WHO WILL BE THE NEXT CLIMATE MIGRANTS?

How Dust Bowl–era data may help us understand an expected, massive movement of people

Plus:

Paying attention has more value than you realize

What the latest Nobel Prize winners taught us
“But I also imagine you could give me the middle finger or punch me in the face.”

Page 36
Over the course of our lifetimes, climate change seems set to unleash what may well be the largest migration of people in history. This creates a huge challenge for policy makers, and much like the now outmoded debate over whether global warming is real or not, the discussion of this issue has moved on from whether populations will face upheaval to how best to manage the vast implications.

Our cover story (page 26) suggests that we need to start by learning some elemental information about climate migrants. Chicago Booth’s Richard Hornbeck is an economic historian who mines archival data to uncover insights that are deeply relevant to today’s societies. In this issue, he shares what he is learning about Dust Bowl migrants and how they differed from other migrants at the time. Understanding who left the badly eroded counties of North America’s Great Plains in the 1930s could help us, almost a century later, recognize contemporary and future climate migrants and anticipate how communities will react to their arrival. Those reactions, Hornbeck notes, may help shape policies to mitigate the economic effects of climate change.

We move from global policy to personal encounters in our other feature, which looks at what keeps people from meaningfully connecting with each other (page 36). Booth’s Nicholas Epley finds that most of us hold a somewhat dim view of how we think a conversation with a stranger is likely to go—and if we talk at all, we stick to chitchat. But his research suggests that people prompted to have deep conversations almost always find that the experience is better than anticipated. Have more of them, he says—it’s a cheap, easy way to make yourself happier.

These are just two of the articles we have that explore new and in-progress research, but we also know that it takes time for some of the greatest insights to be digested, vetted, and ultimately celebrated. This October, Booth’s Douglas W. Diamond was awarded the Nobel Prize in Economic Sciences, alongside his collaborator Philip H. Dybvig of Washington University in St. Louis and former Federal Reserve chair Ben Bernanke. Booth’s Anil K Kashyap penned an essay, which we have republished in this issue, explaining why these three are so deserving of the honor (page 52). Their work, from the 1980s, was the first to explain that to understand the banking system and its risks, it is necessary to recognize and appreciate the fundamentals of banking—the distinct roles played by bank assets (loans) and liabilities (deposits). “This may sound trivial, as deep insights often do, but it is hardly obvious,” Kashyap observes.

We join the community in saluting the groundbreaking work of these newest Nobel laureates. On our website, you will find more stories about Diamond’s research, as well as a Q&A with him in which he shares thoughts about the inevitable next financial crisis—which may well hit us before another wave of climate migrants are on the march.

Hal Weitzman
Executive director, Intellectual Capital
Editor-in-chief, Chicago Booth Review
hal.weitzman@chicagobooth.edu

Emily Lambert
Director, Intellectual Capital
Editor, Chicago Booth Review
emily.lambert@chicagobooth.edu
Eight ways in which lying is seen as moral
To encourage donations, make people publicize their charity
The COVID medical-debt bomb that fizzled
Is a housing bust ahead? Look at short-term sales
Expect a slowdown for the Chinese economy, but not a crash
Do whistleblowing laws work?
Looking for a trustworthy face? There’s a photo database for that
The gap between diversity policies and recruiting decisions, explained
Paying attention has more value than you realize
Quantitative tightening endangers stability
To prepare for a recession, boost vulnerable workers
Fight climate change using peer pressure
Chinese cities’ $1 trillion-a-year piggy bank
Fixing troubled banks can aid minorities and women
Why banning menthol cigarettes locally doesn’t work
Can privacy exist in the future?
A tool to help algorithms cope with human ‘gaming’
How Old Navy could have avoided a plus-size mess
How rich are the superrich, exactly?

Who will be the next climate migrants?
How Dust Bowl-era data may help us understand an expected, massive movement of people
By Rose Jacobs

The person stopping you from being happier is probably you
A self-imposed barrier is preventing people from connecting
By Kasandra Brabaw

Rimmy E. Tomy, associate professor of accounting and a Kathryn and Grant Swick Faculty Scholar, researches regulation and enforcement in the financial sector, including questions relating to effective enforcement and regulation’s unintended consequences. In research covered in this issue, she finds an unintended benefit of bank enforcement actions for historically disadvantaged borrowers. (Page 20)

Richard Hornbeck, the V. Duane Rath Professor of Economics and a Neubauer Family Faculty Fellow, is an economic historian and applied microeconomist whose research focuses on the historical development of the American economy. History, in his view, can help explain why some people and places have become wealthier than others—and provide perspective on what factors could drive widespread improvements in living standards. (Page 26)
Reading faces is a dangerous game

By Alexander Todorov

What the latest Nobel Prize winners taught us

By Anil K Kashyap

Why we are so cash conscious

By John Paul Rollert

Will the Fed’s rate hikes raise expected inflation?

By John H. Cochrane

Is executive pay excessively high?

The IGM Panels

Nicholas Epley, the John Templeton Keller Distinguished Service Professor of Behavioral Science and a Neubauer Family Faculty Fellow, studies social cognition to understand why people so often misunderstand each other. The director of Booth’s Center for Decision Research, he is the author of Mindwise: How We Understand What Others Think, Believe, Feel, and Want and is working on a second book, about social connection. (Page 36)

Alexander Todorov, the Leon Carroll Marshall Professor of Behavioral Science and a Richard Rosett Faculty Fellow, researches how people perceive, evaluate, and make sense of the social world. In this issue, he discusses the pseudoscience of physiognomy and explains why someone’s facial appearance can be revealing—or deeply misleading. Todorov is also the author of Face Value: The Irresistible Influence of First Impressions. (Pages 14 and 47)
COUNTERPOINT: DON’T DIVEST OR PROTEST

Green investors: Don’t divest... protest! (Fall 2022)

Did you approve this woke nonsense? When did the Booth business journal become a sociology journal? Maybe you need to learn the difference between an investment and a donation? Investors invest to generate growth and cash flow for future needs (homeownership, tuition, business formation, retirement, etc.). Benefactors make donations to causes that are important to them. “Green” is a cause, not an investment goal. You seem to think it’s OK to confiscate investor money to pursue causes important to you. I’d suggest that you sell your stock and write checks to your favorite causes. Leave my investments alone, thank you very much.

—Michael Mainelli

AS CONCENTRATION GROWS, SO DOES CONCERN

Rising corporate concentration continues a 100-year trend (Fall 2022)

The United States needs to start enforcing antitrust laws again. Break up these huge conglomerates.

—Anthony Clark

There are monopoly laws. But if your donors are major corporations, why would you go against the hand that feeds you?

—Ryan Austin

We’ve morphed from being a nation of small-business owners to being a nation of employees. That’s a cultural revolution.

—Tom Bosworth

WHAT ABOUT CORPORATE SUBSIDIES?

Should the US outlaw price gouging? (Fall 2022)

Maybe next time you can ask about companies that make fantastic profits and get US government subsidies, e.g., one oil company made $50 billion in just one quarter and is still getting a $15 billion subsidy. Should its subsidy be reduced or eliminated?

—Philip Rynes

GREEN INVESTORS: DON’T DIVEST... PROTEST!

Booth’s IGM Forum regularly queries its panels of experts and welcomes ideas for topics at igm@chicagobooth.edu.
RAISING THE BAR ON HIGH-IMPACT, CUSTOM EXECUTIVE EDUCATION

Consistently ranked high among the top global offerings, Executive Education programs at Chicago Booth are where intellectual rigor, engaging teaching, and cutting-edge research meet. We work collaboratively with organizations to create custom-designed executive education programs and virtual learning solutions tailored to meet unique needs and objectives. Partner with us and empower your organization with The Chicago Approach™.
PHONE CALLS ARE A THING OF THE PAST. SHOULD THEY BE?

Booth researchers are exploring how less text-based messaging and more talking could improve communication.

Follow your curiosity at chicagobooth.edu/communication
Eight ways in which lying is seen as moral

Would telling the truth cause ‘unnecessary harm’?

A friend asks what you think of her presentation. A colleague asks you if he looks good in his suit. In moments such as these, telling the truth could harm someone’s feelings or self-esteem. Does that make lying seem like the right choice?

Research by Chicago Booth’s Emma Levine, focusing on this question, suggests that for many people, merely sparing someone’s feelings isn’t enough to justify lying. It is only when the truth causes “unnecessary harm” that most people find lying to be ethical.

“Unnecessary harm is a function of how much value the truth has in the long run, whether you can learn and grow from it, and how much emotional pain and suffering it will cost you,” Levine says. If telling the truth will cause someone emotional pain and suffering
The truth hurts, sometimes too much

In a series of vignettes, study participants were more likely to approve of lying when the perceived value of telling the truth was lower and the perceived harm higher.

**Participants’ ratings (on a 1–7 scale) of the value vs. the harm of telling the truth**

Imagine a manager who must fire 10 percent of her workforce. Employees know that the company is reorganizing, but they don’t know that layoffs are coming. It is a Friday afternoon, and the manager just received a list of who will be fired. An employee who is on the list drops by the manager’s office to ask if there’s any news about the reorganization. The manager still has about a month until she needs to tell the employees of their work status.

**Should the manager lie?**

**Scenario 1:** It’s a Friday afternoon like any other.  

<table>
<thead>
<tr>
<th>Low</th>
<th>Rating scale</th>
<th>High</th>
<th>Percentage of respondents who approved of lying</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value of truth</td>
<td>5.1</td>
<td>22.9%</td>
</tr>
<tr>
<td></td>
<td>Harm of truth</td>
<td>4.3</td>
<td>64.4%</td>
</tr>
</tbody>
</table>

**Scenario 2:** It’s the Friday afternoon before the employee’s wedding.

<table>
<thead>
<tr>
<th>Low</th>
<th>Rating scale</th>
<th>High</th>
<th>Percentage of respondents who approved of lying</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value of truth</td>
<td>4.6</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Harm of truth</td>
<td>5.3</td>
<td>64.4%</td>
</tr>
</tbody>
</table>

Imagine an employee who must deliver an important presentation. He tells the colleague that he plans on wearing his favorite black suit. Unbeknownst to the employee, the colleague thinks the suit is too tight and inappropriate for the presentation. The employee asks his colleague what she thinks of the suit.

**Should the colleague lie?**

**Scenario 1:** It’s the day before the presentation and the employee has other suits available.

<table>
<thead>
<tr>
<th>Low</th>
<th>Rating scale</th>
<th>High</th>
<th>Percentage of respondents who approved of lying</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value of truth</td>
<td>5.4</td>
<td>7.6%</td>
</tr>
<tr>
<td></td>
<td>Harm of truth</td>
<td>3.1</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

**Scenario 2:** It’s the day of the presentation and the employee has no other suit available.

<table>
<thead>
<tr>
<th>Low</th>
<th>Rating scale</th>
<th>High</th>
<th>Percentage of respondents who approved of lying</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value of truth</td>
<td>3.9</td>
<td>64.4%</td>
</tr>
<tr>
<td></td>
<td>Harm of truth</td>
<td>4.5</td>
<td>64.4%</td>
</tr>
</tbody>
</table>
• Controllable versus uncontrollable: when a person can’t do anything to change the circumstances
• Disruption of special moments: when the truth would distract a person from something important
• Presence of others: when a lie would help someone save face

Participants in the experiments said they would value ethical deception both as the liars and as the people being lied to. In one study, Levine divided participants into three groups: communicators, third-party judges, and targets. No matter how participants were asked to view themselves—as the liar, the lied-to, or separate from the lie—a majority endorsed deception when the truth might cause considerable immediate harm and would have low long-term value. If telling the truth will hurt someone emotionally or physically and won’t encourage learning or growth, why be honest?

“I would want someone to lie to me when the alternative of telling the truth would make me feel worse off and I would have no control over what happens,” wrote one participant. “For example, if my beloved dog died after being hit by a negligent driver, I’d much rather my parents or friends have told me the dog died peacefully in its sleep than to tell me the facts.”

Others explained that they would want people to lie about something that couldn’t be changed, and one person gave the example of asking friends whether they “looked OK” for a night out. If the question was posed from home, “I hope they would tell me the truth, so I could change whatever looked bad (as best I could),” wrote the participant. But if the same person asked the same question when already out, and received an honest but negative response, “my night would be ruined and I would have to stay at the bar knowing I looked bad.”

Levine says that a lot of research in this area, including hers, documents cases where “communicators think it’s OK to lie and the targets don’t agree.” But when a lie clearly involves unnecessary harm, targets and communicators largely agree it’s preferable to the truth, she finds.

Kasandra Brabaw

TO ENCOURAGE DONATIONS, MAKE PEOPLE PUBLICIZE THEIR CHARITY

IF YOU’VE ever given to a cause, you may have been nudged to wear a sticker or a T-shirt or to post a hashtag on social media afterward. If this made you uncomfortable, you’re not alone. Advertising a selfless act creates a conundrum: you may want people to know about your good deed, and the beneficiary, yet don’t want to come across as a braggart. For many donors, charitable giving is less potent when it’s publicized.

Organizations can defuse this tension by making publicity a requirement rather than just a nudge, according to National University of Singapore’s Adelle X. Yang (a graduate of Booth’s PhD Program) and Chicago Booth’s Christopher K. Hsee. Through a series of experiments, the researchers find that the “voluntary publicity” strategy that many charities use may actually backfire, as benefactors don’t want anyone to assume that they have “impure” motives related to image, rather than “pure,” altruistic ones.

“As a result, numerous charity campaigns fail to drive up social contributions or social awareness despite adopting and encouraging the use of self-promotion devices,” Yang and Hsee write. Counterintuitively, they find that an “obligatory publicity” strategy, in which a donor is required to publicize a gift, may be more effective at drumming up donations and ensuring sufficient publicity to sustain fundraising momentum.

In their study, the researchers pitted the two publicity approaches against each other. In one experiment, they sent emails to students at several schools

with the National University of Singapore, inviting them to participate in an upcoming campus blood drive. But there was a minor difference in the emails: about half the participants read that receiving a promotional hand stamp was required as part of the donation (obligatory publicity), while the other half read that it was simply an option (voluntary publicity). The emails were supplemented with physical posters displaying the same information in locations where the respective groups of students were most likely to see them.

Over the three-day blood drive, although the baseline donation rate from the previous year was about 0.2 percent per day, students in the obligatory condition were more than twice as likely to donate blood than those in the voluntary condition, at roughly 0.4 percent versus 0.2 percent. That the donation rate of the voluntary group matched that of the generic blood drive the previous year suggests making publicity mandatory really did affect donation behavior, Yang and Hsee say. They argue that obligatory publicity removes people’s fear of coming off as self-promotional because it places the decision outside a person’s control.

In the same experiment, the researchers find that not only were participants in the obligatory group more likely to donate blood, but so were their friends who were not part of the experiment, suggesting obligatory publicity may generate a ripple effect through social networks.

The research findings also suggest that people are indeed sensitive to others’ perceptions, and they don’t expect a “cheap donation” to earn them a good reputation.—Alice G. Walton


Emma Levine, “Community Standards of Deception: Deception is Perceived to be Ethical When It Prevents Unnecessary Harm,” Journal of Experimental Psychology: General, February 2022.
THE COVID MEDICAL-DEBT BOMB THAT FIZZLED

EVEN BEFORE COVID-19, Americans already owed $140 billion for delinquent medical bills. When the pandemic hit the United States, that debt burden appeared likely to increase significantly, as hospitalizations spiked, unemployment soared, and millions lost their employer-sponsored health benefits.

Instead, overall medical debt fell, according to research by Chicago Booth PhD candidate Benedict Guttman-Kenney and a group of fellow researchers. Elective medical procedures plummeted, and the federal government pumped money into pandemic relief support, higher unemployment benefits, and health-insurance exchanges and Medicaid (the government health-care program for the poor).

Medical-debt levels were already trending downward before the pandemic, and that continued, with proportionally similar declines across different income groups, the researchers find. The fall was unrelated to infection and vaccination rates.

The researchers analyzed medical-debt collections from January 2018 to September 2021 using the TransUnion Consumer Credit panel, a representative sample of 10 percent of US credit files, housed at Chicago Booth’s Kilts Center for Marketing. They constructed a measure of the flow of delinquent non-medical debt for comparison.

The results were foreshadowed in an earlier paper by some of the researchers, which finds that expanding Medicaid significantly lowered medical debt.

That study used TransUnion data for 2009–20 to analyze medical debt across US states. The researchers examined how the expansion of Medicaid under the Affordable Care Act, signed into law in 2010, affected household finances. They find that mean medical debt fell 34 percentage points more in the states that expanded Medicaid as a result of the ACA in 2014 than in the states that did not. Furthermore, Medicaid expansion states saw the gap between richest and poorest communities shrink, highlighting how Medicaid can alleviate financial distress for many households.—Martin Daks

Go to chicagobooth.edu/review to see citations for research mentioned in this article.

Averting debt disaster

Even as COVID-19 cases soared in the US, the amount of new medical debt fell.

With the recent run-up in real-estate prices amid the housing shortage and now rising mortgage rates, many people are concerned that a housing bubble—similar to the one 15 years ago that set off the Great Recession—is about to burst in the United States. As a sign of what’s to come, some point to the level of speculation in the market. An August 2022 Atlantic article highlighted activity by house flippers, “aspiring Airbnb tycoons,” and other investors in the market for single-family homes.

