT-related products in the neighborhood of $600 billion. Now, if we accept that these are the sectors from which this missing $3 trillion is coming, what we’re really saying is that $600 billion is just the tip of the iceberg. There’s another $3 trillion that was being produced but that we missed in our statistics, so the real number isn’t $600 billion, but rather $3.6 trillion.
How worried should you be? If productivity growth stays where it is, you should be worried. We are going to be considerably poorer than we would be otherwise.

The evidence of income
Finally, let’s look at income versus output. GDP is the total value of all expenditures in the economy. Gross domestic income is the income flip side of that. It’s the total amount of income in the economy. These two things, when you add everything up, should be equal to one another, because one person’s expenditure is another person’s income. But they never do in practice, because they’re measured using different data. The Bureau of Economic Analysis adds both measures up, and they’re close, but they’re never the same.

If you look at the gap between them, there’s actually a pattern to it. Since 2004, gross domestic income has been higher on average than GDP by about 0.5 percent per year. If you add up all those differences across the decade, the decade covering the productivity slowdown, it adds up to almost $1 trillion. In some sense we’re saying there’s $1 trillion of income that has been earned over the last decade that isn’t showing up in expenditures.

People have said, “Well, actually, this gap is completely consistent with the mismeasurement hypothesis.” The story is that companies such as Google, Snapchat, and Facebook pay people really well to create stuff that the companies then go and give away for free. You see a lot of income, because the workers for these companies are getting paid, but you don’t see expenditures, because no one’s paying for Google when they use it, and that’s why you see this gap open up. That’s the story anyway.

The problem is, this gap did not open up at the time of the productivity-growth slowdown. It opened up in 1998, and in fact, it was positive for every single year between 1998 and 2004. The gap opened up not as we saw the rise of smartphones and social media; it already existed. Moreover, if you look at where the income growth has come from and why it’s separated itself from output, it’s come not from payments to labor, but payments to capital. In other words, profits are really high—precisely the opposite of what’s suggested by the mismeasurement hypothesis and the accompanying notion of high wages combined with low revenues.

In part, this is because companies such as Google, Snapchat, and Facebook aren’t just giving stuff away for free, of course. We may not pay directly for these services every time we use them, but it’s not right to say that there is no transaction that’s measured. For instance, all the companies that advertise to me on Google, and Facebook and Snapchat, pay Google, Facebook, and Snapchat for that advertising. This is being measured in GDP. Moreover, I can’t enjoy Google or Facebook, or use my GPS or camera, until I buy various devices, and I also can’t do any of that stuff until I get online by paying for broadband, wireless access, etc. All these transactions are part of GDP. It’s not at all clear that we’re not paying for any of this, or that we somehow don’t measure these payments.

All four of these analyses imply that the productivity-growth slowdown is real. To suggest otherwise due to mismeasurement, you’d have to argue not that our measurement of output is bad,
but that it got systematically worse around 2004 or 2005, and worse in a particular direction. No one’s been able to suggest this has happened.

**Be afraid—but don’t panic**

So how worried should you be? If productivity growth stays where it is, you should be worried. We are going to be considerably poorer than we would be otherwise. We already are. Ten years into the slowdown, we’re each already $9,000 poorer per year.

But there’s reason to hope growth will pick back up. Looking back through the historical data, I see our current growth trend as an echo of past trends.

Historically, productivity gains from general-purpose technologies have come in waves. For instance, consider what I call the portable-power era—the time of the diffusion of technologies such as the electric motor and the internal-combustion engine. This era starts around 1890 and ends in the mid-1930s. For the first 25 years of this era, productivity growth was quite slow: less than 1.5 percent per year. Then starting around 1915, growth sped up to around 3 percent per year and stayed there for a decade. Then things slowed again through the mid-1930s. So you have a 25-year slow period while the technology was diffusing, a 10-year acceleration, and then another slowdown.

Let’s compare this to the more recent experience of the IT era, which began somewhere around 1970. Again, we had 25 years of slow productivity growth, a decadelong acceleration from 1995 to 2005, and then a slowdown. So the question is, what happened after that second slowdown in the portable-power era? Well, there was another acceleration, and productivity growth went back up toward 3 percent a year.

We’ve had one productivity growth wave for IT, from 1995 to 2004. We may yet have another. We may even have a third. That doesn’t mean we definitely will have one, or that it’s going to start tomorrow. But history tells us that the productivity benefits of new technologies can come in multiple waves. It’s almost inherent to the diffusion process of general-purpose technologies that you have retrenchment periods during which people need to figure out how to use those new technologies. The IT era is full of such technologies, such as artificial intelligence, that are just starting to find their place in commercial applications.

So take the productivity slowdown seriously, but don’t despair of the future. Keep your eye on the data, and better yet, make yourself and your own organization as productive as possible, and let’s all move the needle together if we can.

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Go to Review.ChicagoBooth.edu to see citations for research mentioned in this essay.

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**An echo of past productivity trends**

An era starting around 1890, marked by the advent of the internal combustion engine and other technologies, saw periods of both quicker and slower productivity growth. A parallel can be seen in more current times, suggesting the possibility of new waves of acceleration.

**History tells us that the productivity benefits of new technologies can come in multiple waves.**
How to get a company off the ground

The Traction Gap is defining the second stage of new-venture creation.

In his 2011 book, The Lean Startup, entrepreneur Eric Ries outlined a process for creating a new venture. His wasn’t the first methodology ever published, but it caught fire and became a worldwide movement. Ries’s book, with its vocabulary of experimentation, minimum viable product (MVP), and pivots, defined something that entrepreneurship educators, practitioners, and investors were trying to codify: what makes a successful start-up. Ries was joined by his former investor and University of California at Berkeley professor Steve Blank, creator of the customer-development methodology defined in another book, The Four Steps to the Epiphany. Blank engaged with Swiss academic Alex Osterwalder, whose Business Model Canvas template offered entrepreneurs a way of thinking beyond just the launch of their product into the operations of a company that could bring the product to market. The Lean Startup movement continued to pull in thought leaders in areas of user experience and start-up finance. Now it is a full curriculum taught all over the world by consultants, colleges, entrepreneurship incubators, and even government agencies.
Launching a new venture is incredibly difficult. Entrepreneurs must take a concept from an idea through building a product or service to engaging customers, recruiting a full team, establishing processes, and scaling operations in order to become a profitable, self-sustaining company. What Lean Startup does for entrepreneurs is help them begin the process by telling them exactly what to do—how to learn about their market and customers, how to develop and test a product or service offering, and how to iteratively refine it to find product-market fit. The methodology defines success in the earliest stages of building a new venture. But it has led many entrepreneurs to believe that having an MVP and a handful of customers equates to having a viable business. Not so. It takes a lot more.

Creating a company is like getting a jet airplane off the ground. The start-up phase so clearly articulated by Lean Startup is merely the plane’s systems check and taxi out of the gate. As the plane begins to accelerate down the runway, it must build enough traction and momentum to overcome gravity and lift off from the earth. Only then can it speed toward the sky. The same is true for young companies.

