advantage

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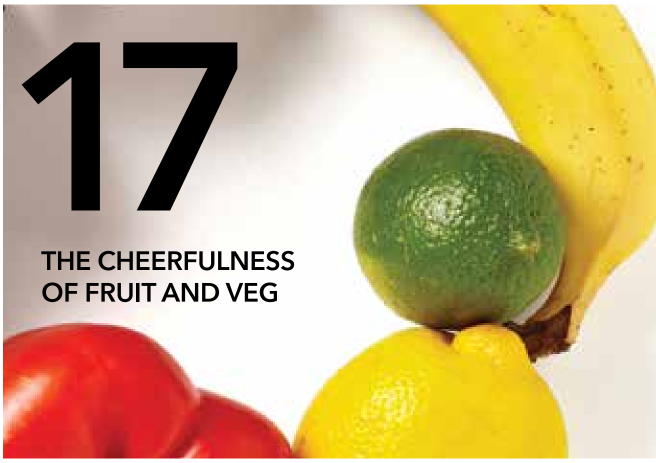
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"Welcome to the autumn issue of *Advantage* ...

... the magazine of the Centre for Competitive Advantage in the Global Economy.

Our research, which is funded by the Economic and Social Research Council (ESRC), addresses issues related to improving living standards, raising productivity, maintaining global competitiveness and facilitating economic well-being. Our aim in every issue is to provide a wide range of articles that reflect the breadth and depth of research undertaken by researchers at CAGE and to bring this research to a wider audience to promote engagement and discussion on policy, practice and understanding.

In this issue our opening feature focuses on farming in the developing world. Here the biggest risk farmers face is rainfall uncertainty. Anandi Mani's research shows that droughts don't only affect farmers when they occur – instead, rainfall uncertainty and preoccupation with the possibility of drought imposes psychological costs that can lower their income.

We continue our focus on the developing world in the article on business practices in small firms. Here Professor Christopher Woodruff explains that small enterprises with good management practices have higher sales and profits, yet most small businesses fail to implement basic tools such as financial planning.

From here we move to look at issues facing western economies: Dennis Novy discusses the challenges around the Transatlantic Trade and Investment Partnership (TTIP), the most ambitious free trade agreement in history, and considers implications for Britain in a post-Brexit world. In the adjacent article on mortgage investments and bank health, researcher Natacha Postel-Vinay considers the impact of a recent proposal from U.S. Republicans to scrap parts of the Dodd-Frank legislation adopted in the aftermath of the global financial crisis and designed to strengthen bank regulation: she draws on the Chicago Bank Failure of the 1920s to explain that history should make us vigilant.

We end this issue on a "happy" note with an exploration of Andrew Oswald's recent research that shows that eating more fruit and vegetables can substantially increase people's later happiness levels.

Much more about CAGE research is on our website, including our working papers and policy briefing publications – plus videos and comment by our researchers on current issues facing the economy.

I hope you find this issue of the magazine both enjoyable and informative."

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Cognitive droughts

By Anandi Mani

Droughts don't only affect farmers when they actually occur; even the possibility of drought imposes psychological costs that can lower farmers' income in developing economies.

How does rainfall uncertainty and preoccupation with the possibility of a drought affect farmers' decision-making?

FARMING IS STILL the dominant occupation in the developing world. And the biggest risk farmers face is rainfall uncertainty. It is the canonical example of risk that is used in the study of developing economies worldwide.

How does rainfall uncertainty and preoccupation with the possibility of a drought affect farmers' decision-making? Traditionally, researchers and policymakers have focused on the *after*-effects of a drought, in terms of loss of income and the hardship that follows from a bad harvest. But what about the psychological toll and anxiety caused by the mere possibility of drought – even if it does not actually come to pass? In recent work, Guilherme Lichand and I have examined whether this psychological toll of rainfall uncertainty has adverse cognitive effects that may then affect farmers' decision-making and productivity. In a field study that we conducted in the highly drought-prone Céara region of NE Brazil, we find significant cognitive effects – quantitatively equivalent to losing 25% of one's harvest at the end of the rainy season. We elaborate a little more below on several innovative features of our research design and some further work that we are carrying out, in light of these significant cognitive effects.