Research suggests that the interest in this activity could be well placed. Northwestern’s Anthony A. DeFusco and Charles G. Nathanson and Chicago Booth’s Eric Zwick find that speculation

Is a housing bust ahead? Look at short-term sales

Guttman-Kenney et al., 2022
was one factor that drove the dramatic 2000–05 boom and subsequent collapse. Short-term buyers such as house flippers were particularly influential in the market.

Like many other economists, Zwick sees the US housing market slowing and says it has entered a phase called the quiet—the lull following a boom that’s just before a potential bust. Other research (including by House of Debt authors Booth’s Amir Sufi and Princeton’s Atif Mian) finds that credit played a large role in the prior bust, which suggests that credit levels are crucial to assess and watch now. DeFusco, Nathanson, and Zwick argue that speculation, possibly fueled by credit access, is another important force to monitor.

Focusing on which buyers are most active during each phase of the cycle can shed light on the underlying mechanisms causing prices to rise and fall, according to the research. Similarly, looking at those markets that attract more speculative buyers can be a predictor of the degree of downturn that might follow. That has relevance to today’s market, although Zwick says that in comparison to the prior cycle, “what’s different about this one is that [transaction] volume didn’t go up that much. I’m not sure we have the same speculative-entry phenomenon driving price growth.”

The researchers used data from 50 million home sales between 2000 and 2011, measuring speculative buying and selling across 115 metropolitan areas representing 48 percent of the US housing stock. Prices fell by 28 percent from 2007 to 2011, and transaction volume by 63 percent, they find. The researchers studied deed records rather than mortgage documents, as many speculative deals are all cash. To narrow in on speculative activity, they identified buyers who sold within three years of initial purchase and nonoccupants who listed a mailing address different from the property address. While total sales volume increased 40 percent during the early 2000s boom, it doubled among short-term buyers and those who didn’t reside in the property. Speculative transactions accounted for 40–50 percent of housing sales from 2000 to 2005, contributing substantially to the price bubble.

The cities with larger speculative booms, such as Phoenix, Las Vegas, and Orlando, experienced larger price surges, sharper increases in unsold listings when the market turned, more severe price drops, and more foreclosures.

“Speculative buyers indirectly cause foreclosures by leading prices to overshoot,” Zwick says. People may overpay for a property, then be unable to make mortgage payments when a recession hits and they lose their job. And when prices fall, they may be unable to sell the property if its price is below that of the mortgage amount.

When the researchers removed short-term buyers from their model, along with those who didn’t occupy a property, they find that price busts did not occur. And when they removed only nonoccupants from their model, the housing price surge remained strong, suggesting that short-term buyers were the primary amplifying force driving up prices.

—Allyson Reedy

Why are industrial-land prices so much lower?

Oftentimes, people say it’s due to a distorted land policy, that the government wants to subsidize production. But my coresearchers and I argue that another explanation makes more sense. The government is a monopolistic supplier of land. Like many people, my grandmother owned a piece of land before the Communist Party took over, after which point everything belonged to the state. But beginning in 1998, expect a slowdown for the Chinese economy, but not a crash

Zhiguo He, Fuji Bank and Heller Professor of Finance and Jeuck Faculty Fellow

Q1 There’s a lot of talk in the United States about rising interest rates depressing the housing market. What is the situation in China? It’s so pricey—almost like New York or Palo Alto, even though incomes are lower. I, personally, cannot afford an apartment in Beijing. Over the past 20 years, buying a house has been the easiest way to make money. My parents always want me to buy in my hometown, and like many others, they say, “Don’t miss the opportunity!” But economists know a market like that can’t last. A slowdown would be a good thing. The situation is different with industrial land prices, which haven’t risen nearly as much. Every economist sees a discount, and there’s been a lot of discussion about what’s causing it.

Q2 Why are industrial-land prices so much lower? Oftentimes, people say it’s due to a distorted land policy, that the government wants to subsidize production. But my coresearchers and I argue that another explanation makes more sense. The government is a monopolistic supplier of land. Like many people, my grandmother owned a piece of land before the Communist Party took over, after which point everything belonged to the state. But beginning in 1998,
China developed a land market and started slowly selling the land—or, technically, the rights to use it—to finance infrastructure investment. Most construction is on newly released land.

In residential real estate, the local government sells land to a developer and gets money at the point of sale. But with industrial land, the government will also collect future tax income. From a public-finance perspective, is someone doing a careful calculation and taking into account the money that will come in over time? In research, we find that we can explain the price differential through this simple time-horizon perspective.

**Q3**  
Is it dangerous to make assumptions about the Chinese market on the basis of what happens elsewhere? Indeed. For instance, land is a scarce resource in China, and it’s important to understand the local governments’ economic decisions, which can provide perspective. In the United States, demand for land is important to prices. But in China, prices reflect land supply.

Also the involvement of the Chinese government is different. In 2021, there was a lot of concern that Evergrande Group, a big real-estate developer, was going to default and cause a Lehman moment (when Lehman Brothers’ 2008 bankruptcy shook the global financial system). I said it wouldn’t happen. The government made a huge mistake in allowing a practice unique to Hong Kong and China’s mainland, in which developers can sell a house when it’s only 20 percent built. The issue is whether Evergrande will default on promises made to people who bought homes that aren’t finished. For that, the Chinese government has zero tolerance, and it has built an ad hoc fund to make sure developers finish these projects.

**Q4**  
Is there a takeaway for investors? As a simple fact, an economic collapse will not happen in China. I always tell my students a collapse only occurs in an economy like the US where market forces are paramount. China’s past growth has been extraordinary, and what will come is a slow slowdown. But there will still be speculation.

---

**DO WHISTLEBLOWING LAWS WORK?**

**OVER A PERIOD** of several years, the Brazilian unit of medical-devices maker Zimmer Biomet Holdings ran a massive kickback scheme, according to the Securities and Exchange Commission, which in 2017 levied a $30 million penalty against the Indiana–based company. The wrongdoing reportedly came to light when a former orthopedic surgeon provided an anonymous tip to the company and then to the SEC. That won the whistleblower a $4.5 million reward from the US regulatory agency.

The bounty was authorized by the 2010 Dodd–Frank Act, which offers whistleblowers 10–30 percent of cash funds collected from enforcement actions that top $1 million. The program effectively deters financial fraud, according to Chicago Booth’s Philip G. Berger and City University of New York’s Heemin Lee (a graduate of Booth’s PhD Program). Their research finds that the Dodd–Frank whistleblower provision has reduced the likelihood of corporate financial fraud by 12–22 percent, depending on how the calculations are done, without significantly affecting audit fees.

Whistleblower laws have a long history. In 1863, when Civil War profiteers were effectively robbing the public purse, the US Congress pushed through the False Claims Act, offering rewards to whistleblowers. Over time, lawmakers have broadened the application of the bounty incentive.

Because detected fraud could represent just a fraction of the problem, Berger and Lee focus on an indicator of the probability of fraud known as the F-score, developed in 2011 by University of Southern California’s Patricia M. Dechow and her coresearchers. Berger and Lee argue that the measure provides a reasonable approximation of underlying fraud. The F-score reflects financial-statement data showing accrual quality, business performance, and external financing measures. Higher scores signal a greater probability of accounting misstatements.

The other big research challenge was coming up with a before-and-after comparison for businesses likely to be affected by Dodd–Frank. Berger and Lee used false-claims laws, passed in 17 states before Dodd–Frank, which reward whistleblowers who provide evidence of securities fraud by companies whose stocks are part of state pension-fund portfolios. These state laws incentivized companies to tighten up their accounting and take anti-fraud measures prior to the existence of the federal program, thus presenting a good opportunity for comparison with companies for which Dodd–Frank was their first exposure to whistleblower liability, the researchers argue.

When they analyzed the financial reports of more than 1,800 companies from 2008 to 2014 (before and after the passage of Dodd–Frank), they find that companies subject to the state-level laws saw F-scores decline by 12 percent between 2008 and 2010. The research suggests that the drop in the probability of fraud resulted from companies being exposed to a state program during this time period, either because of a newly implemented law or because a state pension plan invested in the companies. Businesses in the group that hadn’t had to worry about state whistleblower laws lowered their F-scores by even more—up to 22 percent—once Dodd–Frank went into effect, the researchers find.

—Bob Simison

The Dodd-Frank whistleblower provision reduced the likelihood of corporate financial fraud.

Go to chicagobooth.edu/review to see citations for research mentioned in this article.
Looking for a trustworthy face? There’s a photo database for that

In order to study the automatic judgments that people make when assessing facial traits, scientists need faces to show their lab participants. Traditionally, researchers who study impressions have taken one of two approaches: they use real photographs that limit how much they can change the features of a particular face, or they use artificially generated faces that don’t look very real.

Scientists from Princeton, Chicago Booth, and the Stevens Institute of Technology offer a new approach. Combining deep machine-learning models with more than 1 million facial judgments of over 1,000 images, they have created models that allow researchers to generate synthetic but photorealistic and demographically diverse faces that can be tuned along sets of perceived attributes, such as age or weight, and even evoke more subjective judgments such as trustworthiness or intelligence.

“We make an API (application programming interface) available to the scientific community, they’ll have a lot more power over the kinds of images they use. And it will open a whole new set of questions that were never possible to answer before,” says Chicago Booth postdoctoral scholar Stefan Uddenberg, a researcher on the project. The same technology could have commercial use too, as it could potentially allow photographers, ad agencies, and others to identify which of their face photos are likely to be considered trustworthy or smart, for example.

These models were born of the researchers’ frustration at never having enough faces or the right type of faces for study, Uddenberg says. While researchers frequently develop expensive new face databases, artificial faces don’t necessarily convince anyone that they’re real. “They look like bald heads on black backgrounds, like mannequin heads,” Uddenberg says. The goal was to create easily transformed images that look like actual photos.

To make sure their face models do what they want them to, the researchers performed a series of validation studies involving about 1,000 people in all. Each participant was assigned to judge one of 10 perceived attributes—such as age or trustworthiness—and given 150 faces to judge. Fifty of the images were synthetic faces while 50 others were developed using unique face photographs and manipulating them with the researchers’ models; repeat images were included in the mix to test the raters’ reliability. Sure enough, the models transformed impressions of face photographs as predicted: faces made to look older (according to the models) did in fact look older to study participants, for instance.

Uddenberg is careful to note that this research is modeling impressions, not defining what makes a person trustworthy, for instance, or smart. “What we’re saying is this is what the American population in general thinks a trustworthy or smart person looks like,” he says.

The patterns demonstrate clear biases in judgments. For example, a male face that is thinner and older with a crooked smile tended to be perceived as intelligent, while a round, chubby face topped by a baseball cap was perceived as unintelligent. The (mostly white) participants deemed a face more familiar the larger the smile and the whiter the complexion it had.

Besides the model’s implications for the scientific community, Uddenberg says the researchers are exploring its commercial utilities, and he’s excited to see how it will be used. He gives the example of a wedding photographer who might take 100 pictures of a couple and could use the model to pull out photos that evoke just the right impression.—Kasandra Brabaw


Faces are fascinating

Read more about what faces can (and can’t) reveal on page 47.
The gap between diversity policies and recruiting decisions, explained

Educational institutions and employers have come to embrace the value and importance of diversity in a student body or a workforce and have poured considerable energy into developing policies to level the playing field for selection. But there’s often a gap between policies and practices, according to Chicago Booth PhD student David Munguia Gomez and Booth’s Emma Levine.

The gap is evident in the mismatch between Americans’ stated beliefs and their willingness to back measures to advance those beliefs. In the mid-1990s, half of US residents said they supported affirmative action for women and members of historically underrepresented racial groups, according to the researchers, who cite polls from NBC News and the Wall Street Journal. However, a 1997 poll from CBS News and the New York Times indicated that only 34 percent of people said it was a good idea to hire a woman over an equally qualified man, and only 20 percent said a college should deliberately pick a Black student over an equally qualified white student.

Little has changed over the past quarter century. The contradiction between beliefs and actions has become a persistent organizational problem that the researchers call “the policy-people gap.” It describes the situation in which decision makers support policies that would favor one type of applicant but choose a different type of applicant in making individual choices.

Munguia Gomez and Levine examined the policy-people gap in the contexts of college admissions and workplace hiring, surveying college admissions officers, employees in the technology industry, and others. They find that when choosing between selection policies, decision makers are more likely to favor disadvantaged applicants—but when choosing between specific individuals, they tend to choose the more advantaged applicants. The contradiction exists at least in part because people prioritize different standards of fairness when thinking about policies compared with thinking about individuals, they write.

In one of 19 experiments, Munguia Gomez and Levine divided 802 online participants into two groups. They asked participants in one group to choose between two policies that would affect which of two final candidates would be selected for college admission. Participants in the other group simply chose between the two people. Essentially, both groups were making the same choice between college applicants, but one group thought about the decision in terms of a broader policy.

Setting the experiment up this way allowed Munguia Gomez and Levine to test their theory that people’s decisions reflect different fairness standards: when choosing between policies, people apply a “macrojustice” standard of fairness or justice, and in picking between individuals, they use a “microjustice” standard.

“Microjustice is what’s fair to individuals,” Munguia Gomez says, explaining that this means establishing a correspondence between individuals’ inputs, such as their grades and test scores, and an output, such as admission to college. This is a standard of fairness that’s focused on looking at individuals’ characteristics to determine what they ought to get. In contrast, macrojustice means what is fair in the aggregate— that is, how spots for college or jobs are distributed across people, such as those from advantaged and disadvantaged backgrounds. This standard of fairness is concerned with the overall allocation of opportunities and rewards in organizations and society, such as whether they are distributed equally between groups or whether a minimum for a group is reached.

These two ways of making admissions decisions, Munguia Gomez says, can create a tension because standardized test scores correlate with incomes. So if a college prioritized admissions only on the basis of test scores, as microjustice would suggest, the incoming class would be skewed toward the socioeconomically advantaged. This result would clash with people’s desire for equality and diversity, reflecting their macrojustice concerns.

To mimic this tension, the two applicants in Munguia Gomez and Levine’s study scenario represented a socioeconomically advantaged person with higher test scores and a socioeconomically disadvantaged person with lower scores. Participants choosing between the individuals picked the higher-scoring, higher-income student 56 percent of the time, while those choosing between policies did so only 45 percent of the time. What’s more, almost two-thirds of participants picking between specific individuals indicated that it was fairer to choose the higher-scoring, higher-income student, far more than the 38 percent who indicated the same when deciding between policies.

Munguia Gomez and Levine also asked a group of participants to make the same kind of choice but only after hearing about the difference between microjustice and macrojustice—and after being asked to prioritize macrojustice. In this case, the gap between policy choices and people choices was significantly narrower: more participants selected the disadvantaged applicant in their individual decision, bringing it in line with their policy decision. The implication, says Munguia Gomez, is that organizations should recognize that standards of fairness applied to policies and individuals won’t necessarily line up—and should guide decision makers to prioritize the standard that aligns with their goals. –KSANDRA BRABAWS

Intentions differ from actions

Study participants preferred an admissions policy that favored a disadvantaged applicant. But when asked to pick between applicants, they still chose the advantaged one.

Share of the preferred admissions policy versus share of the preferred applicant

- Admit applicant with lower income and test scores
- Admit applicant with higher income and test scores

<table>
<thead>
<tr>
<th>Which policy?</th>
<th>54.4%</th>
<th>45.6%</th>
</tr>
</thead>
</table>

| Which applicant? | 43.4% | 56.6% |

Munguia Gomez and Levine, 2022
Paying attention has more value than you realize

Every day, people make dozens of choices about how to deploy mental effort and where to focus. Do we give attention to work or play? Should we exercise or zone out in front of the TV?

The decisions we make appear to underrate the importance of attention, according to the results of a study. A group of researchers including Chicago Booth’s Eric Zwick find that we often make irrational decisions, undervaluing how much attention is worth relative to distractions.

“The rational inattention” theory assumes that people fully understand the consequences of, say, scrolling through Instagram instead of hunkering down and writing that report—and that we choose where and how best to put our attention. To test it, the researchers ran three experiments that gave people the opportunity to reduce the demands on their mental bandwidth.

For the first experiment, they asked nearly 1,400 US students enrolled in an online coding class to complete three 15-minute coding lessons each week. The students were rewarded monetarily for completing the lessons, with a randomized range of bonuses between $1 and $5. To help make completing the tasks easier, the researchers offered students a planning tool to block out three 15-minute windows on their online calendars.

The researchers—interested in nudges that could help people build good habits—find that students who used the tool were more likely to complete the tasks and get the financial reward, but adoption of the tool depended on the incentives. As the incentives for completing the weekly lessons increased, so did the tool-adoption rate. This makes sense: the more you get out of doing something, the more likely you are to invest in making sure you complete the task. However, more participants should have used the planning tool, according to the theory. The fact that they didn’t led researchers to conclude that participants undervalued it.

In the second experiment, the researchers offered financial bonuses to 2,300 participants to complete an online survey. The catch? The survey wouldn’t be sent to them for anywhere from two days to six weeks. To help participants complete the survey and earn their bonuses of $3–$12, the researchers offered to send a set of three reminder emails, gauging participants’ willingness to pay for them. But as in the first experiment, they find that participants undervalued the reminders.