VC company Wildcat Venture Partners, started in 2015 by successful investors and entrepreneurs, is defining that next stage of company building—the sprint down the runway—the way Ries and Blank defined the start-up stage. They call it the Traction Gap. Their methodology provides a framework and set of metrics entrepreneurs can use to determine whether they are ready and eligible for venture funding, which would allow them to successfully hit the accelerator and enter a period of high growth. What is unique and especially useful about the Traction Gap model is that, like Lean Startup, it is prescriptive—it gives entrepreneurs detailed specifics about what to prioritize, where to apply resources, and what metrics to look at to determine success. It is also data driven.

Googling “entrepreneurial success metrics” produces more than 1.5 million results, with articles such as “7 Metrics All Entrepreneurs Must Track” and infographics offering “34 Startup Metrics that Tech Entrepreneurs Need to Know.” Clicking into these myriad references yields metrics that include burn rate, recurring monthly revenue, lifetime customer value, customer acquisition cost, churn, virality, and net promoter score. What doesn’t show up is meaningful information that tells entrepreneurs what these metrics should look like at any particular point in their business development. Part of the problem is that each business’s path will be different, and there is no exact number for any one of the metrics that guarantees success or indicates certain failure. Additionally, the metrics and timing for reaching certain milestones will change based on the business model the company is pursuing.

For a business-to-business software-as-a-service (B2B SaaS) company, monthly recurring revenue is a key indicator early on. These are companies such as Salesforce, Slack, or Zendesk—B2B companies that run software from the cloud rather than from their own internal servers. However, for a social network or mobile app company, virality—how often your customers recruit new users for you, effectively reducing the cost of customer acquisition of those new users to zero—will be critical.

With the Traction Gap framework, Wildcat is seeking to provide entrepreneurs with a playbook for executing in the post-start-up, early-growth phase, as well as data from successful companies on what metrics indicate you have reached critical inflection points.

**Defining the go-to-market phase**

Wildcat’s founding team of Bruce Cleveland, Bill Ericson, Bryan Stolle, and Katherine Barr came together not just with extensive expertise in venture investment but—more importantly, according to Cleveland—with operating experience. Cleveland himself was an early employee at Oracle and on the founding team of Siebel Systems. Stolle created and built Agile Software. Collectively, the team has invested in dozens of companies that have been acquired or had IPOs, including Marketo, Rocket Fuel, Coupa, and Workday.

As a new venture firm, Wildcat wanted a strong investment thesis and a process for working with early-stage companies that would differentiate it from all the other seed and Series A investors. It also wanted to provide its limited partners—the people and organizations Wildcat gets its funding from all the other seed and Series A investors. It also wanted to provide its limited partners—the people and organizations Wildcat gets its funding...
from—best-in-class returns. During their positioning brainstorming, Cleveland introduced an idea he had been working on at his prior firm. He called it the Traction Gap. The Wildcat team jumped on the concept and worked to fully develop it into a complete framework.

Cleveland describes a problem Wildcat was having: it was meeting tons of founders who were great product people and seeing 40-page slide decks in which 38 slides were devoted to product architecture, technology stacks, and total market size. Slide 39 would show the classic hockey-stick sales curve leading to tens if not hundreds of millions in anticipated revenue, and Slide 40 would be the ask—for $4 million, $5 million, or $7 million to get the team to the promised land. Cleveland would ask them: “What is this miracle that occurs between product launch and $100 million in revenue?” He discovered that while all teams had spent considerable time on their product, few had invested significant time developing detailed plans regarding the customer-acquisition process, marketing tactics, and sales cycles and metrics.

That’s when Wildcat decided to codify the go-to-market phase of company development. If Lean Startup represents the go-to-product stage, and Geoffrey Moore’s 1991 book Crossing the Chasm is the roadmap for becoming a really big company (or the go-to-scale phase of development), what was missing was a methodology for the go-to-market period—building traction with early customers and developing a repeatable revenue-generation process that leads to profitability.

Building on Lean Startup’s vocabulary, Wildcat’s Traction Gap defines two key inflection points: minimum viable repeatability (MVR) and minimum viable traction (MVT).

MVR indicates that a company has demonstrated a repeatable process for acquiring customers. It has learned enough about go-to-market that its product positioning and marketing messages are clear to prospective customers. It has reference customers (who will tell others that a product works as claimed), and it understands something of its sales process, and response metrics and conversion-rate metrics.

Additionally, while Traction Gap’s methodology focuses on marketing and sales, it also defines what the company has to do in other areas. So MVR also demonstrates that a company can execute a product development and launch sequence and successfully implement its solution with customers, repeatedly. The airplane is gathering momentum down the runway.

MVT indicates liftoff. This occurs when the company achieves steady quarter-over-quarter growth for 12 to 18 months, during which time it has collected data, improved its processes, and become more efficient. It has survived the Traction Gap and is set to scale up—by expanding to new markets and introducing new offerings.

What makes the Traction Gap framework so useful to entrepreneurs is that it is actionable—it defines the areas of business operations that founders must focus on and develop competencies in. The four pillars that need to be strengthened in order to get to MVT are product, revenue, team, and systems. Today, the Traction Gap Institute, affiliated with Wildcat, offers guidance for how to advance in each area. Through blog posts, videos, workshops, and engagements with expert consulting partners, it outlines, for example, how to know when a company has gotten too large for QuickBooks and needs a more robust accounting system, when to hire a CFO, or how to effectively engage with a board of directors.

Reverse engineering the milestone data
An airplane needs sufficient speed for the wings to generate enough lift to get the plane off the ground. The exact speed and thrust required varies based on the length of the runway, weight of the aircraft, configuration of the aircraft’s flaps, and headwinds. So too, businesses with varied models and markets will use different metrics to identify their MVR and MVT inflection points. While engineering and mathematics have allowed scientists to calculate these numbers for airplane pilots, there is less information available to the entrepreneur to assess progress.

Again relying on its team’s core expertise, Wildcat parsed data from the S-1 filings of 60 public companies, and from private companies the team had been involved with, to see what numbers successful B2B SaaS companies achieve, and when they reach their MVR and MVT milestones.

The data indicate that the time from start-up to first product launch averages 12-18 months. At that point, companies begin receiving feedback from customers...
The entrepreneur’s runway

While Eric Ries’s Lean Startup movement is the defining methodology for young start-ups and Geoffrey Moore’s book Crossing the Chasm is the blueprint for large-scale success, VC company Wildcat Venture Partners is developing a methodology for the time in between, called the Traction Gap.

and using that to improve their products. This process, which typically takes an additional six months, can involve several rounds, until companies achieve an MVP they feel indicates they are ready to launch their product to a broader public market. Moving from MVP to MVR, or from $0 to $2 million in annual recurring revenue, takes another 18 months. Then, over the next 12-18 months, successful SaaS companies achieve steady quarter-over-quarter growth and reach the MVT inflection point, of $6 million in annual revenue or $500,000 of monthly recurring revenue.

These numbers can help SaaS entrepreneurs establish milestones and timelines to help them do two things: decide whether their business is working and understand how venture investors will evaluate them. Hopefully, data like these can also help entrepreneurs create no-go metrics—numbers below which they will realize that their businesses don’t work. In a previous essay based on analysis of the Kauffman Firm Study data set (see “The elusive hockey-stick sales curve,” Spring 2017), I wrote that if a company doesn’t learn how to sell in its first two to three years, it will very likely never do so. Wildcat’s model reinforces this timeline. Too often entrepreneurs cling to companies that have fatal flaws in their business models, value propositions, or execution—throwing good money after bad only to see the same problems year after year.