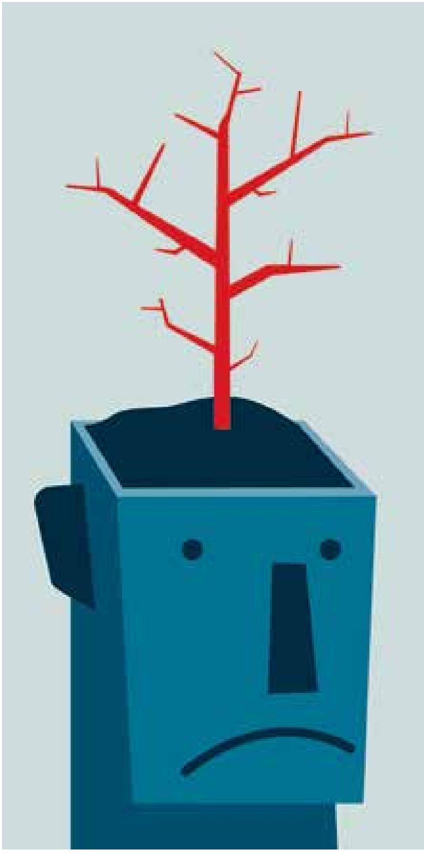
Trying to understand what is going on inside a farmer's head as he worries about what the rainfall for the season will be, and how this affects his decision-making poses unique challenges. First, we have to distinguish these psychological effects of drought risk from other effects that may be driven by a low *level* of income and other correlates of poverty, such as a lack of education, information, and other cultural factors. Second, we need to track these thought processes of farmers who are widely scattered all across a remote rural landscape, as they happen and evolve over the season. To tackle the first challenge, we use a two-pronged strategy, combining actual rainfall shocks with survey experiments. We examined the impact of the actual rainfall shocks that farmers experienced in the week prior to the survey on a range of cognitive outcomes. ▶

To isolate the psychological effects, we (randomly) primed a subset of farmers in our sample with drought worries during each phone survey. To tackle the second challenge, we exploited the dense cell-phone network in Céara and managed to survey over 2800 farmers multiple times over the 4-month rain season, using voice-activated automated phone calls.

Recent work on the cognitive effects of scarcity by Sendhil Mullainathan and Eldar Shafir, predicts that drought risk worries would not just reduce the mental bandwidth that farmers would devote to various tasks and decisions but also that they may reallocate their focus to conserving the scarce resource. We measured how drought worries impact several aspects of farmers' cognition – attention, memory and impulse control, their susceptibility to a variety of behavioral biases – as well as their performance on hypothetical tasks involving the scarce resource, in this case water.

We find that the gap in cognitive performance across farmers differentially affected by rainfall risk is equivalent to that between farmers in municipalities with no harvest losses and those in municipalities with about 25% losses at the end of the rainy season (in a cross sectional-comparison). While priming significantly does increase focus, actual rainfall shocks do not have this positive mitigating effect, suggesting that living under endemic worries simply depletes mental resources.

Lastly, we offer farmers the opportunity to listen to real credit and insurance offers. We find suggestive evidence that the psychological tax imposed by rainfall risk may lead to a poverty trap: worries cause farmers to demand less credit for irrigation and crop insurance (relative to credit for consumption and funeral insurance). This keeps farmers vulnerable to rainfall risk, potentially making cognitive effects persistent.



We measured how drought worries impact several aspects of farmers' cognition – attention, memory and impulse control, their susceptibility to a variety of behavioral biases – as well as their performance on hypothetical tasks involving the scarce resource, in this case water.

In ongoing work, we are exploring the implications of our findings in this project for the design of insurance products. In particular, our preliminary pilots suggest that the most widely prevalent agricultural crop insurance product offered in developing countries – i.e. index insurance – may not be best suited to encourage take-up of insurance among farmers, to mitigate these significant cognitive effects of drought risk. There is more work to be done! ◀

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Publication Details

This article summarises CAGE working paper 298/2016, "Cognitive Droughts", by Guilherme Lichand and Anandi Mani. The paper is available at: **http://www2.warwick.ac.uk/fac/soc/economics/research/centres/cage/manage/publications/298-2016_mani.pdf**

Sendhil Mullainathan, and Eldar Shafir "Scarcity: Why Having Too Little Means So Much", Time Books, 2013.