Could people be prompted to value these sorts of nudges? In a third experiment, the researchers briefly showed participants a series of equations and asked them to state whether most were correct or incorrect, indicating that participants would be rewarded for accuracy. Before doing this a second time, the researchers offered to make the challenge easier for a small fee. Participants were willing to pay some money for an easier task and increased likelihood of earning the bonus, but they weren’t willing to pay as much as the theory had predicted.

The findings can be applied to many aspects of what Zwick calls today’s “distraction economy.” Exercising now could reduce health problems later, and adopting bandwidth enhancements such as automatic reminders could help us complete chores—which saving money or booking a medical appointment—be worth doing.

“This offers some kind of structure on how we can tame them [the demands on our attention],” says Zwick. “If people aren’t optimally allocating their attention and dealing with all these distractions, we need to think about interventions to help them get closer to what they could ideally be doing.”—Allyson Reedy

To prepare for a recession, boost vulnerable workers

In a recession, the most vulnerable workers typically bear the brunt of layoffs and pay cuts—and their subsequent belt-tightening can magnify the effects of an economic downturn. That’s especially true when income inequality is rising, according to Chicago Booth’s Christina Patterson, whose research suggests that policy makers should bolster these populations ahead of recessions by improving access to credit, expanding unemployment benefits, and considering stimulus checks, as well as enacting other policies to stabilize the finances of young and low-income workers.

Recessions, defined as a fall in GDP over two successive quarters, do not affect all workers or companies equally. In the 11 recessions in the United States between 1945 and 2011, GDP fell by an average of 2 percent, and unemployment rose by an average of about 2 percent, according to the research. To study how the impacts can vary, Patterson homed in on a period that included two of those recessions. She used a variety of US government data generally covering workers in 23 states between 1995 and 2011, measuring how much spending on goods and services tended to fall for each dollar of lost income.

Workers who spend a larger share of each dollar in their paycheck have a higher marginal propensity to consume, or MPC—and when higher-MPC individuals cut back, that can worsen a recession. Patterson finds that those with the highest MPCs in her data were younger than 35, didn’t have college educations, made less than $25,000 a year, or were Black. Single men and women had higher MPCs than married workers. And men had higher MPCs than women did, as they tended to spend more than they saved.

Patterson explored the extent to which workers whose consumption was sensitive to their income (that is, those with high MPCs) also worked in jobs that were likely to be cut during recessions. When these workers slowed their spending, there were ripple effects, she finds. “The initial shock of a person losing a job can amplify,” Patterson says. “Someone loses income, and then doesn’t go out to dinner. That person makes groceries stretch further, and doesn’t get a haircut. The hairdresser in turn has less income, so doesn’t buy a dishwasher.” When the people in this chain—serving dinner, selling groceries and dishwashers, and cutting hair—also have high MPCs, more ripples form.

On average, in recessions, workers with high MPCs spend about 50 cents less for every lost dollar of income, Patterson’s analysis indicates. When shocks disproportionately hit workers whose spending is more sensitive, the effect is large enough to decrease overall US consumption by 20 percent relative to a benchmark in which all workers are equally likely to lose their jobs in recessions, the study finds.

Shocks aren’t limited to specific industries and tend to impact certain jobs within a company. This means, Patterson says, that it wouldn’t necessarily be safer for workers who spend more and save less to leave jobs in industries viewed as less stable—such as hospitality or construction—for jobs in government or higher education. Those sectors still tend to cut administrative assistants and janitorial staff with less tenure.

Her findings support those of other research—including by University of Chicago Harris School of Public Policy’s Peter Ganong and Booth’s Pascal Noel—that argues policy makers should target relief policies toward people who have the most variable incomes and whose shopping patterns are most sensitive to shocks. And by measuring the connections between MPCs and recessions, her work could help governments better target their relief efforts. Germany, for example, offers more generous unemployment benefits to older workers, but Patterson’s findings indicate that the extra funds might be more effective if directed to younger workers with fewer financial resources.

Additionally, “these results may suggest another reason for policy makers to be alarmed by rising inequality in the economy,” Patterson writes. “As wealth becomes more unequally distributed, MPCs in the population may become more dispersed, with a wider swath of consumption being greatly affected by aggregate shocks.”

If more workers are potentially vulnerable to macroeconomic shocks, recessions could be deeper and more prolonged. But governments could prepare for and respond to such shocks and direct support to workers who need it—well before the next recession.—Gina Potthoff Kacik

Go to chicagobooth.edu/review to see citations for research mentioned in this article.
FIGHT CLIMATE CHANGE USING PEER PRESSURE

BY THE TIME climate change has permanently altered the place you live, the choices you have about how to react are relatively narrow: mitigate, adapt, rebuild, or relocate.

But for people hit less directly by climate change, the decisions have lower personal stakes—such as whether or not to pay for carbon offsets. And these can be influenced by subtle changes in how information about global warming is communicated, suggests a study by Goethe University’s René Bernard, Panagiota Tzamourani of Germany’s Bundesbank, and Chicago Booth’s Michael Weber. In their analysis, telling people what others were doing prompted them to do more to reduce their own emissions.

The researchers posed questions through a national survey conducted by the Bundesbank, asking Germans how much they would be willing to pay to offset their carbon footprint from a hypothetical roundtrip flight to Mallorca, Spain.

All respondents outside a control group were then given information about carbon emissions’ impact on global warming, and on how people can reduce their individual emissions. For some, this information was framed as coming from government experts. For others, the type of expert was not specified. For two final groups, the researchers described the ideas as practices that other Germans had already taken up: either other Germans generally, or those in roughly the same age cohort as the respondent.

At the end of the survey, respondents were asked again for the sum they would be willing to spend to offset their own emissions—this time from a hypothetical trans-Atlantic flight.

People increased their carbon-offset spending most after hearing that other Germans—whether their age or not—were taking similar action, the research finds.

The “scientific framing” presented to the first two groups also had an effect, although not as much. These respondents indicated they would increase their spending on offsets, but the average sum was two-thirds as much as the “peer-framing” groups offered. Those who believed the information came from government experts indicated a greater willingness to increase their spending than those whose information came from unspecified experts—easing, perhaps, concerns that citizens are increasingly skeptical of institutions such as governments, says Weber.

These subtleties are important because individual behavior, at scale, can change the direction of global warming. Households account for almost three-quarters of emissions globally. In Germany, they produce 63 percent, according to a 2009 analysis by Norwegian University of Science and Technology’s Edgar Hertwich and the Center for International Climate Research’s Glen Peters—though the proportion of household emissions that comes from transportation, including air travel, is higher than the global average.

Bernard, Tzamourani, and Weber emphasize the need for policy makers to think carefully about how they frame their messages, something they explored further in a follow-up survey. “Successful campaigns to reduce individuals’ carbon footprints cannot purely rely on providing information but also have to find creative ways to reach individuals that normally would not actively search for this information,” they write.—Rose Jacobs

Chinese cities’ $1 trillion-a-year piggy bank

What drives the Chinese economy? One piston of growth, perhaps surprisingly, is land. In China, all land technically belongs to the government. Local authorities sell rights to use it, effectively leasing parcels to different parties to generate income. More than a quarter of local government revenue comes from land sales, totaling ¥7.3 trillion (US$1 trillion) in 2019, and local government spending accounts for a quarter of GDP in the world’s second-largest economy. Understanding how the land market works is key to understanding the explosive growth of China’s economy over the past 40 years.

One striking feature is the price discrepancy between land rights sold for industrial use and residential use. Land-use rights for building factories or mines sell for about one-tenth as much as those for residential development. Students of the Chinese economy long thought this reflected a mechanism to subsidize business activity and spur growth. The actual dynamics are more complex, according to research by Chicago Booth’s Zhiguo He, Scott Nelson, Yang Su (a Booth PhD student), and Anthony Zhang and Tsinghua University’s Fudong Zhang.

The “industrial land use discount,” as it’s known, in fact translates into a revenue stream that over time is greater than what local authorities get from residential land-rights sales, the researchers find. When municipal authorities sell a parcel of land to housing developers, they get a one-time cash infusion with no promise of future revenue, as there’s no property tax. When a city authority sells to an industrial developer, there may be less cash up front, but the factories and other commercial facilities the buyer builds produce goods and services that generate future tax revenue.

The researchers suggest that local governments in China employ a kind of three-legged stool for balancing their budgets: borrowing through bond sales, selling property for apartment blocks when
they need a cash infusion, and auctioning off land to industrial developers to create a longer-term stream of revenue.

This year, China’s local governments face a massive revenue crunch as land-rights sales dry up. Amid government efforts to curb risks associated with excessive borrowing, China’s real-estate giants can’t borrow more to roll over their debt or finish existing projects, so residential sales have stalled. Meanwhile, a cooling economy is slowing demand from industrial buyers, leaving local governments running to debt markets to fund their budgets.

The researchers analyzed publicly available data on land-rights sales between 2007 and 2019, recording how many parcels were sold and to whom. Focusing on sales to industrial developers for manufacturing, mining, or utilities installations, they tracked the performance and cash flow of the businesses before and in the years following each land purchase. Then they estimated the extent to which buying land rights for new factories boosted companies’ sales, as well as the resulting increase in tax revenue from those businesses.

The analysis demonstrates that enterprises did indeed record more sales when they built new facilities on recently purchased land. The rise in value-added tax that they paid to governments was significant. The researchers estimate that tax revenue jumped by ¥114 per square meter of land in the first two years, eventually rising to ¥214 per square meter. They find that over time, industrial land sales generated annual rates of return of almost 8 percent.

The findings challenge the narrative that selling land rights for industrial use is unprofitable or just a bad deal for local governments, Booth’s Zhang says. When authorities need to raise funds, the study demonstrates, they can borrow by selling bonds or they can essentially sell land. Residential land will deliver a fast payoff, and industrial land will generate longer, slower-burn revenue.

The findings also shed new light on how any government can use resources as an instrument for liquidity when they need to raise cash. A lot of it depends on timing, says Zhang—and how impatient governments are for revenue.

“We measure patience by looking at local government bond yields over time in China to pinpoint moments of financial pressure or constraint,” he says. “And we see that when governments are impatient or squeezed for income, they do indeed resort to selling more residential land over industrial land—even when the market demand for housing is low. As our study shows, this has nothing to do with the intrinsic profitability of one transaction over another. It’s about how urgently they need the cash.”

In China, one measure of just how urgently local authorities need to raise funds could very well be the number of apartment blocks rather than factories that are being built.

“If you happen to see a new condo building going up in Shanghai or Beijing, the reality is that it might have nothing at all to do with demand or a spike in the local population,” Zhang says. “It could just be because the city needs to get its hands on cash fast.”—Aíne Doris

Fixing troubled banks can aid minorities and women

Federal regulators step in when US banks are badly managed or take on excessive risk. And if informal efforts to address issues such as risky lending or inadequate capital fall, banking authorities may issue an enforcement decision and order (EDO), a measure of last resort, to force banks to take corrective actions. An EDO lays out a road map to compliance, and an institution that fails to follow it may be forced to close.

These orders have an unintended benefit: they result in increased mortgage lending to some historically disadvantaged borrowers including minorities and women, according to University of Utah PhD student Byeongchan An, University of North Carolina’s Robert Bushman, the Federal Reserve’s Anya Kleymenova, and Chicago Booth’s Rimmy E. Tomy.

EDOs generally do not address issues related to fair-lending regulations, and yet 17 years of data covering 1,350 disciplined banks indicate that after going through the course-correction process, lending institutions cranked up residential mortgage loans to minority borrowers and to women who were primary or solo borrowers, according to the study. And they did so without taking on more risk.

“Improvements in internal policies and procedures initiated by bank supervision can lead to very real changes in lending, which could potentially affect the local economy, growth, and employment,” Tomy says. “When new loan policies are introduced and documented, and employees follow best practices in lending, it reduces subjectivity and improves lending outcomes for minorities and women.”

The researchers focused on banks that received the most common and severe types of EDOs between 1997 and 2013 from the Federal Deposit Insurance Corporation, the Federal Reserve, and the Office of the Comptroller of the Currency. They excluded orders that referenced fair lending and analyzed the three years before an enforcement action, the period when the order was in effect, and the five years after. They also studied transaction-level Home Mortgage Disclosure Act data on mortgage loan applications, including applicants’ race and ethnicity, underwritten loans, and denial reasons.

In the study, minority borrowers were those who identified as Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, or nonwhite Hispanic.

They find that before an EDO, banks were 9.6 percent more likely to deny loan applications from minority borrowers than from white borrowers. But after banks made the changes demanded by federal regulators, that number dropped to 4.6 percent. After going through the enforcement action, banks also expanded lending to women who were primary or solo borrowers.

Women and minority borrowers tend to have lower overall wealth, which makes it harder for them to borrow and build credit histories. They are also more prone to credit-damaging income shocks. All this typically makes banks more likely to deny these borrowers’ mortgage loan applications on the basis of credit scores.

However, after a period of federal oversight, banks were 3.4 percent less likely to reject loan applications from minority borrowers because of their credit history, the researchers find. This is most likely because banks improved their credit-risk assessment.

“If improving banks’ operations allows them to process information better, they may be able to use additional sources of hard information and rely less on credit histories or credit scores, which disproportionally disadvantage minority communities,” Tomy says.

Because federal regulators often require stricter internal governance and documentation procedures, banks may also rely less on the discretion of individual loan officers, the research suggests. “Banks might have to properly document their internal audit processes and loan policies, reducing loan officers’ subjectivity,” Tomy says.

The severer an enforcement action, the greater the increase in lending to minority borrowers, the researchers find. The results were also stronger in counties with a higher proportion of subprime borrowers. Although the study focused on the most extreme examples of poorly managed banks, the findings emphasize the possibility that improvements in banks’ administrative controls can play an important role in enhancing access to credit for minority borrowers. —Sarah Kuta

Why banning menthol cigarettes locally doesn’t work

In the long US public-health war against tobacco, one principal battleground is menthol cigarettes. The Family Smoking Prevention and Tobacco Control Act of 2009, which gives the Food and Drug Administration authority to regulate such products, outlawed other flavor and chemical additives. Citing evidence that menthol cigarettes—which have been marketed to the Black community and now represent a third of the cigarette market—are more addictive and a greater threat to health than plain smokes, more than 150 cities and counties and a few states have since banned their sale too. The FDA proposed this year to do likewise.

The problem with local or even statewide restrictions on a product is that in many cases Americans can just drive to the next state to get what they want. And that’s what happened with the first state ban on menthol cigarettes, in Massachusetts starting in June 2020, according to research by the University of Washington’s Ali Goli and Simha Mummalaneni and Chicago Booth’s Pradeep K. Chintagunta.

“Many Massachusetts residents are still smoking menthols; they’re just buying them from a different state,” says Mummalaneni. “If you think that stopping people from smoking menthol cigarettes is beneficial from a public-health perspective, this ban has only been about 50 percent successful. It has also dramatically reduced the state’s tax revenue, and that’s a rough combination for Massachusetts.”

The researchers analyzed cigarette sales in Massachusetts and neighboring states before and after the menthol ban. They find that while some smokers switched to nonmenthol cigarettes, overall tobacco consumption didn’t change much. Menthol purchases in contiguous states rose, depriving the state of an estimated $108 million in tax revenue. The state would have been better off simply adding a $6-a-pack menthol tax, which the researchers calculate would have cut menthol sales 28 percent while raising tax receipts $72 million, or 14 percent. They arrived at this figure through modeling, trying to strike a balance between raising revenue and lowering the smoking rate.

In lieu of a national prohibition, the takeaway for local policy makers and regulators is to tax rather than ban. “A menthol tax would allow them to directly reduce menthol consumption while also generating a large amount of additional tax revenue that could be used to fund other anti-smoking and public health outreach efforts,” the researchers suggest. Of course, a menthol ban by the FDA would take away the cross-border shopping option—and ultimately lead to better health outcomes.

Goli, Mummalaneni, and Chintagunta studied NielsenIQ Retail Scanner Data, part of the NielsenIQ databases housed at Chicago Booth’s Kilts Center for Marketing. Tapping into data from 2019 and 2020, the researchers examined what happened to sales in Massachusetts and 30 miles into New York, Vermont, Connecticut, Maine, Rhode Island, and New Hampshire. They find that about 45 percent of Massachusetts’s menthol cigarette purchases moved to neighboring states after the ban—as well as about 7 percent of nonmenthol sales.

Some Massachusetts smokers switched from menthol to nonmenthol, contributing to a 10 percent increase in nonmenthol sales in the state. Overall cigarette sales within Massachusetts dropped about 21 percent, and cigarette consumption in the state declined by almost 5 percent, they estimate.

The shifts partly reflected already higher prices and taxes on cigarettes than in neighboring states. Massachusetts is also small, making it easy for people to cross the state line to pick up a pack or a carton. The findings are in line with other research indicating that when governments implement bans or raise taxes, consumers engage in cross-border shopping to continue buying the same products.