Wildcat’s milestones also support, with a broader base of data, the trajectory that Battery Ventures, a well-known VC firm, identified in its “triple, triple, double, double, double” model for B2B SaaS companies, or T2D3 for short. That model shows SaaS companies first getting to $2 million in top-line revenue, in the next two years tripling to $6 million then again to $18 million, then over the next three years doubling three times to $36 million, $72 million, and $144 million. This growth rate puts both a billion-dollar valuation and potential IPO in sight.

Will the Traction Gap Institute become the next Lean Startup movement?
The Traction Gap project is in its earliest phase—really just a start-up itself. The Traction Gap Institute was launched in 2016 but already boasts more than 500 member companies. The first version of both the data and tools comes largely from its creators’ experiences in starting, scaling, and investing in B2B SaaS companies. To be broadly applicable and
truly useful to entrepreneurs worldwide, it needs to mature. The institute needs to collect and share similar data for other high-growth business models, including B2C apps, e-commerce, companies that offer physical rather than virtual products, retail ventures, and services models. The actionable tools being built around the framework of product, revenue, team, and systems—providing guidance about when to invest in specific kinds of software, or who to hire, and so forth—need to be extended and widely published. (Cleveland promises a *Traction Gap* book in the not-too-distant future.)

But the Traction Gap is already drawing thought leaders such as *Crossing the Chasm*’s Moore, expert on scaling technology companies, and John Baird, one of the premiere executive coaches in Silicon Valley, to contribute to the intellectual capital of the initiative. And even in its current stage of development, the Traction Gap Institute can be a resource for entrepreneurs as they transition from creating that perfect product to generating sustainable revenue—by helping them identify the critical inflection points for their businesses, demonstrating a methodology of research and modeling to set milestone goals, and focusing them on building their go-to-market engines using the four pillars of product, revenue, team, and systems.

As Cleveland puts it, “There needs to be as much attention to the revenue architecture as there is on your product architecture—and most teams don’t do it.”

— BRUCE CLEVELAND, WILDCAT

“There needs to be as much attention to the revenue architecture as there is on your product architecture—and most teams don’t do it.”

Waverly Deutsch is clinical professor and academic director of university-wide entrepreneurship content at Chicago Booth.
The Bitcoin market isn’t irrational

The cryptocurrency is a bad long-term investment, but that doesn’t mean its price is inexplicably high.

Bitcoin has been around 10 years, but it’s still making headlines. It has shot up in value in the last year—as I write, around $15,000. But the price is volatile. Today, the day I’m writing this, it’s gone from a daily high of $16,269.69 to a daily low of $13,957.91, a 16 percent swing in a day. It’s up more than 650 percent since mid-July, but over two weeks in December, it lost more than a third of its value.

What the heck is up with Bitcoin? Is it a bubble? A mania of irrational crowds?

It strikes me as a fairly pure instance of a regularly occurring phenomenon in financial markets, one that encompasses some “excess valuations” in stock markets, gold and commodities, and money itself.

Let’s put the pieces together. The first concept of asset pricing is that price equals the expected present value of dividends. Bitcoin has no cash dividends and never will. So right off the bat we have a problem—and a case that suggests how other assets might have value above and beyond their cash dividends.

If the price is greater than zero, either people see something that acts like a dividend, some value in holding the asset beyond its cash payments, or they are willing to hold the asset despite a lower expected return going forward, or they think the price will keep going up forever, so that price appreciation alone provides a competitive return.

Two explanations are called “convenience yield”; the latter is a “rational bubble.”

Rational bubbles are intriguing but fundamentally flawed. If a price goes up forever, eventually the value of Bitcoin must exceed all of US wealth, then all of world wealth, then all of interplanetary wealth, then all of the atoms in the universe. This greater-fool theory, or Ponzi scheme theory, must break down at some point, or rely on an irrational belief in the next fool. The rational-bubbles theory also does not account for the association of price surges with high volatility and high trading volume.

So, let’s think about convenience yield. Why might someone be willing to hold bitcoins even though their price is above their fundamental value—even though their expected return over a decently long horizon is lower than that of stocks and bonds, or even though we know pretty much for sure that within our lifetimes Bitcoin will become worthless?

Well, dollar bills have the same feature. Why don’t they pay interest, and they don’t pay dividends. By holding dollar bills, you hold an asset with a fundamental value of zero, and with an expected return lower than that of, say, one-year Treasuries. One-year Treasuries are completely risk-free, and over a year they will give you about 1.5 percent more return than dollar bills. This is a pure arbitrage opportunity, which isn’t supposed to happen in financial markets!

It’s pretty clear why you still hold some dollar bills or their equivalent in noninterest-bearing accounts. They are more convenient when you want to buy things. Dollar bills have an obvious convenience yield that makes up for the 1.5 percent loss in financial rate of return. That convenience acts as a dividend flow, or equivalently justifies the subnormal return.

Moreover, nobody holds dollar bills for a whole year. You minimize the use of dollar bills by going to fill up at the ATM occasionally. And the higher that interest rates are, the less cash you hold and the more frequently you go to the ATM. So, already we have an overpricing—dollars...
We can think of Bitcoin as an electronic version of gold.

are 1.5 percent per year higher priced than Treasuries—that is related to “short-term investors” and lots of trading—high turnover—with more overpricing when there is more trading and higher turnover—just like Bitcoin. And just like 1999 tech stocks. And 1630s tulip bulbs.

Where is the convenience yield for Bitcoin? Some of the convenience yield of cash is that it facilitates tax evasion, and allows for illegal voluntary transactions such as drugs, bribes, and hiring undocumented workers.

These arguments for the convenience yield of cash hold at least as well for Bitcoin, and this yield seems to be one obvious reason some people are willing to hold Bitcoin for some amount of time, even though they may know it’s a terrible long-term investment. It certainly facilitates ransomware. It’s great for laundering money. And it’s great for avoiding capital controls—getting money out of China, say.

One can have a fun argument whether these uses of cash for anonymous transactions are good or bad. But that is beside the point here. The point here is that there is a perfectly rational demand for Bitcoin, as it is an excellent way to avoid both the beneficial and destructive attempts of governments to control economic activity and to grab wealth.

On top of this fundamental demand, we can add a speculative demand. Suppose you know or you think you know that Bitcoin will go up some more before its inevitable crash. In order to speculate on Bitcoin, you have to buy some bitcoins. So as we also see in high-priced stocks, houses, and tulips, high prices come with volatile prices and large trading volumes. Someone speculating on Bitcoin over a week cares little about its fundamental value: even if you told her that Bitcoin would crash to zero for sure in three years, it would make essentially no dent in her trading profits, since you can make a lot of money in a volatile market over the course of a week if you get on the right side of the volatility.

Moreover, there is good reason to suspect a lot of the asymmetric information that motivates trading. There are no earnings reports or analysts to tell you just how many drug lords or ransomware hackers are likely to want to buy Bitcoin next week.