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Business practices in small firms in developing countries

By Christopher Woodruff

Small enterprises with good management practices have higher sales and profits, yet most small businesses fail to implement even basic tools, such as financial planning.

INCREASING PRODUCTIVITY is key to increasing income, and a robust private sector is key to increasing productivity. Recent research shows that the quality of management in large firms varies – and varies considerably – around the world. This is important because management and per capita income are strongly correlated at the country level, and some evidence suggests that management has a causal effect on firm performance.

The majority of non-agricultural workers in low- and middle-income countries work not in large firms but in enterprises with fewer than 10 workers. Do management practices matter in these smaller enterprises? To answer this question, we developed a business practices diagnostic tool targeted at micro and small enterprises. The diagnostic assessment covers four areas: record keeping, marketing, inventory control, and planning. Within these four areas, we identify 26 specific practices associated with good management. We believe that each of these 26 practices would be universally recognised as beneficial for business performance. For example, we ask owners if they keep written records; if they ask existing customers whether there are goods or services that the business does not currently provide, but which the customer would like; if they set targets for sales over the coming year; and if they work out the cost of the main products or services she sells. ▶

The enterprises are most likely to implement the practices related to inventory controls, and least likely to implement the practices related to financial planning.

In various projects, we have implemented this diagnostic assessment ourselves with samples of micro and small enterprises in five countries: Sri Lanka, Bangladesh, Kenya, Ghana and Nigeria. We also have data from two additional countries – Mexico and Chile – where other researchers have used a version of our diagnostic tool. In total, we have data from more than 20,000 enterprises in the seven countries. With one exception, the samples are not designed to be representative of the microenterprises in the country, so we focus on variation within rather than across countries. The criteria for each sample were determined by the goals of the specific project for which the sample was drawn. In one case, the sample consists of female-owned enterprises with profits of less than USD 50 per month. In another, it involves enterprises participating in a business plan competition, where the owners often have university education and several employees. While each sample is quite specific, collectively they represent quite well the spectrum of micro and small enterprises in developing countries.

We reach three very basic conclusions. First, the micro and small enterprises fail to implement the majority of these very basic practices. The average business in our samples implements only 39 percent of these basic practices. The enterprises are most likely to implement the practices related to inventory controls, and least likely to implement the practices related to financial planning. Second, there is substantial variation in business practices across enterprises within each of the samples. Some businesses implement a larger share of the practices than others, and the variance is high. Third, and most importantly, enterprises with better practices perform better. Implementing more of the practices is associated with higher sales and profits. In three countries, panel data allow us to see that enterprises with better business practices are more likely to survive in the future. Strikingly, we find that relationship between business practices and performance is almost exactly the same in micro- and small-enterprises as in samples of much larger enterprises.

There are several concerns that might be raised. First, our measures come from self-reports of owners. We should be concerned that the most confident owners are more likely to say that they implement practices, and also are more likely to say that they perform well as owners/managers. In that case, the correlation we find between practices and performance would reflect the confidence of owners rather than the practices themselves. In Nigeria and Sri Lanka, we conducted audit exercises to verify the self-reports. We hired "business mentors" – either experienced businesspeople or entrepreneurship trainers – to consult with businesses. The mentors spent two to three hours with each business owner, asking questions and offering advice. The mentors were able to observe the business in operation and also to examine planning and record-keeping documents directly. At the end of the visit, the mentor answered questions about which of the business practices the owner followed. We use these data to calculate a second business practices score for the enterprise. We find that the self-reports and the mentor's scores are very highly correlated (ρ=0.74), offering some reassurance with regard to the reliability of the self-reported data.

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"WE BELIEVE THAT EACH OF THESE 26 PRACTICES WOULD BE UNIVERSALLY RECOGNISED AS BENEFICIAL FOR BUSINESS PERFORMANCE."

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7

39%

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$50

"IN ONE CASE, THE SAMPLE CONSISTS OF FEMALE-OWNED ENTERPRISES WITH PROFITS OF LESS THAN USD 50 PER MONTH."

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A second concern is that higher-ability owners are more likely both to run successful businesses and to implement the 26 practices. The correlation between practices and performance may simply reflect the ability of the owner. We check this by controlling for several measures of ability. The measures of ability include both indicators, like reported years of schooling and business experience, and cognitive tests, like the Raven non-verbal reasoning test. We do find that more able managers run more successful businesses. But adding the controls for ability has almost no effect on the strength of the correlation between business practices and performance. This suggests that ability and performance operate independently in producing better performance.