Goli, Mummalaneni, and Chintagunta also modeled what the effects would be in Massachusetts if there were a national ban on menthols. Their findings predict that a prohibition would yield “substantially better outcomes,” assuming that vast numbers of smokers wouldn’t be able to illegally smuggle in menthols from Mexico or Canada. They estimate that nonmenthol sales in Massachusetts would increase by about 30 percent under a national ban, and overall cigarette consumption in the state would drop by about 7 percent.

Until then, a statewide menthol tax is a better solution than a ban, the researchers argue. “The bottom line is that a ban is not the only instrument that policy makers have to reduce cigarette consumption,” Goli says.—Sarah Kuta

Smokers go cross-border shopping

After Massachusetts banned menthol cigarettes, sales jumped steeply in the 30-mile area surrounding the state.

Weekly sales of menthol cigarettes

Millions of packs sold

<table>
<thead>
<tr>
<th>30-mile area surrounding MA</th>
<th>US excluding NY and New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4m Jan. 2019</td>
<td>78m July 2020</td>
</tr>
<tr>
<td>1.3m April 2019</td>
<td>73m Oct. 2020</td>
</tr>
<tr>
<td>1.2m July 2019</td>
<td>68m Jan. 2020</td>
</tr>
<tr>
<td>1.1m Oct. 2019</td>
<td>63m April 2020</td>
</tr>
<tr>
<td>1.0m Jan. 2021</td>
<td>58m July 2021</td>
</tr>
<tr>
<td>0.9m April 2021</td>
<td>53m Oct. 2021</td>
</tr>
<tr>
<td>0.8m July 2021</td>
<td>48m Dec. 2021</td>
</tr>
<tr>
<td>0.7m Oct. 2022</td>
<td>43m Winter 2023</td>
</tr>
</tbody>
</table>

Goli et al., 2022
A tool to help algorithms cope with human ‘gaming’

Imagine that a ride-sharing driver receives a request for a pickup, and it’s up to the driver to accept or decline. The ride-sharing company’s algorithm has determined that this is a good customer-driver match and that it’s suggested at an acceptable price for the driver. But the driver may second-guess the result and decline it by claiming to be unavailable, perhaps hoping the next pickup request will come from a closer location or be at a higher price.

This kind of gaming is a headache—not just for ride-sharing companies, but for online freelancing markets, cloud computing platforms, and other applications. Deep in the weeds of these platforms and applications are “allocation and pricing algorithms” selecting outcomes for the users and charging them money. And then there are humans who, in trying to get the best deal possible, sometimes muck up these mechanisms, leading to less-optimal outcomes for themselves and others.

But University of Southern California’s Shaddin Dughmi, Northwestern’s Jason Hartline, Cornell’s Robert D. Kleinberg, and Chicago Booth’s Rad Niazadeh have created a tool that could help address the situation by improving the functioning of many of these algorithms.

To understand what the tool does, Niazadeh says, set aside human gaming for a moment. It can take an allocation algorithm running on a powerful computer many days, or even years, to find the socially optimal outcome for one of these applications. Because of this computational shortcoming, theoreticians and practitioners have devised several ‘fast’ allocation algorithms that are not necessarily finding the optimal outcome but are good enough for the application.

While these algorithms can find an acceptable outcome in a short time, they do so by either assuming that people act truthfully or ignoring the kind of incentives that cause humans to be less than honest. Can researchers redesign algorithms so that they acknowledge human gaming and still perform quickly?

When gaming is involved, the math problem underlying the allocation and pricing task becomes far harder to solve. In the 1960s and ’70s, a trio of economists—the late Nobel laureate William Vickrey, the late Edward Clarke, and University of California at San Diego’s Theodore Groves—created a partial solution for this problem. The Vickrey-Clarke-Groves mechanism imposes monetary costs on people who try to game the system in terms of prices, making them less likely to do so. Since then, many people in various industries have used this, or a variation of it, to essentially make their algorithms immune to rigging.

However, a VCG mechanism only works if the math problem that leads to the socially optimal outcome is exactly solvable in a computationally efficient fashion. But there are a lot of allocation optimization problems that aren’t solvable exactly in a computationally efficient fashion, or at least not in a reasonable amount of time.

The existence of such computationally hard mathematical problems, known as “NP hard” problems in computer science, is a real barrier for exact computation, Niazadeh says. Clay Mathematics Institute, a foundation devoted to increasing and disseminating math knowledge, offers a $1 million prize to anyone who can solve any of these NP-hard problems. “On a related note, the idea of cryptographical internet security, and the entire industry around that, is based on the premise that there are NP-hard encryption codes that cannot be cracked in a short amount of time,” he says.

A ride-sharing company might run into one of these NP-hard problems when matching up drivers and passengers taking short trips, trying to optimize the situation for drivers over the course of several rounds of matches. Because the problem isn’t solvable, the company will either use an algorithm that will find an approximately optimal outcome, or it will use heuristic algorithms, which generally work in practice but have...
no theoretical guarantees. But using either of those options means it can’t use the VCG mechanism to address drivers’ gaming.

Dughmi, Hartline, Kleinberg, and Niazadeh created a way to essentially run a replacement for the VCG mechanism in such cases. “The idea is thinking of the given algorithm as a ‘black box’ that generates some outcome,” says Niazadeh. “We then try to use this black box in a computationally efficient fashion using tools and tricks from applied mathematics and computer science to patch up places where this algorithm allows for gaming.”

Thus, a company that is unable to use a VCG mechanism could use this new one, which the researchers call a “black-box reduction.” Its outcome should address gaming and still be just as good as what the original allocation algorithm would have produced (assuming people were honest when interacting with that one). This provides a strong message for practitioners, says Niazadeh: in applications that involve human gaming, the designer can ignore incentives and only focus on the underlying mathematical optimization problem for finding a socially optimal outcome. Then this mechanism can essentially be wrapped around the algorithm to transform it into a new one that has the same performance and is immune to gaming.

Doing this could help a new class of algorithms produce better responses to a host of problems. Our ride-sharing driver would be less likely to turn down a request for a pickup, explains Niazadeh. Or, to take a different example, US wireless providers at Federal Communications Commission spectrum auctions would be more likely to bid truthfully rather than strategically, even if the FCC’s allocation algorithm isn’t the optimal one.

Moreover, the researchers’ findings suggest that as the theoretical research develops, eventually algorithms could better tackle challenges such as matching kidneys with transplant recipients, or new medical residents with hospitals.—Emily Lambert and Chuck Burke

HOW OLD NAVY COULD HAVE AVOIDED A PLUS-SIZE MESS

WHEN OLD NAVY launched Bodequality, an effort to introduce more-inclusive sizing, a 2021 press release trumpeted the move as “revolutionizing the shopping experience” by offering every size of every women’s style at consistent prices. But shortly after introducing extended sizing, the chain was trying to unload much of the unsold merchandise at steep discounts—while shuttering the campaign, the Wall Street Journal reported.

Chicago Booth’s John R. Birge says Old Navy’s experience demonstrates how challenging it can be for retailers to set prices optimally and avoid costly markdowns. Birge, Chinese University of Hong Kong’s Hongfan Chen (a graduate of Booth’s PhD Program), and Duke’s N. Bora Keskin offer a two-step pricing process that they contend will work better.

Half of all fashion items get marked down because vendors are notoriously inaccurate at forecasting demand, according to Birge, who says that the tech industry faces the same problem. When launching new products, companies often use historical sales data and patterns as guides because they don’t have good information about the potential market. They attempt to strategically lower prices to attract different consumers, for example requiring early tech adopters to pay top dollar to have the latest gadget, then dropping the price to lure in more price-sensitive buyers.

Because “sales data are extremely limited for a new product,” the researchers write, a seller “runs the risk of marking down the product price too early in the data-driven learning process.” When that happens, the company makes less money than it could have and hurts the market value of the product—and potentially the value of similar products coming out in the future.

Many companies turn to analytics software and services for guidance on markdown strategies—but still come up short.

The researchers approached this problem by considering the effects of forward-thinking shoppers who wait for markdowns before buying. With modeling, they studied two forms of such behavior: one where customers are essentially watching both a product’s price and taking note of its past pricing, and one where customers focus on only past markdown patterns.

The researchers’ model prompted them to propose a “learn-and-then-earn policy” to help guide companies. The strategy features two periods for pricing. During an initial learning period—the first two or three weeks of a merchandising season—a seller can set prices that are high enough to learn consumers’ purchasing behavior while also generating revenue. Then the seller can use the observations gleaned to assess consumer demand, comparing current sales patterns with those surrounding past markdowns.

“The difference would allow them to estimate the fraction of customers who are strategically waiting for the markdown before buying,” Birge says. He suggests that such a policy might have helped Old Navy avoid its extended-sizing debacle. By analyzing purchasing data from the first few weeks after launching the new offerings, the company might have realized more quickly that there was limited demand for the new sizes.

—Meredith Kleeman

Markdowns can hurt both revenue and the market value of the product.

Shaddin Dughmi, Jason Hartline, Robert D. Kleinberg, and Rad Niazadeh, “Bernoulli Factories and Black-Box Reductions in Mechanism Design,” Journal of the Association for Computing Machinery, April 2021.

It's generally understood that the richest Americans control the vast majority of household wealth in the United States, but their precise share remains the subject of debate. Estimates vary depending on the data and the assumptions that go into calculating wealth's various components. Research by the Treasury Department's Matthew Smith, Princeton's Owen Zidar, and Chicago Booth's Eric Zwick—which introduces methodological innovations and new data—finds that the richest Americans' share, while having risen in recent decades, may not be as high as others have found. Moreover, certain components of wealth, such as the value of pass-through businesses, may be larger than previously thought. Policy makers trying to level the economic playing field have a better chance at formulating policies that work as intended if they understand how wealthy the rich are and where that wealth comes from. —CBR

**1** Smith, Zidar, and Zwick confirm that all strata of the richest households have been expanding their share of wealth since the 1980s.

**2** Wealth concentration is high—the top 1 percent hold a bigger share of wealth than the bottom 90 percent.

<table>
<thead>
<tr>
<th>Shares by the top and bottom wealth groups, 2016</th>
<th>Average wealth per person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 0.001%</td>
<td>$1.02b</td>
</tr>
<tr>
<td>Top 0.01%</td>
<td>$227.7m</td>
</tr>
<tr>
<td>Top 0.1%</td>
<td>$50.3m</td>
</tr>
<tr>
<td>Top 1%</td>
<td>$10.8m</td>
</tr>
<tr>
<td>Top 10%</td>
<td>$2.2m</td>
</tr>
<tr>
<td>Bottom 90%</td>
<td>$112k</td>
</tr>
</tbody>
</table>

**3** But the rich may not be as wealthy as previous research suggests.

**Estimates of the top 0.1 percent's share of total household wealth**

- 1920: 5%
- 1930: 10%
- 1940: 15%
Smith, Zidar, and Zwick find that the share of the top 0.1 percent, for example, has risen more slowly than others have estimated, particularly compared with estimates by those using an “equal-returns” approach.

A third, the equal-returns method, takes income data from tax returns to compute wealth using a rate of return on assets, which the researchers assume is equal across all individuals within each asset class.

Smith, Zidar, and Zwick build on this tax-return approach but relax the assumption of equal returns. For fixed income assets, they argue that the rich have greater exposure to high-yield assets such as distressed debt. Given reported income, a higher return on assets implies lower wealth. The researchers also account for differences in returns across industries when valuing pass-through businesses, and they place more weight on dividends than on capital gains when valuing C corporation stocks.

Research has used three main approaches to calculate household wealth:

- One approach analyzes estate-tax data.
- Another uses results from surveys such as the Federal Reserve’s Survey of Consumer Finances.
- A third, the equal-returns method, takes income data from tax returns to compute wealth using a rate of return on assets, which the researchers assume is equal across all individuals within each asset class.

Compared with the equal-returns approach, Smith, Zidar, and Zwick’s estimates point to a larger share of wealth coming from pass-through businesses and less from fixed-income assets.

Wealth composition, 2016

Among the top 0.1%

<table>
<thead>
<tr>
<th>Equal-returns approach</th>
<th>Smith, Zidar, and Zwick</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>34%</td>
</tr>
<tr>
<td>15%</td>
<td>7%</td>
</tr>
<tr>
<td>4%</td>
<td>26%</td>
</tr>
<tr>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>4%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Among the top and bottom wealth groups

- Top 0.001%
  - Smith, Zidar, and Zwick: 34% 23%
  - Survey of Consumer Finances: 53% 22%

- Top 0.01%
  - Smith, Zidar, and Zwick: 34% 23%
  - Survey of Consumer Finances: 44% 23%

- Top 10%
  - Smith, Zidar, and Zwick: 24% 21%
  - Survey of Consumer Finances: 24% 19%

- Bottom 90%
  - Smith, Zidar, and Zwick: 51% 29%
  - Survey of Consumer Finances: 51% 29%

The researchers also find that pass-through businesses and C corporation equity are more important in the portfolios of the richest Americans, while housing and pensions are more important for the least wealthy Americans.


Go to chicagobooth.edu/review to see citations for the other research referenced in this infographic.
WHO WILL BE THE NEXT

How Dust Bowl–era data an expected, massive
CLIMATE MIGRANTS?

may help us understand
movement of people

BY ROSE JACOBS
In 1935, Caroline Henderson, a wheat, barley, and cattle farmer on 640 acres of the Oklahoma Panhandle, wrote to a friend in Maryland about her family’s decision to stay put even as dust storms swept the region for a fourth year, coating fields in silt that, alongside erosion and drought, destroyed any hope for crops. “I scarcely need to tell you that there is no use in thinking of either renting or selling farm property here at present,” Henderson wrote. “We could realize nothing whatever from all our years of struggle with which to make a fresh start.”

Others in the region felt differently, producing one of US history’s biggest migrations. Henderson was one of many chroniclers of the Dust Bowl and its impact on migration, joined by John Steinbeck, whose novel *The Grapes of Wrath* won the Pulitzer Prize, and Dorothea Lange, whose iconic 1936 photograph of a migrant mother and her children is part of the Museum of Modern Art’s collection.

These accounts feel resonant today, as global warming makes the world’s population freshly aware that anyone could at some point be confronted with the need to uproot.
More than 200 million people globally live in coastal regions at risk of flooding as temperatures rise, according to The Stern Review: The Economics of Climate Change, a comprehensive report produced for the UK government in 2006. More recent studies suggest this is an underestimate: one 2019 paper says up to 340 million people could be threatened by flooding by 2050.

A 2021 report by the World Bank, employing advanced modeling, predicts that climate change could force 216 million people in Africa, Latin America, Eastern Europe, and East, South, and Central Asia to move by 2050. And in the United States, environmental economists Qin Fan of California State University, Fresno; Karen Fisher-Vanden of Penn State; and H. Allen Klaiber of Ohio State estimate that extreme temperatures (both hot and cold) will likely push millions of US residents in the South and Midwest out of those regions over the next 40 years—even taking into account possible countervailing forces such as changes in home prices and wage rates in response to climate-induced migration.

Migrations affect more than the people forced to move, and the relocation of hundreds of millions of people has the potential to transform societies and economies worldwide, many of which are likely to struggle, politically and economically, with the implications. Will infrastructure be adequate? Who will provide and pay for social services? What will people need to settle and be productive in new areas?

These are all open questions worrying policy makers. “If you think migration has been a problem in Europe from the Syrian War, or even from what we see now, wait until you see a hundred million people for whom the entire food-production capacity has collapsed,” said John Kerry, the US’s climate envoy, at an energy conference in March 2022.

To be able to plan for and manage what could be the largest migration in human history, it would be valuable to have some foundational facts about these climate migrants. At a basic level, who migrates in response to climate collapse? Are they similar to other migrants, including those fleeing war or poverty, or do they differ in important ways? History may hold some answers, and Chicago Booth’s Richard Hornbeck is finding some of them in data from the Dust Bowl era.

Climate migrants are different

Research stretching back to the 1950s has produced an abundance of information about both migration within and between countries. But little of it pertains to people who have moved because of permanent, climate-induced change, and even studies that do focus in on this group can struggle to distinguish climate migrants from migrants driven or pulled by other forces.

People move for all sorts of reasons, making migration difficult to generalize. As China’s Central University of Finance and Economics’ Ning Jia and the US Federal Reserve’s Raven Molloy, Christopher Smith, and Abigail Wozniak point out, active migration research includes two important areas: that which looks at patterns in who, exactly, is moving around, and that which tries to measure migrants’ impact on the places to which they move—and what their departure means for the places they leave behind.

Some patterns have emerged in both of these categories. People who move from one US location to another, for example, tend to be better educated than the people who stay put, according to multiple studies over seven decades.

It could be that high-skilled, educated workers are moving for better opportunities. This notion, that higher-earning or more-productive individuals self-select into crossing national borders, was widely accepted in the 1960s and ’70s. But it was undermined in the late 1980s with new methodologies by researchers including George J. Borjas, now at Harvard, who observed in a 1991 paper that country of origin was pivotal in determining whether an immigrant to the US had been more or less productive than a nonimmigrating peer.

Those from developed countries tended to be relatively more productive, and those from developing countries relatively less productive. However, in terms of education, immigrants from developing and developed countries alike were ahead of their average compatriots: Borjas found that immigrants to the US, regardless of where they were arriving from, had significantly more years of education, on average, than their peers at home.