To support a high price, you need restricted supply as well as demand. There are only so many bitcoins, as there are only so many gold bars, at least for now. That will change. The Achilles’ heel of Bitcoin’s long-term value is that there is nothing to stop people from creating Bitcoin substitutes—there are already hundreds of similar competitors. This is why I have such low expectations for Bitcoin’s long-term value. Moreover, there is nothing to stop people from creating private claims to Bitcoin (Bitcoin futures) to satisfy speculative demand. In fact, Bitcoin futures began trading through both the CBOE and the Chicago Mercantile Exchange in December 2017.

But all that takes time. And the demand I’m describing doesn’t come from people who want to hold Bitcoin for very long. Ice cream is also a fast-depreciating asset, but people are willing to hold it for a little while. In this view, however, Bitcoin remains a terrible buy-and-hold asset, especially for an investor who plans to pay taxes.

In sum, what’s going on with Bitcoin seems to me like a perfectly normal phenomenon, one that we have seen many times before. Intersect a convenience yield and speculative demand with a temporarily limited supply, plus a temporarily limited supply of substitutes, and you get a price surge and great price volatility. Unlike the bubble and irrationality views, this view makes definite predictions: an “overpricing” relative to dividends comes only with restricted supply, limited substitutes, and large volume. The bubble and irrational views neither require nor explain the latter connections. I describe this view in more detail with several other instances of the phenomenon in a paper titled “Stocks as Money,” which is available online at faculty.ChicagoBooth.edu/john.cochrane/research/.

Bitcoin is not a very good currency. It is a pure fiat money (no backing), with a value that comes from limited supply plus the sources of demand I’ve outlined. As such, it has the huge price fluctuations we see.

In fact, we can think of Bitcoin as an electronic version of gold. And for those economists who long for a return to gold-based currency, Bitcoin’s wild price swings should serve as a clear warning.

My bet is that alternative cryptocurrencies with stable values—always worth a dollar—and very low transaction costs will prosper in the role of money, at least until there is a big inflation or sovereign-debt crisis, at which point a stable-value cryptocurrency not linked to government debt will become awfully attractive.

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IN-HOUSE ETHICIST
JOHN PAUL ROLLERT

How workplace bullies exploit the ethics of expediency

The offenses exposed by #MeToo have echoes in other types of professional tyranny

The professional roles we play give us a window into the lives of others, whether or not the view is welcome. Psychiatrists find themselves asked to interpret fairly disturbing dreams during cocktail hour, lawyers are plucked aside after mass to determine the legal muster of manifold sins, and one can only imagine the inconvenient displays a podiatrist endures on more or less a daily basis.

The claim to being a business ethicist prompts its own confessions, most often involving a monstrous boss who’s making somebody’s life miserable. Take a characteristic example from a few years back. Fresh from college, a family acquaintance (we’ll call her Indira) had landed herself a post at a prestigious consulting firm. The learning curve for such positions is famously steep, but the climb is far more perilous when it seems like someone is busy rolling boulders in your path from somewhere far above you. Such was the case for Indira during her second rotation, when she came under the supervision of a senior consultant (we’ll call her Annalise) who seemed, at best, careless about her feelings and, at worst, a tad sadistic.

After months of comments that did little to help her improve her work performance (and absolutely nothing for her self-esteem), Indira was at her wit’s end and turned to me for advice. She told me about her troubled days, not a few of which ended in tears, and the behavior of the boss who provoked them. When she was done, I gave her a sympathetic smile and prepared to administer the bitter dollop of advice I had given many times before.

Yes, I told her, Annalise’s behavior was obnoxious, unprofessional, even occasionally cruel. She was stunting her professional development, undermining the team project, and, insofar as we’re a reflection of the organizations that elevate us, indicting the reputation of the consulting firm. This is to say, Indira had every right to lodge a complaint against Annalise, and yet, before she did so, I told her, she had to first wrestle with the whistleblower’s dilemma, namely that what is right and what is expedient are rarely one and the same.

Annalise’s behavior was certainly not criminal; if it were, the matter might actually have been easier to resolve. Instead, she was callous in her conduct, with bouts of outright mean-spiritedness. In other words, she was a bad boss and something of a bully. Fair enough, I said, but encountering such individuals is not like catching sight of Garbo. Throw a nickel or two in the air at Grand Central during rush hour, and you’ll almost certainly hit one.

Still, it wasn’t primarily the fact that such behavior is not uncommon in the workplace that gave Indira’s conundrum the quality of steel pincers. To escalate the matter to the level of a formal complaint with human resources was to cross a Rubicon of sorts in her relationship with Annalise, and once she had done so, there was no bridge that might take her back across those icy waters. Moreover, given that her behavior, if undoubtedly unpleasant, was by no means extraordinary—every workplace, it seems, has at least one “Annalise”—even if Indira
weren’t branded by others a “whiner” for lodging her complaint (or, ironically, someone who was “difficult to work with”), she still faced the possibility that, when all was said and done, for a time at least, Annalise would still be her supervisor.

Yet none of these was the principal factor in Indira’s ultimate decision. Rather, the chief consideration was an inconvenient truth: she needed Annalise. She would soon be applying to business school, and Annalise had supervised her work longer than anyone she had ever known. Not only that, for all of her boss’s nastiness, Indira, whose poker face was first-rate, was actually convinced that Annalise liked her. “She’ll write me a good letter,” she said rather hopelessly.

The assumption was not only decisive for Indira; it proved clairvoyant. She got into her top choice for business school despite Annalise, and because of her.

I thought this was the right decision at the time—and counseled her accordingly—but with the #MeToo Movement and the avalanche of anecdotes involving far more harrowing trade-offs between preserving one’s career and pursuing justice, I find myself returning to the precarious relationship between ethics and expediency and how it shapes, and so often deforms, those who wield power.

The poster boy for the movement—if the poster were conceived by the Marquis de Sade and illustrated by Goya—is Harvey Weinstein, the disgraced movie mogul whose behavior with women was reportedly so preposterous and brutal that, in the closing months of 2017, it sustained more than 30,000 words of reporting between the New York Times and the New Yorker. For all that the coverage did to expose an elaborate apparatus arranged over decades to perpetuate one man’s predations and silence his victims—one, reports suggest, that included sophisticated public-relations campaigns; stringent nondisclosure agreements; an in-house coterie of enablers; and strategic alliances in politics, the press, and across the world of the arts and entertainment—the breathtaking temerity of Weinstein’s alleged conduct, which ran the gamut from sustained boorishness to a slew of allegations of criminal sexual behavior, risked setting a standard for sexual harassment in the workplace so impossibly high it might effectively shield the majority of bad actors. (Well, I never demanded any junior associate join me in the shower!)

Abuses of professional power aren’t limited to salacious matters, and there seems good reason to start a second conversation.

Thankfully, the national conversation prompted by #MeToo successfully navigated this ditch. By encouraging women to share their stories, the movement broadened the popular understanding of what actually qualifies as sexual harassment. Today, many Americans now not only appreciate the prevalence of such behavior in professional settings; they have come to see the boss who solicits sexual favors and the one who expects subordinates to indulge misogynist remarks and locker-room banter as two points on the same continuum encompassing the abuse of power.