The strong relationship between business practices and performance raises the question of whether business practices can be improved through training. In an earlier review of the effectiveness of entrepreneurship training programmes aimed at microenterprises, we found little evidence that existing training programmes lead to higher sales and profits of enterprises. We can think of the effect of training on enterprise outcomes in two steps. The training directly affects business practices, and the improved business practices lead to improved enterprise performance. The data here show that the problem is with the first link of the chain – a weak effect of training on business practices – rather than the second link. This suggests that we can improve enterprise performance through training. We just need training that has a stronger effect on business practices. ◀

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McKenzie, David and Christopher Woodruff (2014) "What are we learning from business training evaluations around the developing world?", *World Bank Research Observer*, 29(1): 48-82.

Transatlantic trade under pressure:

TTIP and post-Brexit Britain

By Dennis Novy

The Transatlantic Trade and Investment Partnership (TTIP) between Europe and the U.S. would be the most ambitious free trade agreement in history. But lack of political support has eroded its chances of ever being concluded, and a post-Brexit Britain would most likely be left out.

IF SUCCESSFULLY CONCLUDED, the Transatlantic Trade and Investment Partnership (TTIP) would be the most ambitious free trade agreement in history, with the potential to benefit millions of consumers in the European Union and the United States. TTIP is not only an economic project but also a political project to promote transatlantic ties. But once a British exit from the European Union is in place, Britain would most likely be left out and might at best hope for an inferior agreement many years down the line.

WHY TTIP?

TTIP stands out because of its sheer scale – the European Union and the United States represent about 45 percent of global output. But it also stands out because it is a serious attempt to tackle duplicate regulation and non-tariff barriers such as "buy national" policies and technical barriers to trade. In the past, trade agreements were mainly about cutting tariffs, and that was relatively easy.

The benefits of TTIP could be very significant. A study produced by the Centre for Economic Policy Research indicates that in the best-case TTIP scenario, the average EU household of four could see its disposable income rise by EUR 545 per year by 2027 as a result of higher wages in many industries, higher productivity and lower consumer prices. But as always, these numbers should be treated with caution. They depend on the eventual outcome of the negotiations, and they are subject to the substantial uncertainty that such projections inevitably carry.