Decades of research has collected such observations about migration generally, giving us an increasingly detailed picture about the people who move. But extrapolating these facts to climate migration must be done with caution. People who have been planning to uproot for years might prepare by earning an additional degree or putting aside savings to offset the costs of relocation; climate migrants may not have time for such investments when faced with local environmental collapse. Economic migrants—those with longer-anticipated moves to improve their earning prospects or standard of living—might choose their destinations on the basis of language or cultural affinity, on top of job opportunities. Climate migrants, by contrast, may undergo a more scattered and less planned migration. (Indeed, that’s what Hornbeck’s research finds.)
Granted, economic and climate migrants may have some similarities. “It is not the differences in mean income levels [in a potential immigrant’s home versus destination countries] that determine the extent of migration, but the differences in mean income levels net of migration costs,” wrote Borjas. “These migration costs will be both monetary and psychic.” He argued that the psychic costs of migration to the US are higher for people whose home cultures are very different from American culture. While Borjas was writing about immigrants arriving on US shores for any number of unspecified reasons (including, for example, political revolutions at home), it makes some sense that people who have decided to abandon their life’s work in the face of climate disaster, possibly with little to no recompense, will also suffer high psychic costs.

Still, concluding that climate migrants are like all others could blur our understanding of their motives—and mean we fail to anticipate the consequences of their migration. The challenge becomes reducing the noise so that we can make more-definitive statements about climate migrants in particular.

For example, in the 1930s, many people left Oklahoma and other parts of the Great Plains because of widespread permanent erosion. But others migrated due to the Great Depression more generally, or in response to government policies, technological changes, and other events of the time. University of Arizona’s Price Fishback, Syracuse’s William Horrace, and Shawn Kantor at Florida State, in research published in 2006, explain that New Deal policies between 1933 and 1939 acted as magnets to parts of the US with good infrastructure for public-works projects, and may have drawn many American workers away from farming, particularly because federal support for agriculture was focused on landowners, not their hired laborers.

The experience of these workers serves less well as a model for predicting the movements of Zambians whose jobs are at risk due to water scarcity, Germans whose homes and shops were destroyed by flooding, or Californians anxious about the health impacts of forest-fire smoke.

Economies adjusting to environmental shocks might rely heavily on the movement of people.
farming in the early 20th century left land vulnerable to drought. Without deep prairie grasses anchoring the earth and helping retain moisture, when severe drought descended on the region in the 1930s, the result was devastating erosion; soil turned to dust and blew away in suffocating, blackout flurries. Caroline Henderson, whose letters from Oklahoma were published at the time in the Atlantic, described some farms covered hip-deep in ash, others simply swept clean of plowable earth.

Indeed, while the Dust Bowl moniker covered counties in six US states, the experience differed considerably across those counties—a variation Hornbeck analyzed to understand the impact on local economies. He saw that land values in more eroded counties dropped more precipitously than in less eroded counties, with little adjustment in crop choice. His analysis suggests that economies adjusting to environmental shocks might rely heavily on the movement of people: mass migration away from the Dust Bowl’s most eroded counties—rather than adaptation within the agricultural sector—turned out to be the primary means by which these areas began to adjust after 1940.

Hornbeck resisted drawing conclusions about the migrants themselves because the data available at the time did not allow him to distinguish between climate migration and more general migration. US Census Bureau records pertaining to individuals cannot be released to the public until 72 years after they are collected; therefore, while Hornbeck could see how the population of a county rose or fell between 1930 and 1940, he had no way of knowing who was causing these ebbs and flows.

The individual-level data from the 1940 Census is now available, enabling researchers to identify who migrated by looking at names that disappeared in one county and reappeared in another. Name changes due to marriage make linking women from one census to another difficult, however, and shared names or misspellings can lead to mismatches that falsely inflate migration rates and affect analyses of who migrates.

Hornbeck was able to sidestep these issues thanks to a question in the 1940 Census that asked people where they had been living in 1935. This let him also generally “move beyond identifying impacts of the Dust Bowl on more-eroded counties and identify impacts of the Dust Bowl on people from more-eroded counties,” he writes. It also meant he could distinguish between climate migrants (whom he defines as the additional people, on top of a baseline amount of other migrants, who left the counties where the soil was most eroded) from more general migrants (whom he defines as all people leaving less eroded counties).

He finds notable differences: climate migrants were more likely to move further—for example, to California,
How the intensity of land erosion during the Dust Bowl influenced migration

The public release of the 1940 census has made it possible to take a closer look at the migrants who moved away from areas that suffered the most destruction during the Dust Bowl.

Residents of counties that experienced more soil erosion were more likely than others to migrate, especially to farther destinations including California and the Pacific Northwest.

**Difference in migration rates, 1935–40**

- High-erosion relative to low-erosion counties
- Medium-erosion relative to low-erosion counties

Migration to California from high-erosion counties was higher by .69 percentage points than in low-erosion counties. Migrants were on average more educated than those who stayed. But the difference in education between migrants and nonmigrants varied across counties.

**Difference in years of education between migrants and nonmigrants**

- All Plains counties
- High-erosion relative to low-erosion counties
- Medium-erosion relative to low-erosion counties

The difference in education between male migrants and nonmigrants was half a year smaller in high-erosion counties than in low-erosion counties.

**Cumulative erosion damage in the Great Plains region after the Dust Bowl**

- High
- Medium
- Low

- Boundaries of the Plains region counties

Hornbeck, 2022
A popular view of Dust Bowl migrants as farmers took hold across the United States. It was likely the result of comparing migrants from the Plains with the residents of the places they moved to—especially California—rather than with the rest of the Plains population that stayed behind.

**Difference in the proportion of people living on a farm in 1935**

- **All Plains counties**
- **High-erosion relative to low-erosion counties**
- **Medium-erosion relative to low-erosion counties**

Counts that suffered more from erosion, compared with those that suffered less, experienced much larger decreases in land value and agricultural revenue. By contrast, they had relatively modest declines in wage incomes, which indicates people (who can migrate) were substantially less impacted by the Dust Bowl than the value of land (which is fixed).

**Economic impacts**

- **Agricultural revenue, 1940**
- **Land values, 1940**
- **Income, 1939**

Incomes of people from high-erosion counties were 1.3% lower than those from low-erosion counties.

as in Steinbeck’s *The Grapes of Wrath*—than those leaving less eroded zones. They also moved to more scattered locations, whereas general migrants tended to concentrate in particular destinations, which suggests a more planned migration.

In terms of schooling, the additional migrants from more eroded counties were less educated than those who stayed behind, in contrast with the general understanding that migrants generally have higher levels of education, but this was much less true for migrants induced to leave by the Dust Bowl,” says Hornbeck.

And these Dust Bowl migrants earned less money in their new homes than migrants from less eroded counties—although everyone leaving the Great Plains had lower incomes, on average, than the locals at their destinations.

Hornbeck notes that a greater array of people moved than he had expected—hired hands as well as landowners, workers outside agriculture as well as farmers, women as well as men. These individuals faced considerable hardship in their new homes, socially as well as financially—and yet the Dust Bowl yielded “remarkably modest impacts” on wages of all people from the worst-hit counties, compared with “substantial” and “enduring impacts” on land values, he says.

**Who will be climate migrants?**

Comparing the two types of 1930s migrants tells us a lot about them, and could help us understand people being displaced by climate change almost a century later. Migrants today may well be different from people who left the Great Plains, in myriad ways. Yet the differences between today’s climate migrants and today’s other migrants is what the Dust Bowl can help illuminate.

Consider the political reaction to the Dust Bowl migrants. “How society reacts to migrants depends on who they are,” says Hornbeck. “The Dust Bowl was unusual in US history for white, internal migrants facing such hostile reactions in the places they arrived. And that may well have been related to them having been less educated and with lower incomes than average in their new destinations.”

If the same education and income patterns persist for today’s climate migrants, will they face similar hostility? A better understanding of these dynamics could help policy makers anticipate a number of things, including political reactions that end up shaping policy decisions, both in communities at high risk of climate disaster and those likely to receive new migrants.

In the US, the expected surge in climate-induced migration is set against a backdrop of decreased immigration (both documented and not) to the country in recent years, and sharply falling internal migration volumes over the past several decades. According to
the annual Current Population Survey, 1.4 percent of US residents moved states in 2021, compared with 1.6 percent in 2011 and 2.9 percent in 1991—more than a 50 percent decline in 30 years.

University of Chicago’s Greg Kaplan and the Federal Reserve Bank of Chicago’s Sam Schulhofer-Wohl argue that two things in particular are driving this decline: the job market has become more homogeneous across geographies, reducing the economic advantages of moving, and there’s better access to information about the places people might move, thanks not just to the internet, but also to cheaper long-distance calling rates and lower travel costs. The researchers find in a 2017 study that this additional information deterred people who might have moved more than it spurred potential migrants to take the plunge.

But information that’s encouraging can increase migration, other research demonstrates—in which case information could be an important factor as climate migration accelerates. Economists William Carrington, Enrica Detragiache, and Tara Vishwanath, all at Johns Hopkins at the time, developed a model in the 1990s for understanding migration that includes information shared through networks of contacts. Their analysis helps explain why the Great Migration of Black Americans from the South to the North, for example, only began decades after the end of the Civil War—despite an almost immediate difference in wages and quality of life for Black people in the North versus the South.

Will we recognize climate migrants, especially when some weather events cause temporary shocks rather than permanent environmental change? University of Colorado at Boulder’s Myron Gutmann and Vincenzo Field, then a student at the University of Chicago Law School, pointed out in 2010 that we need to distinguish between people moving in response to sudden events such as earthquakes or tornadoes, those responding to “environmental hardship” such as drought, those seeking out “environmental amenities” including mild weather or proximity to water, and those moving because of “environmental barriers and their management,” ranging from air conditioning to flood control. All of these people will be affected differently by global warming—and how society reacts to migrants might

**A broader definition of climate change–induced migration also complicates our sense of when someone becomes a migrant.**
also depend on whether it deems them genuine climate refugees across these categories.

A broader definition of climate change–induced migration also complicates our sense of when someone becomes a migrant. Local and federal “managed retreat” policies set up to mitigate the impact of climate change underscore this. The Federal Emergency Management Agency awards grants, for example, that are meant to give communities incentives to move infrastructure ahead of rather than in response to potential disasters. Other programs, such as those meant to preserve wetlands, include private landowners in their remit. Any climate migrants affected by this sort of forward planning might, then, have time to prepare for their dislocations by saving cash or continuing their education—much like other immigrants have done before them.

They might also have time to take advantage of newly accessible information to lower the psychic cost of a move, finding new locations that are culturally aligned with their old ones, or that boast strong job markets. And this combination of time and information might increase the rate of “positive self-selection,” or people with above-average earning power or higher education choosing to migrate.

Southern Methodist University’s Klaus Desmet and UChicago’s Esteban Ross-Hansberg modeled the impact of global warming on global welfare in a 2015 analysis and find that as people relocate to places more suitable for activities such as agriculture and manufacturing, migration will be critical for mitigating the negative economic effects of climate change. Introducing more restrictions on movement than exist now would negate this phenomenon, with the most deleterious effects for residents of regions most hurt by rising global temperatures. “Global warming is particularly problematic in the presence of moving frictions,” they write. “Migration policy should therefore become an integral part of the debate on how to limit the negative economic impact of climate change.”

Archival data and empirical analysis can help us understand this integral part of the adaptation process. We have a great deal of experience understanding modern migration, Hornbeck notes, but little sense of how many of the migrants we see in news photos, who are moving in search of work or away from war, differ from those who will because climate change permanently reshapes the environment around them. It’s possible that the scale of migration ahead will be bigger than anything the world has experienced before, and of a different nature. But there is some historical precedent for this movement of people—and value in drawing on it.—CBR

Go to chicagobooth.edu/review to see citations for research mentioned in this article.
The person stopping you from being happier is probably you

A self-imposed barrier is preventing people from connecting

BY KASANDRA BRABAW
ILLUSTRATIONS BY MAGDA AZAB
Hunter Prosper is in his 20s and has 5 million followers on TikTok. He doesn’t sing, dance, bake hyperrealistic cakes, or otherwise entertain others with special skills. Rather, he simply talks to people. In his series, called *Stories from a Stranger*, Prosper asks individuals he meets to answer intimate questions such as “Who was your first love and why did you fall in love with them?” or “When have you felt your weakest?” The videos are short (averaging 30–40 seconds) but profound. When asked about her first true love, a middle-aged woman says that she hasn’t had one and that she’s still looking. In another video, Prosper asks a young woman, “What’s a feeling that you miss?” She answers, “Simplicity,” describing the joys of childhood and lamenting how complex life becomes when you have to worry about money and relationships.

Like the photography project *Humans of New York*, Prosper’s video series builds on the idea that everyone has a story to tell, but that few of those stories make it beyond a small circle. Far from revealing their inner thoughts to a stranger, most people walk past others, saying little more than hi. We can sit for hours next to strangers on an airplane but hardly acknowledge their existence, staring into devices or out of windows instead of starting a conversation.

Why do humans, who are social creatures by nature, spend so much time ignoring others? Chicago Booth’s Nicholas Epley has long studied that question, and his research suggests that we’re hindered by a barrier of our own making. We generally avoid having conversations and even giving compliments because of what we think will happen if we do. We are worried about feeling awkward, or held back by fears and expectations that, it turns out, are systematically mistaken and exaggerated. We should recognize that our fears are overblown and try to overcome them, Epley argues. Doing so would make us happier.

**Quiet, lonely train rides**

Epley commutes to work by train and has spent years watching people avoid discussions and eye contact, even when in a rush-hour throng. He had this realization on a train one day, during a period when he was working on his first book, *Mindwise: How We Understand What Others Think, Believe,*
"Our results suggest that underestimating how positively these conversations can go creates a psychological barrier to having the kinds of meaningful conversations we would rather have more often."

— NICHOLAS EPLEY

Feel, and Want, and specifically on a section that described brain structure. “Much of our forebrain, the fat part above our eyes, our neocortex, is designated for social cognition. And that’s the part of our brain that makes us unique from other primates,” he says. Yet when he looked around his train car, he noticed everyone fiddling on their phones or staring into space. “It was one of those ‘what the hell is going on?’ moments you have as a behavioral scientist,” he recalls. “Why is it that a highly social species is sitting cheek to cheek, with brains uniquely built to quickly connect with each other—and we’re made happier and healthier by doing so—and yet we’re all sitting here ignoring each other?”

That morning he struck up a conversation with an older woman sitting next to him. He commented on her red hat, made a lighthearted joke about it, and that led to conversation that only ended when Epley arrived at his stop. “And it was clear to me that was better and more enjoyable than normal,” Epley recalls.

Evidence strongly suggests that for older adults, loneliness is a health risk, associated with increased risk of premature death, dementia, heart disease, stroke, depression, and anxiety, according to a report from the National Academies of Sciences, Engineering, and Medicine. Additionally, a 2018 study from researchers then at the University of Arizona, the University of Wisconsin, and the University of California at Davis finds that people who report lower well-being spend more time alone and tend to engage less in deep and meaningful conversations.

It doesn’t take much to lead people to a better, happier state. After his experience on the train, Epley and University of California at Berkeley’s Juliana Schroeder, then a PhD student at Booth, ran an actual experiment asking Chicago-area bus and train commuters to either ride as they normally would, sit quietly, or talk to the person next to them. When asked to engage, participants enjoyed connecting with others. (For more, read “Talk to a stranger: It’ll make you happier,” in the Winter 2014 issue and online at chicagobooth.edu/review.)

Although initiating a conversation is a cheap and easy way to improve a commute or other daily chore, few will do it unprompted, which is one reason why icebreaker exercises are a staple of corporate meetings. The commuter experiment, which included a survey, identified something that keeps people quiet: miscalibrated expectations. People assume that others simply aren’t interested in talking, so they don’t initiate a conversation, and they think that they will enjoy their commute more if they keep to themselves, Epley and Schroeder find. They’re wrong on both counts.

Yet these inaccurate expectations linger even after a conversation begins, according to further research. Northwestern postdoctoral scholar Michael Kardas (a graduate of Booth’s PhD Program), University of Texas’s Amit Kumar, and Epley recruited about 1,800 people, from business leaders to passersby at a public park, to participate in experiments in which they had to talk to each other. Moreover, the researchers randomly assigned some participants to try discussing deeper and more personal topics than they normally do when first meeting someone, and other participants to just have a typical conversation. People were especially likely to overestimate how awkward the deeper talks would be, and to underestimate how happy they would feel after them, suggesting that misguided assumptions about these more-personal conversations might make us overly reluctant to have them.

During a recent orientation session for MBA students, Epley demonstrated what typically happens when people truly engage. At the session, he asked all students in attendance to have a deep conversation with another person in the room,
providing four leading questions for them to discuss, and to indicate on a survey how they expected the conversation would go. How awkward would they feel? How strong of a bond would they have with their conversation partner? Would they like the other person and enjoy the exchange? After recording their expectations, each pair of participants had 20 minutes to talk. When finished, everyone filled out a second survey in which they reported their actual experiences.