The reckoning brought about by the #MeToo Movement is certainly overdue. Long regarded as trifling events or even fodder for juvenile humor, examples of sexual harassment in the workplace, so vividly chronicled across so many painful stories, amount to an epidemic that is well deserving of the soul-searching it has prompted and the intense scrutiny it has received. Still, abuses of professional power aren’t limited to salacious matters, and there seems good reason to start a second conversation about injuries that aren’t essentially sexual in nature, especially because the same instinct underlies them: to do whatever one wants to do, whenever one wants it to do it, regardless of the harm that comes to others.

The judiciary system, of all places, provides an excellent case study in Alex Kozinski, who was until recently a judge on the Ninth Circuit Court of Appeals. When I attended Yale Law School in the late 2000s, Kozinski—who had been appointed to a federal appeals court seat by President Ronald Reagan at the tender age of 35—was known as the renegade “feeder” judge who openly flouted the gentleman’s agreement among federal judges to wait to interview students until the fall of their third and final year of law school. “When they complain about the bad apples,” he wrote, alluding to the debate over when and how judges should select clerks, “they’re usually talking about me.”

The impish acknowledgment appears in “Confessions of a Bad Apple,” a 1991 essay, wherein Kozinski defended the wisdom and right of federal judges to pluck clerks from the ranks of elite law schools whenever they please. Getting a jump on his colleagues, and regardless of their sensitivities, Kozinski poached the very best second-year law students he could find, offering them the opportunity not only to work in his chambers but to be fed along to the conservative justices he was
intimate with who could afford them the capstone of a Supreme Court clerkship. If, for an ambitious young law student, there is absolutely nothing better than a clerkship on the high court, the best thing in life, in this instance, was certainly not free. The Pasadena-based judge had a reputation among students at Yale for being something like the Charles Manson of the circuit-court system: crazy, cruel, and requiring cult-like devotion. The hours his clerks kept were gratuitous—it is widely known that my clerks are on call 24 hours a day,” he wrote in his essay—and the rumor was they were only allowed one weekend off a year. What did they do with all their time? Rewriting, it seems. Kozinski was infamous for endlessly revising the judicial opinions his clerks helped him assemble. “My clerks and I normally go through 20–30 drafts of an opinion,” he acknowledged, and “50 or 60 drafts is not uncommon as I polish and revise.”

Though they weren’t inconsistent with the reputation, neither the inordinate hours, which far outstripped anything required for even a Supreme Court clerk, nor the Sisyphean writing process gave the reputation, neither the inordinate nor the Sisyphean writing process gave Kozinski the respect, not the inordinate nor the Sisyphean writing process gave Kozinski the respect, not the inordinate hours his clerks kept were gratuitous—it is widely known that my clerks are on call 24 hours a day,” he wrote in his essay—and the rumor was they were only allowed one weekend off a year. What did they do with all their time? Rewriting, it seems. Kozinski was infamous for endlessly revising the judicial opinions his clerks helped him assemble. “My clerks and I normally go through 20–30 drafts of an opinion,” he acknowledged, and “50 or 60 drafts is not uncommon as I polish and revise.”

During his Senate confirmation in 1985, stories of Kozinski’s behavior as a civil servant nearly derailed his judicial nomination. As the New York Times reported, testimony and affidavits were provided by half a dozen people who worked with him when he was special counsel for the Merit Systems Protection Board, an executive-branch office charged, ironically, with protecting the rights of federal employees. When Kozinski was an administrator, his coworkers said, his behavior was “cruel,” “humiliating,” and even “sadistic.” John F. Hollingworth, a former administrative director at the Merit Board’s Office of Special Counsel, went so far as to claim, “I cannot recall a more callous disregard for people than Mr. Kozinski exhibited,” citing in his affidavit incidences such as “demanding that a messenger be fired when one piece of correspondence could not be located” and “issuing a notice of farewell to an employee who had cancer and had not yet finalized plans to leave the office.” Kozinski, for his part, ordered Hollingworth to fix office furniture.

Notwithstanding these complaints, nor the report that six of the eight most-senior lawyers quit during his tenure, Kozinski was approved by the Senate, largely along party lines. If the experience of being publicly admonished by members of the Senate had any abiding affect on him—“he lacks judicial temperament, is prone to anger, and is lacking in compassion,” said Carl Levin (Democrat of Michigan)—like heat from a kiln, it appears to have hardened the mold of his behavior. One of his clerks, Heidi Bond, would later describe the cumulative trauma of working under him in a December 2017 blog post: "I began waking from sleep, heart racing, hearing imaginary double beeps summoning me to his office." Even trivial mistakes, she wrote, “the misplaced comma or misspelled word,” would prompt the invitations, together with a fit. “I do not think a week passed without at least one such outburst; during bad times, they were a daily occurrence.”

Such on-the-record accounts of a judge’s bedside manner are exceedingly rare. Clerks rarely speak out about their experience, in part for reasons of protocol—judicial ethics curtail what they may say about the activities of judges inside their chambers—but also because of the central role these judges play in their personal and professional lives. They are at once parental figures, peerless referees, and lifetime mentors, creating “relationships between law clerks and their judges” that Slate’s Dahlia Lithwick described as “mostly built on worshipful silence.”

If this is true for the average judge, imagine the aura about one such as Kozinski. As someone whose extraordinary reputation among law students was built on precarious achievement, impeccable legal prose, and, above all else, the quid pro quo proposition of a Supreme Court clerkship, for nearly 30 years, the judge had loomed in many impressionable young minds as both token and trigger for the acme of lawful ambition.

Thus the bravery of Heidi Bond is especially unusual, and the occasion is explained by the #MeToo Movement. For beyond the berating and belittling, the writerly indecision and the intense work requirements, Kozinski, it seems, had a flair for sexual indiscretion. The incident Bond recounted on her blog involved the judge sharing pornographic pictures and wanting probing her opinion of them. However, by the time Kozinski stepped down from a lifetime judicial appointment, shortly after Bond published her blog post, a dozen other accusers had come forth with credible claims against the judge of pinching, groping, and ogling women in addition to making a litany of inappropriate comments.

While such stories never surfaced in the gossip when I was in law school, to be perfectly frank, I was hardly surprised by them. At work, old-fashioned bullies and powerful lechers alike share the same insatiable desire: to reaffirm for themselves and everyone around them their power and professional superiority. On her blog, Bond wrote that when she objected to Kozinski’s instruction to stop reading romance novels on her dinner break, he reminded her that he controlled not only what she read, but virtually every other aspect of her life as well. As Bond herself noted, to do anything other than meekly assent was to risk what the actress Salma Hayek described in the New York Times as the “Machiavellian rage” triggered in Harvey Weinstein whenever he heard the word he hated most: no.

No. A simple, unassuming word, but I can’t think of one more vital or necessary to leading a life with dignity. It is not only impossible to imagine a healthy work environment without its routine employment; practically speaking, the ability to decline a request that is crude, cruel, or manifestly ridiculous seems like a pretty elemental feature of any organizational structure that is not entirely incompetent. And yet, even as we come to grips with the stubborn nature of sexual harassment, we still too often dismiss the casual sadism of senior executives as simply an unavoidable part of being gainfully employed or even a professional rite of passage. “Suck it up” is the advice one most often hears, at least if she seeks to advance.