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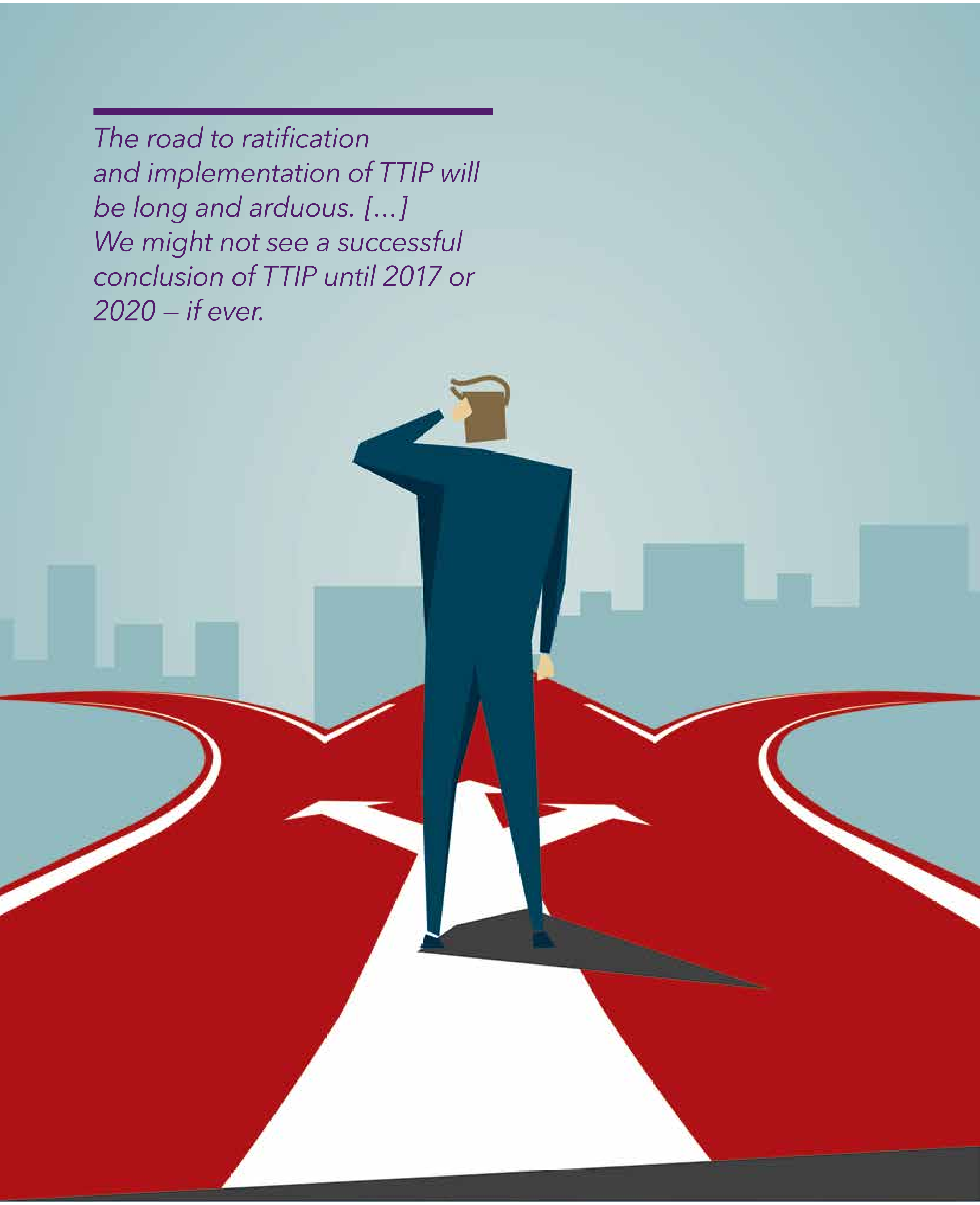
POLITICAL ROADBLOCKS AND CONTROVERSY

The road to ratification and implementation of TTIP will be long and arduous. On the US side, the presidential election cycle has stalled political momentum. We might not see a successful conclusion of TTIP until 2017 or 2020 – if ever. ▶

The road to ratification and implementation of TTIP will be long and arduous. [...] We might not see a successful conclusion of TTIP until 2017 or 2020 – if ever.



On the European side, it seems that governments are currently losing the public debate. Trumping TTIP's economic benefits in terms of numbers will not win the hearts and minds of the electorate. The potential benefits of TTIP are likely to be spread widely and thinly, while costs will be concentrated. If they want to sway the public debate, governments have to come up with convincing narratives and concrete examples of how the average person in the street can benefit from TTIP. They also need to explain why it is in the EU's long-term interest to engage in such negotiations rather than leave it to the U.S. and China to write the rules of 21st century global trade.

If they want to sway the public debate, governments have to come up with convincing narratives and concrete examples of how the average person in the street can benefit from TTIP.

KEY CONTROVERSIES

Regulation and non-tariff barriers: The meat of the TTIP negotiations is not about tariffs but rather about aligning regulation and removing non-tariff barriers. A classic example is car safety regulation. There is no evidence that cars are less safe in either the EU or the US. However, car manufacturers currently have to comply with two different sets of regulation. Removing duplicate regulation would bring down production costs and arguably consumer prices, even if this does not automatically generate new trade.

While car safety is a common sense issue, negotiators face many controversial issues such as food safety regulation. It is important to note that TTIP might actually generate new regulation for future technologies. It is a common misunderstanding that TTIP will inevitably lead to less regulation.

Government procurement: Fair and open access to government contracts is supposed to be an essential part of TTIP. But access is especially difficult to obtain at the sub-federal level where the national government might have less power to legislate. Some promising progress has been made by the EU on that front in its recent free trade agreement with Canada.

Investor-State Dispute Settlement (ISDS): At its core, ISDS is an enforcement mechanism that is supposed to avoid discrimination against foreign companies and ensure the rule of law. Britain has a relatively fair legal system, so it is easy to assume that ISDS is not needed. But how many people in Britain would trust a court jury in Mississippi to give them fair treatment? Likewise, the US is concerned about the legal institutions in some Eastern European countries.