“You tended to underestimate how positively these conversations would go,” Epley told the students in a follow-up letter in which he shared the results. The conversations were far less awkward and more enjoyable than the students had expected them to be. Overall, the students reported being very open and honest in their discussions, and thought their partners were almost equally open and honest. When asked to assess their conversation’s depth, the students reported that it was much deeper than their typical one, and closer to what they would ideally like to have with strangers.

“Most of you would prefer to be having much deeper conversations with others than you typically do, although not quite as deep as the one you had in the session,” Epley concluded, encouraging the students to run their own similar experiments in their daily lives. “I think our results suggest that underestimating how positively these conversations can go creates a psychological barrier to having the kinds of meaningful conversations we would rather have more often.”

The importance of conversations
There’s also another gap at work, one that involves experiences rather than expectations. In research, it’s called a “liking gap,” and it describes the difference between how much a stranger likes you after a conversation—and how much you think they like you like you.

University of Pennsylvania’s Erica J. Boothby and Gus Cooney, Gillian M. Sandstrom of the University of Sussex, and Yale’s Margaret S. Clark observed people meeting for the first time in a variety of contexts. Some of their study participants met in a lab, while others were first-year college students with new dorm mates, or attendees of a personal development workshop. The researchers find that participants “systematically underestimated how much their conversation partners liked them and enjoyed their company.”

But conversations involve risk. It’s impossible to know exactly how a stranger will respond if you start a conversation, and you concoct many possible outcomes, explains Epley. “I imagine you could say hello and talk back to me,” he says. “But I also imagine you could give me the middle finger or punch me in the face, or call the police, or pull out a handgun.” The range of imagined possibilities is wide and tends to be more negative than positive. Research from Ruhr Universität Bochum’s Hans Alves, Chicago Booth’s Alex Koch, and University of Cologne’s Christian Unkelbach points to why: negative information, they find, is much more diverse than positive information. So while someone might imagine

**Why Negative News Sticks in Our Minds**

Since ancient times, people have been learning to steer clear of dangerous situations, and our knowledge of potential risks has grown as we’ve evolved. According to standard psychological theories, this is how we have come to pay close attention to negative information—closer attention, in fact, than we do to positive information. A long-ago ancestor died from eating a poisonous plant, that painful event was seared into the memory of friends and relatives, and several millennia later we still know to avoid ingesting toxic plants and chemicals.

But Ruhr University Bochum’s Hans Alves, Chicago Booth’s Alex Koch, and University of Cologne’s Christian Unkelbach suggest that people may also pay close attention to negative information because it’s often distinctive and unusual. Positive information can be similar to the point of becoming standard: if most of your trips to the dentist are uneventful, you won’t dwell on them. By contrast, one piece of negative information can be wildly different from another piece of negative information “so you pay more attention because the novelty value is higher,” says Koch. There are more distinctive ways for something or someone to be bad than there are for them to be good, the researchers conclude.

Koch invites people to think about this in terms of attractiveness. “Models tend to be very symmetrical,” he says. “Their skin is smooth and fine. Their eyes are not too close together or too far apart. Their noses are not too big or too small. There is little margin for error.” Meanwhile, people who aren’t models look different from each other in myriad ways.
One person might have rough skin, another a crooked nose, a third bad teeth, and so on. Some people have a combination of features considered unattractive. There are far more ways to be unusual looking than to be conventionally beautiful.

This phenomenon extends to climate. Most people generally are comfortable in a relatively mild range of temperatures, somewhere between 65°F and 85°F (around 18–30°C). Beyond that are two kinds of negative temperatures: too hot or too cold. But a room that’s too warm could be a little too hot, painfully hot, or deathly hot, and the same is true for a room that’s too chilly. “We argue that this is the case for many dimensions, where extremeness provides two different bands of negativity but one small range of positivity,” says Koch.

To explore the consequences of this greater distinctiveness of negativity, the researchers revisited conclusions of previous studies that compared how people respond to negative versus positive information. For example, a 1983 paper by Northwestern’s Andrew Ortony and his coresearchers presented a quandary to psychologists: the researchers observed that when given two sentences that were identical except for their verbs (for example, “The talented musician staged the free concert.” and “The talented musician canceled the free concert.”), neither of which had been encountered in a set of sentences they had previously read, participants were better able to detect that they had not previously read the sentence with the negative verb (“canceled”).

Alves, Koch, and Unkelbach imagined how the distinctiveness of negative information and the similarity of positive information might explain the results. They ran an experiment, theorizing that participants would have more trouble remembering positive words due to the higher similarity of positive information, and indeed their results bear this out.

Multiple studies find that negative information attracts more attention than positive information, the researchers note, pointing out that many other studies find that novel or unexpected information also attracts attention. Could these two conclusions be related? “Because there is such a great diversity of potentially harmful stimuli, negative information needs more computational space to be encoded,” the researchers write. Negative information may grab attention at least in part because we tend to remember things that are different, they argue. They also revisited and re-explained research conclusions about negative information’s greater tendency to affect perceptions of people, impression formation, and attributional thinking (e.g., people look more for the cause of a negative compared with a positive outcome).

The researchers suggest that their theory could solve old puzzles—such as that raised by Ortony and his colleagues. The higher similarity of positive information could also explain why people more quickly infer one positive trait (say honesty) from another (productivity) but have a harder time inferring negative traits (dishonesty and laziness, say) from each other.

In another experiment that the researchers revisited, FOM University of Economics and Management’s Michael Gräf and Unkelbach gave participants a sentence to indicate a certain trait. For example, for honesty, the researchers described a hypothetical person who “does not speak ill of other people behind their back.” After reading this description, participants were asked the likelihood that the person being described had a different trait, such as kindness. The participants inferred positive traits from other positive traits significantly more often, but did not infer negative traits from other negative traits, the researchers find.

Koch says the theory about negative information being diverse lends itself to basic research that applies to many of our current understandings involving how the brain processes negative information. “What are the differences between good, bad, positive, and negative?” he asks. “That’s fundamental.”

Can you turn the heat up?
Many situations have far more potentially negative outcomes than positive ones. Consider, for example, evaluating the comfort of a room.

Adapted from Unkelbach et al., 2020

Go to chicagobooth.edu/review to see citations for research mentioned in this article.
Barriers to connecting

Across experiments, participants consistently underestimated the value of holding a deep conversation or paying someone a compliment. These miscalculations may be keeping people from reaching out to others in a meaningful way.

Barrier 1: Incorrect expectations about engaging in a deep conversation

<table>
<thead>
<tr>
<th>Expectation</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants’ ratings of their feelings about the conversation</td>
<td></td>
</tr>
<tr>
<td>Awkwardness</td>
<td>Connectedness</td>
</tr>
<tr>
<td><img src="" alt="Graph" /></td>
<td><img src="" alt="Graph" /></td>
</tr>
</tbody>
</table>

Kardas et al., 2021

Barrier 2: Misjudging the positive effect on the recipient of giving a compliment

<table>
<thead>
<tr>
<th>Giver’s prediction of the recipient’s feelings</th>
<th>Recipient’s actual feelings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants’ ratings of the effect of the compliment</td>
<td></td>
</tr>
<tr>
<td>Positive mood</td>
<td>Awkwardness</td>
</tr>
<tr>
<td><img src="" alt="Graph" /></td>
<td><img src="" alt="Graph" /></td>
</tr>
</tbody>
</table>

Zhao and Epley, 2021

a few positive ways an interaction could go, the room to imagine negative interactions is vaster. (See “Why negative news sticks in our minds,” page 40.)

Few people appreciate that the range of actual outcomes of a conversation is narrower than we usually expect. This perception is exacerbated when we routinely pass up opportunities to talk with strangers, and we end up creating a “wicked” learning environment, a concept introduced by Robin Hogarth, an emeritus professor at Pompeu Fabra University and previously a Booth faculty member. We all learn from our experiences, Hogarth says, but we rely on immediate and accurate feedback. In some environments, however, the feedback is delayed or misleading, which makes it hard to learn from. These are wicked environments, and they are common.

When we choose whom to interact with, we only learn what it’s like to interact with our chosen groups. In this way, our beliefs about social interactions can become self-fulfilling: if you think someone won’t like talking to you, you avoid a conversation, thus never learning that your assumption was most likely wrong. (For more on how avoided interactions relate to stereotypes, see “You can shake a bad first impression,” Fall 2021 issue and online at chicagobooth.edu/review.)
Yet Epley wants to remind us that reciprocity is a powerful norm. “What actually happens when you say hi to somebody?” he asks. “What does that person normally do in return?” When you treat people nicely, they tend to return the favor. When you say hi, they will probably say it back, he says. We typically reward positive actions with equally positive behaviors and punish negative actions similarly. We regularly experience reciprocity when we interact with friends, family, and others in our social circle. But because we tend to avoid interactions with strangers, we rarely feel how powerful and common reciprocity is in conversations outside our trusted groups.

Just start with a compliment
Yet reciprocity is at work, as comedian Blake Grigsby learned when he started a series on his YouTube channel called Drive By Compliments. He had a friend drive him around Chicago while he leaned out of the car window with a megaphone, shouting compliments at strangers, including “Your hair reminds me of a sunrise and it is quite awesome.” And “Those pants work on you, sir. They look good.” After the second video in his series went viral, the then-20-year-old Grigsby told ABC News, “I feel like people are nervous to talk to strangers because they feel like they’ll be judged, or people will dislike what they say.” He saw the opposite to be true.

People seem shy to compliment not only strangers but also their loved ones. Stanford’s Xuan Zhao (previously a postdoctoral scholar at Booth) and Epley also saw smiles and thank-yous when they prompted pairs of people recruited from a public park to write and receive compliments. The pairs were not strangers to each other, but rather people who came to the park together and had known each other for an average of 10 years—friends, family, romantic partners, or married couples.

One partner in each pair was asked to write three compliments for the other focusing on “positive things you have noticed but have not, for whatever reason, had a chance to compliment your partner on yet.” The writers were told that their partners would read the compliments after they were finished.

But before the partners read the compliments, the writers completed a survey in which they predicted how the recipient would feel after reading the compliments. The writers were also asked how warm and sincere their compliments would be perceived to be, as well as how competent the recipient would find the compliments (in terms of using the “right” words and sounding articulate).

Yet again, the researchers find a gap between expectations and reality. Participants underestimated how happy the compliments would make their partners feel and overestimated how awkward they would feel giving them.

Even among the people we know best, we misunderstand the impact of a compliment. Epley says this is because we tend to evaluate our own actions in terms of our competency, whereas other people tend to evaluate us in terms of our warmth or friendliness. “If I think about approaching you in a conversation, I think ‘What am I going to say? What do I have in common with you? How am I going to manage this conversation?’ Whereas your response is ‘that guy is nice,’” Epley says. If you’re focused on how articulate you sound, or if you’re saying the right things, you will be more worried than necessary about starting a conversation or giving a compliment.

“We find that with compliments. We find that with expressing gratitude. We find that with expressing support,” Epley observes. “People tend to be focused on their own competency, whereas others are focused on their warmth, and that can cause some of this mismatch.”
Challenge your assumptions

This mismatch is what keeps us from talking, connecting, and saying things to others that will make them smile. Worried about being judged, we avoid interactions, and our incorrect assumptions go unchallenged. If we don’t strike up a conversation with a stranger, or compliment a loved one or someone on the street, we won’t know how the other person may have responded.

The late John Cacioppo was a founder of the field of social neuroscience, which recognizes that social experiences and interactions, be they conversations with strangers or yearslong relationships, can and often do influence biological systems and have measurable health effects. He was also an expert on loneliness. “He found that lonely people were not only isolated from others, but they also had a particularly self-defeating, self-isolating set of social cognition,” Epley says. “They exaggerated how much others disliked them, which in turn caused them to withdraw further and feel even lonelier.”

This phenomenon is as evident in taxis as it is on trains. Epley and Schroeder recruited travelers waiting alone in the taxi line at Chicago Midway International Airport. In exchange for a candy bar, 93 travelers filled out a survey and then followed a set of instructions during their cab ride before mailing back a second survey.

The first survey was meant to get a sense of how often each person typically interacted with others in a cab, which could mean talking to the driver or to another passenger whom they didn’t know. About two-thirds of the participants reported that they often talked to their cab drivers. The researchers labeled them “talkers” and the other third “loners.” Both talkers and loners were instructed to talk to their driver during their ride.

The results of the second survey reveal that both talkers and loners were, on average, happier talking than when they were quiet. Presumably the talkers already knew this. But it may have been news to the loners, who had said they would feel awkward trying to talk to their cab driver and would be better off staying silent. “The folks who are most wrong are also the folks who are most avoidant, the folks who have the least information and the least experience,” Epley says.

By routinely avoiding conversation, people maintain mistaken beliefs. In this case, an experiment prompted them to challenge their notions. But in the absence of that, how is it possible to get people to make a different choice, the one that will make them happier? It’s not necessary to drive around shouting compliments at strangers, nor to ask intimate questions of passersby and ask to take their photograph. Epley has a different recommendation: next time you’re on a train, leave your ear buds in their case and ask a fellow passenger where they’re headed. The conversation might lead nowhere. But, he says, it will probably go better than you think—and likely surprise you both.—CBR

Go to chicagobooth.edu/review to see citations for research mentioned in this article.
laboratory on campus, then paired them up. They gave these pairs a simple task: get to know each other by chatting about whatever you wish.

The researchers varied the length of these conversations, requiring some pairs to converse for as much as 30 minutes. After their first few minutes of chatting, participants were alerted to break to a computer to privately rate how it was going and predict how they thought it would keep going. They then paired back up to continue their conversation, reporting back at regular intervals about how the experience was actually progressing, until the study period ended.

Participants enjoyed their first few minutes of chatting, but indicated that they anticipated things would quickly grow stale. But their prediction was wrong. The dreaded dip in things to talk about did not materialize, even for 30-minute conversations. In some experiments, participants wrongly thought that switching between many new conversation partners would be better than having one long conversation with the same person. They even chose to end a long conversation early, yet the ones who were made to continue chatting ended up happier, according to their reports, than those who stopped.

The researchers conclude that we can talk and connect for more than a few minutes—even with people we don’t know. After all, as they write, “All close friendships begin with a simple conversation between strangers.”

COMPANIES SHOULD FOCUS ON PROFITS. SHOULDN’T THEY?

Booth researchers are exploring what should drive corporate decisions in the 21st century.

Expand your thinking at chicagobooth.edu/company-profits
Newborns with virtually no visual experience prefer to look at faces over equally complex objects. Primate brains contain neurons, usually concentrated in a few regions in the inferior temporal cortex, that selectively respond to faces. Our brains are specialized to process faces. We are face experts.

From the moment we are born, we are exposed to faces. We see thousands of them over our lifetime, and we can detect subtle differences in them. We can discriminate between any two faces, and we form impressions from extremely little information.
We are efficient at forming impressions from faces. Typically an exposure of about 100 milliseconds is all that is needed for someone to read demographic attributes such as race and age, emotional states, cognitive states such as effort and exhaustion, focus of attention, and eye gaze. One hundred milliseconds is the time it takes the information to get from your retina to the parts of your brain that process faces—but within half a second, you are basically done forming an impression.

A face can reveal information, such as gender.

These are two identical faces in every respect, except that the skin on one is a little bit darker. If I ask you to identify the male face, you will likely say that it’s the darker one. That’s often correct. In every culture in which researchers have measured people of the same ethnicity, men tend to be darker than women. This seems to be a stable, biological difference.

A face can also reveal information about someone’s underlying health. University of Southern Denmark’s Kaare Christensen led a large study that tracked sets of twins over time to see how long they would live. Biological age was the best predictor of how long someone would live, but it turns out that the next best predictor was how the participants looked relative to their biological age. Those whose faces looked younger actually lived longer.

At first that seems quite amazing, but it’s less surprising when you start digging into the data. What makes us look younger? Well, when we’re aging, our face is aging too. Some people benefit from good genetics or wealth and better access to health care. On the flip side, we are affected by things that make us look older, conditions such as asthma, chronic sun exposure (not from vacationing but from working outside), and smoking. These accumulated advantages and disadvantages are imprinted on our bodies and faces.

But people can also use information inferred from a face in problematic ways. After a brief exposure to a face, people make all sorts of assumptions about a person’s presumably stable personality attributes—about whether the person is trustworthy, competent, or aggressive, for example.

These kinds of inferences have been a point of fascination throughout history, and they highlight what I call the physiognomist’s promise. Physiognomy is the pseudoscience of reading character from faces, and the main promise is that you can infer people’s personalities from their facial features.

The practice goes back to ancient Greece but really picked up in the 18th century, when Johann Caspar Lavater, who was a clergyman in Zurich as well as an influential and prolific writer, wrote four volumes of essays on physiognomy.

Because of the influence of Lavater’s ideas, Charles Darwin, on account of his nose, was almost denied the chance to take his historic HMS Beagle voyage. The captain of the Beagle happened to be a fan of Lavater’s, and he didn’t believe that a person with such a nose would possess sufficient energy and determination for the voyage. Luckily for science, Darwin made it and later wrote in his autobiography, “But I think he was afterwards well satisfied that my nose had spoken falsely.”

Noses, for some reason, were popular to analyze in the 18th and 19th centuries. There was a whole branch of physiognomy called nosology, with entire books dedicated to reading the character of people from their noses. Physiognomists’ notions are funny and ridiculous, except that their promise is alive and well—primarily because we are all naive physiognomists, forming instantaneous impressions from faces and acting on them.