This is close enough to the advice I’ve given in the past that I now worry about its deeper wisdom. As the #MeToo Movement has demonstrated, the relationship between what is right and what is expedient is not static. It shifts in favor of justice when individuals confront brutal bosses, calling out their offenses and making damn sure they can’t get away with them. True, there will always be a price to raising one’s voice—doing so takes courage, and courage isn’t cheap—but when the price is professional ruin, it indemnifies the bully and forces everyone around him to pay for his bad behavior.

John Paul Rollert is adjunct assistant professor of behavioral science at Chicago Booth.
In praise of versatile skills

In an age of informational and technological upheaval, transferrable skills are as integral to education as knowledge

BY THEODORE O. YNTEMA

Saint Augustine, who lived in the fourth and fifth centuries, asserted that as a result of his education he could read anything that was written and understand anything he heard said, as well as say anything he thought. A millennium later, a Renaissance man could be accomplished in the arts and learned in all the sciences. Today, this is impossible. Human knowledge is so vast that no man can even describe its bounds or subdivisions, let alone comprehend what lies within them.

Moreover, knowledge is expanding at an explosive rate. New knowledge will make existing knowledge and specialized skills inadequate and obsolete. If you stop learning, you will soon find yourself on the intellectual scrap heap.

In a recent seminar Theodore Schultz appraised the prospective obsolescence of various types of educational attainments. [Schultz was a member of the University of Chicago faculty who helped pioneer the study of human capital, and who would go on to win the Nobel Memorial Prize in Economic Sciences—Ed.] In order of decreasing obsolescence and increasing durability he listed: (1) vocational and job skills, (2) knowledge of principles and theories, (3) ability to solve problems and develop analytical tools, and (4) ability to keep on learning.

Fleeting facts memorized for examination, debate, or other special occasion he did not even bother to list.

Let me emphasize these points. Specialized vocational skills are likely to be made obsolete by advances in science and technology. The subject matter of science will be more permanent, but it, too, will undergo correction and modification as well as enormous expansion. Problem-solving ability and the ability to continue one's education will be least subject to obsolescence and most likely to be useful throughout life.

I would expand Schultz's list of durable skills in a few respects. And then I would point out that those skills and abilities that are most durable are likewise most universally useful—needed in all walks of life and transferrable from one field of endeavor to another.
In practically all walks of life these basic, transferable skills are needed and that in some they constitute a substantial part of the requisites for success. Moreover, as noted, they are durable—useful throughout life.

Neglect comes naturally
In all matters there is a temptation to do what is easy and neglect what is difficult. So there is a temptation to teach facts and neat theories and to neglect some of the basic skills and abilities that are not so readily reducible to fact and formula.

The process of seeing and solving problems I shall call the “scientific method”—even though this usage may offend some of my scientist friends. The scientific method involves observation, the detection of similarities and dissimilarities in phenomena, the tentative specification of categories and relationships based on observation and on deduction from prior discoveries, and the testing of such tentative hypotheses by experiment and experience.

The scientific method, as I am using the term, is not the special prerogative of the physical, or biological, or social sciences. Science and the scientific method are not the same thing. Science is the body of ordered knowledge. The scientific method is the process of seeing and solving problems. Many students in the sciences do not learn the scientific method because they do not learn to perceive problems or invent hypotheses for their solution.

Perception and discovery
In the conventional curriculum there are courses in analytical methods, in logic, in mathematics, in a priori and inverse probabilities, and in statistics. But where and how is the student to learn perception of the problem and discovery of hypothesis-invention, if you will? And how much practice does he get in taking a vague general idea and converting it into specific form to
Of course, you cannot teach anybody anything. As Dean [George Packer] Berry of the Harvard Medical School once said, “Educate’ is not a transitive verb.”

be tested? How does a student learn to summon and take account of all pertinent evidence and appraise its relevance, its importance, and its credibility? How does he learn to form sound judgments?

Or take the matter of understanding people, communicating with them, and dealing with them effectively as individuals and in groups. I suppose that there are more courses in these subjects offered at many universities than a person could complete in a lifetime of study. Yet most of these courses are specialized, as in psychiatry or education, or else they deal with people impersonally or en masse, as in economics or political science.

How shall the student improve his understanding of the individuals and groups with whom he has personal contact? How shall he learn to perceive their motivations, their probable reactions, their abilities, their potentials? How shall he learn to communicate with them, not only by written word but by speech, in all the variations appropriate to the particular occasions? How shall he learn to communicate by actions and by all the other sensory means? How shall he learn to give and to take; to speak and to be silent; to trust and to distrust; to compete and to cooperate; to follow and to lead; to serve and to direct?

The scholars in a university know a great deal about people. There is also a great deal that they do not know. But the fact that they do not know everything is hardly an excuse for failing to make available to college students in systematic form the essence of what they do know. Helping the student to learn about people may be difficult, but it should not be beyond the ingenuity or beneath the dignity of an academic institution.

Next we come to organization. In the common operational sense, organization is the marshaling of scarce resources for identified ends. It makes use of the same concepts and processes as those used to structure facts into a science. The proliferation of facts would make education impossible were it not for order and organization. Life would be impossible if we did not practice organization and is inefficient if we do not practice it well. In the educational process, however, we have to learn organization in bits and pieces—with hardly ever an indication that this is the essence of science and of rational existence. Because organization is not a conventional category of research, it does not usually qualify as a respectable subject for instruction. Should this be so?

When I raise these questions, I am told that such skills and abilities cannot be taught. Well, of course, you cannot teach anybody anything. As Dean [George Packer] Berry of the Harvard Medical School once said, “Educate’ is not a transitive verb.” The question is not whether you can teach perception and judgment and understanding of people and organization. The question is whether you can help the student to learn these things, and then whether what he learns is worth the cost of helping him.

Steps toward solutions
How can the student learn the transferable skills and abilities most effectively? The answer to this question requires more knowledge and wisdom than I possess. I can offer only a few tentative suggestions.

First, breadth of liberal education is helpful. The student exposed to problems in various fields may perhaps discover that the skills required in one are needed in another. I still remember my surprise and excitement one night forty-odd years ago when I discovered that the calculus I had learned for physical chemistry enabled me to read easily the differential equations describing economic theory—and thus to compress months of undergraduate study into a single evening.

There seems to be agreement that a man who has little knowledge of or feeling for the humanities does not possess a liberal education. Surely, the converse is also true: that a humanist who cannot read the universal language of mathematics, including differential equations, or who cannot read the descriptions of the world about him in simple scientific terms is illiterate.

We have too many teachers in particular sciences who are ignorant of the other sciences and the humanities, too many mathematicians ignorant of the uses of their subject, too many humanists illiterate in
science and mathematics. We need at least some teachers who can recognize the common factors in education and the common concepts transferable from one field to another and who will give the student some clues in this respect.

At the hazard of being ridiculed, I suggest that it may even be feasible to have courses in such subjects as the perception of problems, invention, judgment, understanding people and working with them, and organization. This suggestion does not imply that these abilities can best be developed by studying them in the abstract; on the contrary, they can best be learned, I think, by studying them in relation to real or well-simulated problems.