Many people do not know that ISDS is a European invention and has been a staple ingredient of international agreements for decades. Nevertheless, there is considerable pressure on the EU to drop ISDS from the negotiations.

ISDS turns out to be a particularly contentious issue on the European side of the debate. There are problems with ISDS, for instance its lack of transparency. This needs to be reformed. But perhaps not surprisingly, ISDS is also an issue where a great deal of wilful mischaracterisation has been inserted into the public debate. ISDS has served as a main rallying point for anti-globalisation protesters. It has been hijacked by many campaigners with an ulterior political agenda, for instance by linking ISDS to the National Health Service in the UK, although public health provision will hardly be affected by TTIP.

WOULD A POST-BREXIT BRITAIN BE PART OF TTIP?

Most likely not. When leaving the European Union, Britain would probably stop being a member of the EU Customs Union – even if Britain retained access to the EU Single Market (the Norwegian option). If the EU and the US then concluded TTIP, Britain would be left out and would have to negotiate its own deal with the US. Given that bargaining power largely depends on economic size, Britain would be in a substantially weaker position.

Apart from less bargaining power, Britain would face the additional problem of limited negotiating capacity and expertise. Britain has not concluded a trade deal in over 40 years and would to a large extent have to rely on external advisers.

A likely scenario is that the US would make Britain a "take-it-or-leave-it" offer on terms less favourable than to the remainder of the EU. But as President Obama pointed out during his visit to the UK in April 2016, the US would be in no hurry and Britain would find itself at "the back of the queue." ◀

Dennis Novy was the Specialist Adviser to the House of Lords on TTIP in 2013/14. The views expressed are his and do not necessarily reflect the views of the House of Lords.

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Mortgage investments and bank health

By Natacha Postel-Vinay

Strengthening of banking regulation is already under threat. History should make us vigilant.

A RECENT PROPOSAL FROM U.S. Republicans aims to scrap parts of the Dodd-Frank legislation adopted in the aftermath of the global financial crisis. The goal of this legislation was, among other things, to introduce more stringent capital and liquidity requirements for banks. The proposal, put forward by Congressman Jeb Hensarling, would have such requirements made less stringent for larger, more systemically important banks. That vigilance can decline so soon after such ghastly economic events is puzzling at best.

One of the lessons of the Great Recession is that the health of banks can be tied to their investments in real estate. This is not a new phenomenon. In a recent paper, I show that bank failure and mortgage lending already had a close relationship in the 1930s Great Depression. Such continuity should warn us about the potential links between the two, and may provide further justification for the prudential regulation of banks. ▶

The causes of the US Great Depression, which saw the failure of thousands of banks throughout the country, have been debated by economists and policymakers ever since the catastrophe began. No doubt many questions will remain unanswered for a long time to come. But one city deserves our attention: Chicago. Chicago had to face some of the worst episodes of urban banking distress in the US, and it ended up with one of the highest urban bank failure rates in the country.

For a long time, historians have known that Chicago underwent a deep real estate boom in the 1920s, collapsing in a bust in the 1930s (see Figure 1). But no one had actually quantitatively tested the link between mortgage lending and the ensuing bank failures. In this study, I hand-collected individual bank balance sheet data from 1923 all the way up to 1933 to analyse the link between several types of investments and subsequent bank failure.

Failures occurred in three or four major waves throughout 1930–1933, at a time when notions such as "too-big-to-fail" were close to inexistent. Depositors ran en masse to withdraw their money, without much state intervention.

The crucial finding of the study is that amidst these repeated banking panics, the banks that were more likely to survive were those that had invested less in mortgages in the decade preceding the crisis. The liquidity crises created a sudden need for cash, and assets that took a long time to mature, such as mortgages, were likely to conflict with banks' attempts to meet depositors' demands. Of course, banks could also sell securities and rediscount some of them at the central bank in exchange for cash. But the central bank was wary about accepting long-term loans as collateral, in part due to the uncertainty tied to their future quality. The higher the proportion of mortgages a bank had on its balance sheet, the more likely it was to be unable to properly face the liquidity crisis.