**Physiognomy in the modern world**

Imagine that you’re walking into a party and these are the first two people you see:

These faces, which were generated by a mathematical model that visualizes our impressions of different traits, illustrate our impressions of extroversion and introversion. The prototypical extroverted face is on the left, and the prototypical introverted face is on the right. If you’re going to a party and your objective is to have fun, you would likely approach the extroverted-looking person. Most participants, when asked, said that’s whom they would approach.

Who would make a better CEO? We also have model-generated faces that illustrate our impressions of competence, and these impressions influence our decisions. If you’re trying to pick the person who would make a better CEO, you will pick the person you think is more competent.

If you’re hiring a security guard, you’ll probably pick the person whose face looks more masculine. If hiring a babysitter, you would hire the person who seems more trustworthy.

These impressions from faces are immediate and compelling. You don’t stop to think—you form an immediate impression and make an instantaneous decision about the character of the person. And your impression and the resulting decisions can be consequential.

My coauthors and I showed study participants pairs of images of US political candidates, removing any pictures of familiar, famous people. Just using participants’ first impressions, we were able to predict election outcomes with about 70 percent accuracy, and the results have been replicated in many other countries using photos of local politicians.

University of California at Berkeley’s Gabriel S. Lenz and MIT’s Chappell Lawson, both political scientists, have followed up on this work, so we know that the effect is driven by people with little political knowledge who watch TV. They’re substituting a complex question (how competent is each candidate?) with an easy one (how competent does each candidate look?). In a sense, they’re looking for the right information in the wrong place, because it is expedient.

These impressions influence voting decisions, and many other decisions as well. As I discuss in *Face Value: The Irresistible Influence of First Impressions*, research has demonstrated that competent-looking CEOs are not necessarily better at their jobs, but they’re more likely to get high compensation packages. Dominant-looking cadets are more likely to achieve higher military ranks. And
Most people we meet now are, thankfully, not out to kill us—but we’re still trying to figure out their intentions and capabilities.

Discounted because of appearance
I see two reasons for why physiognomy is so appealing. First, it promises an easy solution to a complex problem, which is how to figure out the intentions and capabilities of strangers. For most of human history, people lived in extended families with rich firsthand and secondhand information about others. The emergence of modern states changed all this, and we had to learn how to live with strangers without trying to kill them or being afraid of being killed.

Most people we meet now are, thankfully, not out to kill us—but we’re still trying to figure out their intentions and capabilities. Consider an employer trying to evaluate prospective candidates for a job. In the early 20th century, the married writers Katherine M. H. Blackford and Arthur Newcomb published several influential books espousing “character analysis,” with arguments based not on Lavater’s flimsy logic but on what they understood as “evolutionary” theory. When trying to find the right person for a job, Blackford and Newcomb essentially said, just look at the candidate and do a character analysis on the basis of appearance. What the candidate said didn’t matter in their view. Letters of recommendation were worthless.

The reality is that Blackford and Newcomb were wrong. Letters of recommendation are actually more predictive than unstructured interviews. As for the idea that you learn something by analyzing a candidate at a meeting, this is called the “interview illusion.”

But appearance sways employers, even in domains such as sports with lots of evidence about the capabilities of others. The book Moneyball by Michael Lewis is about the unlikely success of Billy Beane, the general manager of the Major League Baseball team the Oakland Athletics, whose success was due to his exploiting the prejudices of appearance. He worked with much smaller revenues than other teams, yet the A’s were consistently one of the best clubhouses because he found players who were undervalued because they didn’t look the part.

Billy Beane was looking for “those guys who for their whole career had seen their accomplishments understood with an asterisk,” Lewis wrote. “The footnote at the bottom of the page said, ‘He’ll never go anywhere because he doesn’t look like a big league ball player.’ . . . Young men who failed the first test of looking good in uniform.” Beane recognized that inferences we make from appearances are often wrong, and he used that to build a winning team, relying on statistical information based on past performance.

Making stereotypes visual
The second reason the physiognomist’s promise is so appealing is because it agrees with our intuitions. We form impressions quickly, and our impressions often seem to be shared by the people we know.

My coresearchers and I generate faces using computational models, which visualize facial stereotypes. To build these models, we start with a statistical representation of faces: each face is a set of numbers. We can randomly generate thousands of faces, then ask people to rate them on perceived attractiveness, trustworthiness, or anything else of interest. In this way, we can build a computational model that captures the variations in facial appearance that lead to changes in ratings. Then, we can generate new faces (including hyperrealistic ones) and manipulate those on the basis of these models. When we show these faces to new study participants, the judgments they make match the model’s predictions.

But the faces that our models spit out do not capture personality characteristics, and this is the essential difference between the work that we do and the physiognomists’ work. The models capture systematic biases in judgments. They visualize our stereotypes or those of a particular group—in our case, mostly white American study participants. The physiognomists’ promise confuses the impression (your cognitive and emotional response) with the real thing.

The promise also assumes that faces are the same as images of those faces, when in fact images are an imperfect, variable representation. There are pictures of yourself that you like more than others, after all. Great photographers are employed precisely because they have the ability to make us look better than we usually do.

See it to believe it
Find more visual examples in our online version of this essay.
Although masculinity is a characteristic typically associated with leaders, if you put too much in a woman’s face, it prompts a negative response. By visualizing our facial stereotypes, we can identify pernicious biases that can lead to unfair and suboptimal decisions. (For more on this research, read “How first impressions work against women,” in the Winter 2021/22 issue and online at chicagobooth.edu/review.)

First impressions function as a shortcut for dealing with the complexity of living with strangers.

Do not be misled by surface irregularities

Often, the things we rapidly infer from faces, such as age, gender, and emotional states—and the personality impressions we construct from these first-order inferences—can be inaccurate, overestimating the role of the face.

If you look at photos of tennis players after they won or lost a point, the faces themselves don’t give you any information about who won or lost. The photos may show dramatic reactions, but you don’t know what the direction of the emotion is. If we just show the body, that does the trick, so we know the answer is not in the face.

First impressions function as a shortcut for dealing with the complexity of living with strangers. Some of these impressions might be accurate in the here and now. A disgruntled-looking person is probably not going to help you, for example, while someone happier looking might be more likely to. But first impressions are inaccurate as a guide about personality characteristics that are stable over time and situations.

Georg Christoph Lichtenberg, probably one of the most interesting and least known 18th-century thinkers—he was the first chair of experimental physics in Germany, posthumously credited with introducing the aphorism into the German language—was critical of Lavater’s ideas. He too was fascinated with and enjoyed interpreting faces, but he recognized, among other things, that physiognomy could be used to justify prejudice and that there was a limit to what someone’s appearance revealed about the inner self. As he put it, “First impressions lend the smallest possible knowledge the greatest possible appearance of it. Consider someone wise who acts wisely, and do not be misled by surface irregularities on the surface.”

Alexander Todorov is the Leon Carroll Marshall Professor of Behavioral Science and a Richard Rosett Faculty Fellow at Chicago Booth. This essay is adapted from a talk given in March 2022 at a Think Better event sponsored by Booth’s Center for Decision Research.

Footnotes

It’s not immediately obvious that image variation, even if it’s random, can generate completely different impressions of the same person—because typically when we see a familiar face, our recognition comes with knowledge about that person. But different images of the same unfamiliar person can lead to dramatically different impressions.

The physiognomist’s promise underestimates the huge effect of image variation on impressions and the influence of momentary mental states. A study done in Sweden showed participants pictures—real ones, not generated—of the same people when they were rested and when they were sleep deprived. Participants rated the images of sleep-deprived people as less attractive and less intelligent. Note that the inference of intelligence is warranted in the immediate situation: when we are sleep deprived, we are incapable of doing many “smart” things such as driving safely or solving complex problems. But to draw a larger conclusion about someone’s intelligence is an inferential leap.

First impressions are constructed from cues that have some significance in the immediate situation. They’re grounded in momentary emotional and cognitive states such as happiness and exhaustion and in stereotypes such as masculinity, femininity, and age—from which we make overgeneralizations. Leslie Zebrowitz of Brandeis University has a lot of work demonstrating that people make all kinds of inferences about “baby-faced” adults. As one example, they’re perceived as naïve and not physically tough. Meanwhile, individuals with feminine faces are perceived as more trustworthy. Individuals with masculine faces are perceived as more competent, and so on.

Using our models, we can actually identify the role of specific stereotypes in impressions. Consider what’s behind perceived competence. National University of Singapore’s DongWon Oh, Princeton’s Elinor Buck, and I identified three components of competence impressions, one of which is attractiveness, which benefits women. But when we controlled for attractiveness, what was left was mostly masculinity—which people were using to assess competence. Even worse, we can inject masculinity into photos of real faces, and when we made a male face more masculine, it was perceived as more competent. But when we did this for a female face, gender stereotypes changed the result. The stereotype goes against dominant-looking masculine women. Although masculinity is a characteristic associated with leaders, if you put too much in a woman’s face, it prompts a negative response. By visualizing our facial stereotypes, we can identify pernicious biases that can lead to unfair and suboptimal decisions. (For more on this research, read “How first impressions work against women,” in the Winter 2021/22 issue and online at chicagobooth.edu/review.)

First impressions function as a shortcut for dealing with the complexity of living with strangers. Some of these impressions might be accurate in the here and now. A disgruntled-looking person is probably not going to help you, for example, while someone happier looking might be more likely to. But first impressions are inaccurate as a guide about personality characteristics that are stable over time and situations.

Georg Christoph Lichtenberg, probably one of the most interesting and least known 18th-century thinkers—he was the first chair of experimental physics in Germany, posthumously credited with introducing the aphorism into the German language—was critical of Lavater’s ideas. He too was fascinated with and enjoyed interpreting faces, but he recognized, among other things, that physiognomy could be used to justify prejudice and that there was a limit to what someone’s appearance revealed about the inner self. As he put it, “First impressions lend the smallest possible knowledge the greatest possible appearance of it. Consider someone wise who acts wisely, and do not be misled by surface irregularities on the surface.”

Alexander Todorov is the Leon Carroll Marshall Professor of Behavioral Science and a Richard Rosett Faculty Fellow at Chicago Booth. This essay is adapted from a talk given in March 2022 at a Think Better event sponsored by Booth’s Center for Decision Research.
IS CAPITALISM THE ENGINE OF DESTRUCTION OR THE ENGINE OF PROSPERITY?

Hosts Luigi Zingales, a world-renowned economics professor, and Bethany McLean, a *Vanity Fair* contributing editor, explain how capitalism can go wrong, and what we can do to fix it.

Listen and subscribe wherever you get podcasts, or on capitaisnt.com.
What the latest Nobel Prize winners taught us

Their insights changed the modern understanding of banks

This year’s Nobel Prize in Economic Sciences—awarded to Chicago Booth’s Douglas W. Diamond, the Brookings Institution’s Ben Bernanke, and Philip H. Dybvig of Washington University in St. Louis—should be thought of as recognizing the research that informs our thinking on three questions about banks:

• Among the many things that banks do, what are the essential features?
• Why are banks the institutions that perform those functions?
• What happens when things go wrong in the banking sector?

The answers lie in three papers cited by the Nobel Committee that all were published in the early 1980s, two of them theoretical—Diamond and Dybvig’s 1983 paper “Bank Runs, Deposit Insurance, and Liquidity” and Diamond’s “Financial Intermediation and Delegated Monitoring,” published the following year—and the third, Bernanke’s 1983 paper “Non-monetary Effects of the Financial Crisis in the Propagation of the Great Depression,” empirical.

This research demonstrates that the essence of banks is to take deposits that convey services (for example, checking accounts) from savers and use the funds to make loans to households and businesses. In other words, both bank assets (the loans) and liabilities (the deposits) are valuable, and you can’t understand banking without recognizing both functions.

This may sound trivial, as deep insights often do, but it is hardly obvious. For instance, after periods of financial instability, one often hears commentators ask why we let the banks gamble with savers’ money. If we just forced them to be much, much safer (say, by investing only in government securities), they would not cause so much trouble. The laureates’ work explains why the lending and deposit taking naturally coexist.

The theory starts from Diamond and Dybvig’s research. They ask why any firm would usefully offer demandable deposits. The alternative is that individuals could themselves just buy safe short-term securities, which could be bought and sold as needed. They point out that in most cases people will not have an immediate need for making payments, so it is expensive (in an opportunity-cost sense) to have everyone self-insure and save using only the most liquid savings vehicle.

If we recognize that most savers won’t need their savings at any given time, they could invest the savings in higher-returning assets. Of course, if they do need to sell such assets, that will be expensive since the reason they earn higher returns is that they are illiquid.

The resolution to this tension is to create an organization (a bank) that pools the needs of many people and counts on the idea that not everyone will need their savings at the same time. The bank essentially becomes an insurance vehicle, where it mostly invests in the illiquid assets and sells some of those assets when necessary to meet the withdrawal needs of the people who truly have an urgent requirement for funds. This allows the bank to pay a higher return on the checking accounts in exchange for paying a little less on the longer-term savings accounts. Because none of us knows exactly when we might need to make a payment, this is an attractive service.

Unfortunately, the arrangement comes with one obvious defect. The insurance breaks down if everyone decides that they
The work of these three individuals has had a profound effect on the direction of research.

Financial institutions make many loans. If the financial institution makes many loans, it is unlikely that all the loans will fail at once. It will not be credible for the financial institution to lie and argue that its borrowers have not paid, and the savers will not be able to monitor this. If the financial institution repays its depositors by using the proceeds from the successful investments, because the risk is spread across many loans, the cost of borrowing in the economy falls (relative to the direct lending case) and the duplication of monitoring by the depositors is avoided.

Thus, between these two papers, we see that it makes sense for banks to both take deposits and to make loans. This raises the final question of whether this arrangement creates problems for the economy. Bernanke’s 1983 paper is one of many showing that when banks fail, the overall economy suffers. What is the source of the spillovers?

The seminal work of Milton Friedman and Anna Schwartz, published in 1963, suggests that the problems stem from the losses for savers. In studying the Great Depression, they argued that when banks collapsed, the savers lost access to their deposits. Without those deposits, people and businesses could not make payments, and without payments, the economy could not function.

Of course, this is not the only explanation. When bank deposits fall, so do loans. Hence, we can’t tell whether it is the lending-side or the deposit-side implosion that is critical. (In reality, it is probably some of both.)

Bernanke’s paper argues that there was a clear role for worrying about the lending contraction on its own. He noted that both theoretical and empirical work suggested that it was not just the collapse of liabilities that mattered. The loss of loans also had an independent effect.

For instance, during the Great Depression, large companies that had nonbank sources of credit fared better than smaller companies and farmers, who were especially dependent on banks. He also pointed to contemporaneous survey evidence demonstrating that companies reported pressure to repay loans and highlighting the unavailability of new bank credit as a source of stress in the economy.

Bernanke’s work triggered a wave of subsequent work, much of it by him, aimed at establishing the importance of shocks to bank lending (and credit supply more generally) as a major source of instability for the macroeconomy. As the Nobel Prize citation noted, this attention to preserving lending capacity and credit availability was a central consideration that motivated economic policy during the 2008-09 financial crisis.

Likewise, much of the regulatory response to the global financial crisis has been informed by Diamond’s solo research and the work that he conducted with Dybvig. For example, the idea that demandable claims that are offered by money market funds (and other nonbanks) are prone to runs has been widely embraced as a risk that needs to be addressed.

The work of these three individuals has had a profound effect on the direction of research and on our understanding of the role of banks in the economy. Perhaps equally important, it has significantly altered economic policy and the practical way in which the financial system is regulated. For both reasons, this research is well deserving of the Nobel Prize.

Anil K Kashyap is the Stevens Distinguished Service Professor of Economics and Finance at Chicago Booth. This essay first appeared on the Initiative for Global Markets website at igmchicago.org.
How often do you think about money? And what exactly do you think about when you do?

Among William Shakespeare’s many plays, *Timon of Athens* is the bard’s most sustained meditation on the capacity for wealth to warp human relationships and lead us to reimagine our place and purpose in the world. Timon is a well-heeled aristocrat when the play opens, but he soon gives away his wealth to his friends, who repay his kindness, in turn, by immediately turning their backs on him.

Notably, it is only when Timon loses his money that money becomes an obsession for him. He is blithe and foolish throughout the first act of the play—the portrait of a gilded innocent—but once his empty coffers expose empty friendships, money soon transforms into a matter of endless meditation, especially its tendency to purchase the good opinions of others and reorganize social customs with impudence and alacrity:

```
This yellow slave
Will knit and break religions, bless the accursed,
Make the hoar leprosy adored, place thieves
And give them title, knee and approbation
With senators on the bench
```

The fact that Timon thinks about money only when he doesn’t have any hardly makes his experience unusual, except that, for most of us, not having money is somewhat less exceptional, especially in the early stages of life.

**The Pauper in Polo**

I’ll speak for myself. If you canvassed my friends, they would almost certainly tell you that not having money is one of the enduring themes of my life. This is because, well into my 30s, I didn’t have much money to speak of, and even today, I pride myself on being able to pinch a penny until it screams.