Why are cases widely used in law schools and business schools for instructional purposes? Why are decision theory and game theory and game practice beginning to appear in the curriculum? These are efforts to simulate real situations and to call forth perception, invention, judgment, organization, and the consideration of human behavior as an important variable.

A great educational tragedy of the 20th century is the decline of the family enterprise, the store, the shop, and especially the farm. In the small enterprise, young people had a chance to perceive problems, to work out their solutions, to deal with people, and to practice organization. In so much of education the student is remote from reality—an outsider, a spectator, a critic. In some part of his education he needs to be involved personally in a complex of problems, people, and organization, so that he can develop by practice the essential skills needed in all fields of endeavor.

This can be accomplished in many ways. Formal courses in some fields can present realistic, many-faceted problems. Responsible participation in home life and engagement in student activities and summer work are important. All life, in school and out, on the job and off, presents endless opportunities for seeing and solving problems, for learning how to deal with people and for practicing organization. Some persons seize these opportunities for continuing education and development; some blindly pass them by.

The critical importance of improving education
The deficiencies in education are no small matter. Counting the value of students’ time, education absorbs about one-twelfth of all our productive efforts. Education and research are by far the most important sources of economic progress and improvement in our standard of living. Investment in education is highly productive, both for the individual and for the community.

In our schools, colleges, and universities we shall need more money, more teachers, more buildings, and more equipment to make places for the coming avalanche of students. But expansion is not enough. In this industry, so huge and so critical to our growth and well-being, there are pitifully small resources devoted to research aimed at improving the product and the process of production. In the federal government the resources allocated to research in education are less than those provided for fish and wildlife research. I suspect a similar situation prevails in the individual states. Nor do private universities devote large sums to such work.

There is no field in which high-quality research would pay off so handsomely to the people of this country as in education—its objectives and substance as well as its technology. This cannot be done in our departments of education alone. It will take men of high competence from many fields and men of large talents and great wisdom. I cannot write a prescription for this work. I can say only that I have a deep conviction it can be done if sufficient resources and talents are devoted to it.

If education can become more efficient, it will not only economize resources, especially the very costly time of students, which is too often regarded as a free good; it will also yield enormous dividends in better-equipped and more-productive people, who are the source of our growth and strength and well-being.

There is no field in which high-quality research would pay off so handsomely to the people of this country as in education.

Theodore O. Yntema was professor of business and economic policy at Chicago Booth. He passed away in 1985.
WHAT’S THE FUNDAMENTAL VALUE OF A BITCOIN?

Bitcoin is famously volatile, and investors trying to forecast its price can’t rely on the sort of lengthy track record that other currencies have accrued. Can economists offer reassurance on at least a minimum fundamental value of a bitcoin? Or on the link between Bitcoin’s current and future price? Maybe not: when Chicago Booth’s Initiative on Global Markets consulted its US Economic Experts Panel, only 4 percent of the panelists agreed that a bitcoin’s fundamental value is at least $1,000, although most of the panel didn’t rule it out. “The current value is such a noisy forecast as to be of virtually no use,” wrote Larry Samuelson of Yale.

See more online
All responses to this poll can be seen at igmchicago.org/igm-economic-experts-panel.

About the IGM Economic Experts Panel
To assess the extent to which economists agree or disagree on major public policy issues, Booth’s Initiative on Global Markets has assembled and regularly polls a diverse panel of expert economists, all senior faculty at the most elite research universities in the United States. The panel includes Nobel laureates and John Bates Clark medalists, among others. Questions are emailed individually to the panel members, and panelists may consult whatever resources they like before answering. Members of the public are free to suggest questions.
**Question A**: A bitcoin has a fundamental value of at least $1,000.

**Darrell Duffie, Stanford**
“For many reasons, the market price does not reflect fundamental Bitcoin value, which in any case is mainly related to avoiding detection.”
*Response: Uncertain*

**Eric Maskin, Harvard**
“Bitcoin has a fundamental value of $0.”
*Response: Strongly disagree*

**Robert Shimer, University of Chicago**
“Bitcoin has no fundamental value. Its value comes from the belief that it has value.”
*Response: Strongly disagree*

**Robert Hall, Stanford**
“Conceptually, the fundamental value is the present value of its transaction services. Depends on competition in the private currency market.”
*Response: Uncertain*

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**Question B**: The best forecast for the value of 1 bitcoin in two years is its current price.

**David Autor, MIT**
“But there is infinite variance around this forecast.”
*Response: Agree*

**Kenneth Judd, Stanford**
“Significant deviations from that prediction would imply that current holders are ignoring arbitrage opportunities.”
*Response: Agree*

**Steve Kaplan, Chicago Booth**
“Bitcoin will be valuable, but will be worth less than $17,000 in two years.”
*Response: Strongly disagree*

**Anil K Kashyap, Chicago Booth**
“No clear intrinsic value and lots of risk that regulators move to limit its value, but that does not guarantee a crash.”
*Response: Uncertain*
ARE GOOGLE AND FACEBOOK MONOPOLIES?

Chicago Booth’s Luigi Zingales and George Mason University’s Tyler Cowen discuss the market power wielded by digital platforms, and how to promote competition

Google and Facebook have an effective duopoly on online advertising. For the average person, why is that a problem? Prices haven’t gone up. Why should we care?

Zingales: Most people don’t perceive that as a problem. The perceived price [for using Google or Facebook] is zero. It’s not really zero, because we are giving up our data in exchange. Google and Facebook’s market power in advertising increases the cost of advertising, which eventually will be reflected in the price of goods. In addition, Facebook and Google are in the media business, a very important business for our democracy. The risk of their dominance is the affect on our political system.

Cowen: Google and Facebook are great companies. They give consumers wonderful products for free. They actually give people who want to advertise a much lower price, a much better way of reaching users in a targeted manner, so they’ve very much lowered prices. They’re not monopolies. You can advertise on radio, on TV, in print media, online. They have a large market share because they’re doing a better job at a lower price. If you look at Google and Facebook as media, there’s never been a time in American history where you have more choices as to what to read, what kind of news to get, and how many opinions and commentators you can sample.

Zingales: People say that data are the new oil and Zuckerberg is the new Rockefeller. At the time of Rockefeller, they used to say he was more efficient, but he controlled 95 percent of refineries in the United States! He had deals with the railways that restricted the ability to compete. He was, effectively, abusing his market position, and it was the right decision for antitrust authorities in the US to go after Rockefeller and break up Standard Oil. If it were today, would you be in favor of breaking up Standard Oil?

Cowen: If Standard Oil were giving away the oil for free, no. Facebook doesn’t have a monopoly on my attention. I have a lot of different options.

Zingales: You are absolutely right. These are great companies. They produce a better product, partly because they have more data than anybody else. How did they acquire these data? In a sort of trade. It’s not true that the price is zero. We give up data in exchange for the service. Most people don’t understand what they are giving up.

Cowen: Most Americans are very happy with the bargains they get through Facebook and Google. The real danger, if you have more government intervention, is we become like the European rent-seekers, who view them as foreign companies, revenue sources—“How much wealth can we extract from Facebook and Google to pay the bills of the European Union?”

Zingales: Antitrust in Europe is much more effective. Look at the price of cell phones and cell-phone services. They are a fraction of the price in the EU, with better services. The EU is at the front end of enforcement of competition, while the US has become complacent. In the EU, they have a new directive requiring every bank to give customers access to their data at the customer’s request. That transfer creates competition because it reduces the friction and creates more opportunity for new entry. The monopoly that Facebook and Google have of our data, number one, prevents entry, and number two, gives them tremendous power.

Cowen: Every media source decides which stories to run and which not to run. There are open-source social networks. Most people aren’t interested in them. Facebook, as a walled garden, has clear rules of governance and property rights. They have competed against other competitors and done a better job. People are not looking to pull out of that network. They’re giving more and more of their time to it because they like the job that Facebook has done.

Should personal internet data be portable, like mobile-phone numbers?

Zingales: I don’t have any problem with Facebook editing the news, as long as there is fragmentation of the industry. My solution
“A lot of the discontent I see comes from media companies, which compete against Facebook, and very often are losing.”

— TYLER COWEN

European antitrust law is run. There’s really not been significant evidence that American consumers have been harmed. Facebook and Google are not building a moat to keep out content. That’s not the essence of their business model. Monopoly is a loaded word. It’s misleading, because the price is zero. We should look for another term—platform companies with very wide reach.

If there were data portability and greater competition, and Facebook and Google nevertheless grew and increased their market share, would that be better?

Zingales: Yes, absolutely. In essence, I have nothing against these two companies. I love using Google. I think it’s a fantastic service. I don’t use Facebook much, but I use WhatsApp, which is a Facebook company. I agree that they have provided a lot of value. There’s nothing negative about that aspect. My concern is about the future. Let’s go back to the idea of the moat. Facebook now owns a VPN provider that monitors when something goes viral. When it does, they buy it, because they are afraid of competition. They are using their common base to block any new entry. I don’t call that a competitive marketplace.

Cowen: Less than 10 years ago, I remember reading headlines: “Can anyone challenge the monopoly of Myspace?” And, of course, Facebook did. Facebook has not been such a big deal for very long. Keep in mind, this is perhaps the best operating sector in the whole American economy—the most dynamic, the most innovative.

Zingales: I’m not saying we have a monopoly yet. I’m saying there is a concern, and there is a very simple solution. What is the cost of what I am suggesting? Nothing, because the data are stored already. What you need is the ability to switch somewhere else. Actually, Facebook already offers their Graph API to their preferred programmers. What is the difference between what is happening today and what I advocate? The difference is that under my proposal, you are guaranteed access. Now, Facebook says, “Let’s play with my data. However, if you become my competition, I cut your head off.” That’s not competition. That’s tyranny.

Cowen: The regulations you want would favor the incumbents. Imagine there is a new virtual-reality social network that cannot interexchange with Facebook or LinkedIn because it’s an entirely different medium. The way the old regulations are written won’t pick up the new dynamic properties of the new sector and it will be held back. It will be stifled. The regulations will end up cementing in whatever market power Google and Facebook had.

Zingales: It’s very easy to write regulations, in principle at least, that don’t favor the incumbent: “This rule applies only if you have X amount of market share.” If you are a start-up, you don’t have to subject yourself to those rules. Once you pass that limit, you do. We’re not talking about strictness; we’re talking about allocation of property rights, a function of the government. Is it going to be done in a perfect way? No, but what is the alternative? If the alternative is complete laissez-faire, I think we are in danger of becoming a country that is going to be owned by Facebook.

If we don’t get data portability, will consumers demand regulation?

Zingales: Regulation would be the only other viable option. When AT&T was a monopoly, there was no doubt there was a network externality and a monopoly. It was heavily regulated. In the long run, it was not great; but in the short run, it might be the lesser evil. The demand might come the first time we discover them using the data in a misleading way. Facebook’s algorithm is designed to make people more addicted to Facebook. That’s not that different from what cigarette makers were doing. This, at some point, will be revealed, and, as with the tobacco manufacturers, there will be a revolt against them. As these things go, when the pendulum swings in the opposite direction, there will be excessive regulation, and it will be terrible.

Cowen: American consumers are pretty happy with the status quo. A lot of the discontent I see comes from media companies, which compete against Facebook, and very often are losing.---cbr
How to signal fake news on social media

Easy access to information on social networks, such as Facebook and Twitter, has arguably also made it easier to expose users to false information. If companies running these social-media platforms can discern the levels of inaccuracy in the content being posted, they could help users avoid bogus information by sending fake-news alerts when a certain threshold for inaccuracy is breached. But advising users not to click or read false content also brings down engagement levels, and platforms will have that trade-off in mind when deciding how to flag inaccurate posts, according to Chicago Booth’s Ozan Candogan and University of Southern California’s Kimon Drakopoulos. Platforms that want to prioritize engagement would be better off sending a private alert to select users depending on their tolerance for inaccuracy. Learn more about the researchers’ model on page 14 of this issue.
### March 7–14
Information sessions, Singapore and Hong Kong. Meet staff, current students, and alumni for refreshments and conversation about Chicago Booth’s Executive MBA Program. [ChicagoBooth.edu/programs/exec-mba](http://ChicagoBooth.edu/programs/exec-mba)

### April 9–13
Essentials of Executive Leadership: The Psychology of Management, Chicago. Develop a framework for understanding how to effectively influence others within your organization. [ChicagoBooth.edu/eel](http://ChicagoBooth.edu/eel)

### April 12
Global New Venture Challenge, Chicago. The top teams from Booth’s Chicago, London, and Hong Kong campuses gather to present their business ideas to a panel of judges. [research. ChicagoBooth.edu/nvc](http://research. ChicagoBooth.edu/nvc)

### April 14
Emerging Markets Summit, Chicago. Professionals from across the globe gather for six regionally focused conferences and one panregional conference. [groups.ChicagoBooth.edu/ems](http://groups.ChicagoBooth.edu/ems)

### March
Management Conference, Chicago. Engage with industry leaders and Chicago Booth’s preeminent faculty as they shape the theory and practice of business. [ChicagoBooth.edu/managementconference](http://ChicagoBooth.edu/managementconference)

### April
Reconnect Weekend, Chicago. Reunite with friends and make new connections at this event for Chicago Booth alumni. [ChicagoBooth.edu/reconnect](http://ChicagoBooth.edu/reconnect)

### May 21–25
The Executive Program for Prospective CFOs, Chicago. Develop broad financial strategy and hone leadership skills at this Executive Education program. [ChicagoBooth.edu/eppc](http://ChicagoBooth.edu/eppc)

### May 30
Edward L. Kaplan, ’71, New Venture Challenge finals, Chicago. Teams present their business ideas to a panel of judges in Chicago Booth’s original and premiere accelerator challenge. [research. ChicagoBooth.edu/nvc](http://research. ChicagoBooth.edu/nvc)

### JUNE
Back to Booth, Shanghai. Advance your understanding of negotiations in a class led by Chicago Booth’s George Wu. [ChicagoBooth.edu/alumni/back-to-booth](http://ChicagoBooth.edu/alumni/back-to-booth)

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WHY HASN’T TECHNOLOGY SPED UP PRODUCTIVITY?
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