I elevated this talent to an art form in college, earning the nickname “the Pauper in Polo.” I knew how to get what I wanted on the cheap and otherwise wanted for little because there was little I wanted. I was steely, resourceful, and above all incapable of embarrassment.

In one of my more memorable hustles, I helped to retire a coupon at Tommy’s, one of the two pizzerias on campus. While working on the custodial crew for graduation exercises, I volunteered to clear out the trash depot in one of the dorms. The football player who joined me was less than enthusiastic until I fished a campus magazine from one of the recycling bins and flipped to the back cover.

*Check this out,* I told him. It was a coupon for a free slice of pepperoni pizza with a $2 purchase at Tommy’s. I gestured to the bins. This basement was the King Tut’s tomb of Tommy’s coupons, I explained. There were hundreds of these coupons in the copies of magazines discarded by students who didn’t think twice about leaving money on the table.

We went to work with gusto, tearing those back pages in two and filling our pockets with the loot. But that was only the beginning. Two dollars, I explained, was an odd amount to spend at Tommy’s. In fact, there wasn’t anything on the menu you could buy for exactly that price—not unless you purchased a special 32-oz. plastic mug you could refill whenever you liked for 50 cents. With one such a refill and a $1.50 slice of pepperoni pizza, you had your two dollars—and a second free slice.
I fully grant that when I didn’t have money to solve some of my most basic problems, I made some pretty dumb decisions.
He elaborates:

I am bad, dishonest, unscrupulous, stupid; but money is honoured, and therefore so is its possessor. Money is the supreme good, therefore its possessor is good. Money, besides, saves me the trouble of being dishonest: I am therefore presumed honest. I am stupid, but money is the real mind of all things and how then should its possessor be stupid? Besides, he can buy talented people for himself, and is he who has power over the talented not more talented than the talented? Do not I, who thanks to money am capable of all that the human heart longs for, possess all human capacities? Does not my money, therefore, transform all my incapacities into their contrary?

Marx may be laying it on a bit thick, but his essential point—that money shapes the opinions of others decidedly in one’s favor—seems hard to deny. Moreover, the value of such “good opinions” is not merely the meretricious comforts of constant fawning. To be rich, we might say, is to live in a world where people are always rushing to hold the door for you, and the benefits of such solicitude are not limited to who gets a good table at Delmonico’s.

To be top of mind, to be given first opportunities and final chances, to be invariably extended the benefit of the doubt—these are just some of the advantages that money affords. More importantly, they not only shape social relations, but they also structure the institutions of society. Some of these changes are obvious and official—the set-asides for wealth are evident in acceptance letters and skyboxes—but more often they are implicit and largely imperceptible, an erosion of norms, insidious and steady, that accommodates the tidal current of cash.

Such tendencies together with the more naked favors of first consideration and flattery are the properties Timon has in mind when he dubs gold a “visible god.” Indeed, what could be more godlike than an invisible force that reorganizes the physical world and appoints angels among us?

Free your mind

“When the accumulation of wealth is no longer of high social importance, there will be great changes in the code of morals,” the late economist John Maynard Keynes wrote not long after World War I. “We shall be able to rid ourselves of many of the pseudo-moral principles which have hag-ridden us for two hundred years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues.”

By “pseudo-moral principles,” Keynes had chiefly in mind the elevation of self-interest from a blind and often brutal instinct to a benign, enlightened guide to the invisible hand. For Keynes, this was an example of moral alchemy, and a highly distasteful one at that, but he granted that it was necessary to get the wheels of capitalism turning. Still, he held, once we effectively solved “the economic problem” by expanding productive powers so that people wouldn’t have to work long hours or lead lives of drudgery, we would no longer have a compelling reason to lionize this antisocial impulse. “We shall be able to afford to dare to assess the money-motive at its true value,” he declared, that motive being to self-interest both signal and spark in a capitalist society.

Such predictions may sound supremely utopian, but I would note that Keynes gave them a century to come to pass. He envisioned for his grandchildren in 2030 a world of 15-hour workweeks, and if we pause to think about a future for our own grandchildren a hundred years from today, a world in which little labor is required of us hardly seems among the most fanciful of predictions.

No, it is not a solution to “the economic problem” per se that seems most improbable but the idea that, as Keynes put it, we should so easily “discard” the “social customs” that revolve around money. This is not merely a matter of collective mindset but a metamorphosis of the customs and institutions that so thoroughly shape our lives.

Think about it: What would it mean for money to have no role in determining place and opportunity, for it to be merely a tool readily available to obtain things? It seems inconceivable, doesn’t it? A departure from the world we know so complete as to resemble the stuff of science fiction.

And yet, this is what is required for Timon’s “visible god” to lose its sway over our hearts and minds, for money to no longer be the subject of so much time and attention, so much endless plotting and late-night perturbation. Until then, the essential truth is not that we will spend immense amounts of time thinking about money—we most certainly will—but that we would be crazy not to.

John Paul Rollert is adjunct associate professor of behavioral science at Chicago Booth.
Will the Fed’s rate hikes raise expected inflation?
Exploring a counterintuitive notion of monetary policy

Central banks are starting to raise interest rates. By late September—with two meetings of its Federal Open Market Committee still scheduled before year-end—the US Federal Reserve had raised rates five times and a total of 3 percentage points in 2022, with another 1.25 percentage points still expected between November and January. Those rate hikes may do a lot of things—slow the economy, depress asset prices—but what will they mean for the issue animating the Fed’s actions, inflation?

The Fed expects higher interest rates to lower inflation. Higher interest rates may lower investment demand, especially in housing, and cool the economy; cooling the economy may bring down the rise in wages and prices. But the Fed will run in to headwinds. Cooling the economy will not be popular with Congress, the Biden administration, businesses, or regular people. Higher interest rates will raise debt-service costs, worsening the deficit that is behind inflation to begin with. And, as the United Kingdom is discovering, higher interest rates may reveal financial fragility that the army of financial regulators overlooked, again.

Today, however, I want to consider one particular headwind. These are all short-run effects. Higher interest rates should, in the long run, raise inflation. This long-run force will increasingly battle against whatever short-run forces push in the opposite direction.

How does this strange-sounding proposition work? It follows from two simple core principles of economics. First, the real interest rate equals the nominal interest rate (how many dollars you get next year per dollar invested this year) minus the expected rate of inflation. Second, the real interest rate is, in the long run, determined by real factors—the productivity of capital, people’s desire to save versus consume—not by the Fed. This is the principle of “long-run neutrality.” It follows that if the Fed raises the nominal interest rate, once the real rate settles back to its long-run value, the inflation rate must be higher. This proposition is similar to the monetarist proposition that a higher rate of money growth eventually just raises inflation by the same amount.

Still, the proposition is hard to believe, and that intuition is the point of this essay. In one direction this is easy: if people expect a lot of inflation, they demand higher nominal interest rates to compensate for the declining value of the dollar, so that the real return is unchanged. Higher steady inflation must come with higher interest rates. And it does: countries with 100 percent inflation have, order of magnitude, 105 percent interest rates, not 5 percent interest rates.

The other direction is harder to understand. How might the Fed setting higher nominal interest rates eventually cause higher inflation? Eventually, when the real rate recovers to reflect real things, just what force makes expected inflation rise? Standard intuition says overwhelmingly that higher interest rates cause people to spend less, which lowers inflation.

This is a lovely case in which individual causality goes in the opposite direction of equilibrium causality.
That happens a lot in macroeconomics and can cause a lot of confusion. It also is an interesting case of mistaking expected inflation for unexpected inflation. It’s easy to do.

For any individual, the interest rate and expected inflation are given, or exogenous. A consumer observes inflation and interest rates, and then chooses how much to consume or save. If the Fed raises interest rates and prices do not yet adjust, the real return to saving is larger. The consumer wishes to buy less today, save more, and buy even more in the future, with the higher interest.

Now, a desire to lower consumption today pushes down the price level today, and consuming more in the future pushes up the future price level. As the price level falls today and rises in the future—as inflation increases—the real return to saving falls. This process continues until the consumer’s demand equals supply. *Expected inflation rises to meet the nominal interest rate*—as promised, and by exactly the conventional mechanism in which higher interest rates induce saving.

To the individual, the price levels and expected inflation are given, exogenous, and the decision of how much to consume follows, is endogenous. In equilibrium, the amount that can be consumed, supply, is exogenous, and the price levels and expected inflation follow in order to clear markets.

In sum, a higher interest rate produces higher future inflation over a sufficiently long horizon that (1) prices, sticky in the short run, can move, (2) output runs into supply constraints, and (3) the real interest rate is consequently set by real factors.

But you can get higher inflation by a lower initial price (as represented by the blue line in the graph above) or from a higher later price (the red line). The graph also shows an intermediate possibility (in green).

So the original intuition can be right: higher interest rates might well depress current demand and lower initial prices. (See the blue line in the chart.) That produces lower *ex post* inflation today and higher *expected* inflation from today to the future. The intervention can well “lower inflation” in this sense. This is how standard (New Keynesian) models work.

If we stop here, the confusion between whether higher interest rates raise or lower inflation is just semantic. As often in life, you can resolve a lot of seemingly intractable arguments just by defining terms more carefully. Higher interest rates can lower current inflation. Sticky prices and other frictions can draw out this period of decline. As for the price recovery, and higher future inflation from a lower price level, we often do see that—inflation comes back, as it did in the 1970s—or maybe the Fed doesn’t leave interest rates alone long enough to see it. The long run is a long time.

But there is another possibility. Maybe the higher expected inflation—the larger slope of the line when interest rates rise—comes from a higher future price level, not a lower current price level. Maybe the price level follows the red line in the chart, not the blue line.

Which is it? It comes down to fiscal policy. To have an unexpected decline in inflation, Congress must raise tax revenue or cut spending to pay off bondholders in more valuable money. If Congress refuses, we get the red line: more future inflation, no inflation reduction today. If Congress goes along, we can get the blue line. Fiscal and monetary policies always work in tandem.

In sum, there is a natural and intuitive force by which higher nominal interest rates raise inflation in the long run. That force can push down the price level, so it can rise again in the future. That price-level decline corresponds to the intuition that higher interest rates lower inflation in the short run. But for the US to see that, fiscal policy must tighten. Without fiscal help, we have only a force for higher inflation, starting immediately. Headwinds indeed for the Fed’s efforts to temporarily lower inflation by pushing us toward recession.—CBR

**Pick your path**

A rate hike can produce higher inflation through either a lower price level today or a higher price level in the future, or a combination of both.

---

*John H. Cochrane is a senior fellow of the Hoover Institution at Stanford University and was previously a professor of finance at Chicago Booth. This essay is adapted from a post on his blog, The Grumpy Economist.*
IS EXECUTIVE PAY EXCESSIVELY HIGH?

Compensation for CEOs of S&P 500 companies averaged $18.3 million in 2021, according to an AFL-CIO report. *Bloomberg Wealth* finds that more than 30 public-company executives had total compensation—including salary, stock and options grants, and other forms of pay—upward of $100 million in 2021. Does executives’ eye-popping pay reflect the value they bring to their companies? Was Dodd-Frank’s mandate that public companies give shareholders a voice in executive pay a productive measure?

Chicago Booth’s Initiative on Global Markets posed these questions to its US Economic Experts Panel 10 years ago, and revisited them in September 2022 with the members of its newly created Finance Panel. Relative to the results of the 2012 poll, respondents to the more recent poll were much less likely to agree that CEOs are overpaid, but a plurality still agreed that shareholder voice in executive pay is beneficial.

**About the IGM Economic Experts Panels**

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 three diverse panels of expert economists, all senior faculty at the most elite research universities in the United States and Europe. The panels include Nobel laureates and John Bates Clark medalists, among others. Polls 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.
Statement A: The typical CEO of a publicly traded corporation in the United States is paid more than his or her marginal contribution to the company’s value.

Laura Starks, University of Texas
“While there are extremes in CEO pay, which we can all provide anecdotal stories about, I think the average CEO of a well-governed, publicly traded company is not overpaid. There is much transparency and oversight—activist investors, shareholder votes, media, etc.”
Response: Disagree

Thomas Philippon, NYU
“On balance there are more forces pushing pay above marginal productivity than the other way.”
Response: Agree

Amir Sufi, Chicago Booth
“I do not see how one could empirically estimate the marginal value of a CEO with a high degree of confidence. So difficult to know whether a typical CEO is overpaid or underpaid. Could be either.”
Response: Uncertain

Statement B: Mandating that US publicly listed corporations must allow shareholders to cast a nonbinding vote on executive compensation was a good idea.

Camelia Kuhnen, University of North Carolina
“Shareholders need to have a voice in determining managerial pay. This is a decent mechanism to have this voice be heard.”
Response: Agree

Campbell R. Harvey, Duke
“It is the job of the board of directors to determine senior compensation. The board has full information. The shareholders do not have that information. If board members are not doing their job, the shareholders should replace the board members.”
Response: Disagree

Christine Parlour, University of California at Berkeley
“Reduces the cost to shareholders of monitoring and exercising governance rights.”
Response: Agree

Note: Percentages are weighted by confidence ratings that panelists assigned to their own responses. Charts do not include panelists who reported “no opinion” or did not respond to the poll.
To get individuals to shrink their carbon footprint, try peer pressure

Households produce a large share of the world’s greenhouse gas emissions, whether by consuming energy at home or burning fuel to travel. This makes individual actions crucial in mitigating climate change, but how can policy makers encourage more responsible behavior? Chicago Booth’s Michael Weber and his coresearchers sought to explore one possible avenue through a randomized trial, assigning respondents of a national survey in Germany to one of four treatment groups that received information from peer or expert sources about the impact of emissions on climate change and the ways people can reduce their carbon footprint. All four groups reported a greater willingness to act—in this case, to spend on carbon offsets—relative to a fifth group, a control that received no information on climate change. The researchers find that information framed as coming from peers created the strongest effect. For more, turn to page 18.
Since 1898, the University of Chicago Booth School of Business has produced ideas and leaders that shape the world of business. Our rigorous, discipline-based approach to business education transforms our students into confident, effective, respected business leaders prepared to face the toughest challenges. Visit chicagobooth.edu for more information about our Full-Time MBA, Evening MBA, Weekend MBA, and Executive MBA Programs, our PhD Program, and our Executive Education courses. Chicago Booth has campuses in Chicago, London, and Hong Kong.

### See you soon

Chicago Booth and the University of Chicago sponsor many opportunities for inquiry and for participants to gain insights. Some events below will have in-person and virtual components. More information can be found at the websites listed.

**DECEMBER 5–9, CHICAGO**
**FINANCIAL ANALYSIS FOR NONFINANCIAL MANAGERS**
chicagobooth.edu/fanm
Gain a practical understanding of how to use internal and external financial reports to shape decision-making.

**JANUARY 10, CHICAGO AND ONLINE**
**ECONOMIC OUTLOOK**
chicagobooth.edu/eo
Hear from Booth’s renowned faculty members as they evaluate emerging trends and share observations about the global economy. Economic Outlook events will also be held, on different dates, in Hong Kong and London.

**FEBRUARY 3, CHICAGO**
**22ND ANNUAL BPOC PRIVATE EQUITY CONFERENCE**
chicagobooth.edu/pe-conference
Join investors, students, and entrepreneurs to network and share insights into the dynamics of investing in a constantly changing economy.

**FEBRUARY 20–APRIL 2, ONLINE**
**LEADING WITH DATA AND ANALYTICS**
chicagobooth.edu/lda
Learn how to improve business outcomes by using analytics to make evidence-based decisions.

**FEBRUARY 21–APRIL 3, ONLINE**
**MINDFUL LEADERSHIP**
chicagobooth.edu/ml
Learn techniques to connect with others meaningfully and productively while reducing burnout and stress, building on your values to become a more influential leader.

**FEBRUARY 21–APRIL 3, ONLINE**
**EFFECTIVE BUSINESS COMMUNICATION**
chicagobooth.edu/ebc
Develop your ability to motivate, persuade, and influence—transforming ideas into impact for your organization.

**FEBRUARY 28, CHICAGO**
**CNVC FINALS**
chicagobooth.edu/cnvc
See College New Venture Challenge finalists present to a panel of judges comprising investors, entrepreneurs, and industry experts. Prizes have helped past CNVC finalists including Quevos, Cubii, Frönen, and Moneythink grow into successful businesses.

**MARCH 3, CHICAGO**
**BOOTHS WOMEN CONNECT CONFERENCE**
chicagobooth.edu/booth-women-connect
Join a powerful, collaborative community and build connections at this event, which allows professionals across industries to exchange stories, grow their networks, and participate in meaningful discourse.

**MARCH 20–24, CHICAGO**
**MERGERS AND ACQUISITIONS**
chicagobooth.edu/ma
Acquire the analytical framework and tools necessary to execute mergers, acquisitions, and corporate restructuring successfully.

**MAY 12–13, CHICAGO**
**BOOTHS PHD CENTENNIAL CELEBRATION**
chicagobooth.edu/phd
Catch up with former Booth classmates and colleagues at the 100th anniversary celebration of the country’s first doctoral business program. Open to Booth PhD Program alumni only.

**ONGOING**
**EXECUTIVE MBA ADMISSIONS EVENTS**
chicagobooth.edu/exec-events
Meet students and alumni and hear from Booth’s Admissions team at regionally focused events.