> *The crucial finding of the study is that amidst these repeated banking panics, the banks that were more likely to survive were those that had invested less in mortgages in the decade preceding the crisis.*

Some banks had been cautious in their real estate lending throughout the 1920s. Others had indulged in the boom without much regard for the possibility of a crisis. The more cautious banks were rewarded when the crisis came: they were likely to fail later, or not at all (see Figure 2). One might think that low loan quality was at the root of the problem: perhaps borrowers were simply unable to pay back their mortgages on time, leading banks to make losses on these loans through foreclosure (what is usually called credit risk). However, this is unlikely because loans at the time were only a small proportion of property values (close to 50 percent). Even if borrowers had been unable to pay back their mortgages, banks were unlikely to make any significant losses on these loans, and this even after a significant fall in land values. The long maturity of mortgages, not their quality, was a crucial source of bank weakness during the crisis.

What this suggests is a very simple idea: that banks that are better prepared to face a liquidity crisis, in particular by not overinvesting in long-maturity loans, are more likely to survive one. From a liquidity point of view they are healthier. Of course, deposit insurance and lender-of-last resort facilities were further developed precisely because it was deemed that some otherwise healthy banks were likely to fail unjustifiably if they had to face a run of some kind. Once those facilities were enhanced in the aftermath of the Great Depression, international regulators' attention became increasingly focused on other sources of ill health, usually those emanating from credit risk. Credit risk was deemed the greatest threat to banks' health, since it was thought to cause capital impairment, while liquidity risk was deemed minor, thanks to those enhanced facilities.

The problem with this view is that liquidity risk is still with us, and is likely to remain so for some time. Today, securitisation, including mortgage securitisation, has increased liquidity in the system, and central banks have played an important role in alleviating distress in the recent crisis. Reckless predatory lending to subprime borrowers caused banks to incur significant losses, implying that credit risk was indeed a major component of the crisis.

Nevertheless, liquidity risk was far from inexistent. It dramatically increased after the failure of Lehman Brothers, and although there were no visible runs on banks' deposits, thanks to deposit insurance, there was an invisible run on the uninsured part of banks' liabilities, documented at length by a number of scholars. During this run, the long maturity of loans underlying mortgage-backed securities was an increased source of liquidity risk.

Because the job of central banks is still a very difficult one, due to uncertainty regarding the future quality of banks' collateral, liquidity risk will never disappear completely. For this reason, a bank that is not well prepared to face this risk cannot be considered healthy, even if its credit risk is very low. This is perhaps an unusual claim: that banks should be prepared for an out-of-equilibrium event. The question is of course: to what extent? We cannot ignore the essential trade-off between low liquidity risk and a bank's fundamental role in the economy, which is to provide loans, including those with long maturities. But nor can we ignore the dangers of liquidity risk – as the Great Depression shows, these can be very serious indeed.

In recent years, international bank regulators have placed greater emphasis on liquidity risk than they had done in previous decades. This emphasis should be welcomed by anyone who wishes to avoid a repeat of the financial catastrophe of the 1920s. ◀

Figure 1: Annual number of new buildings in Chicago.

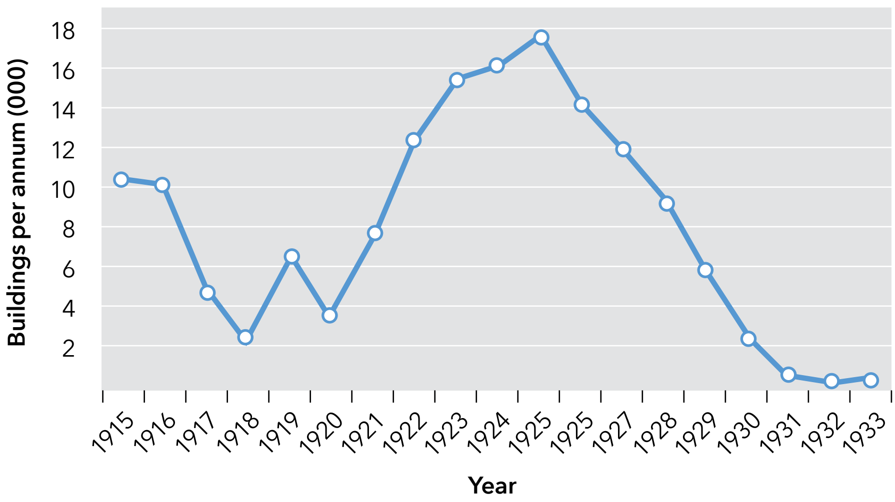
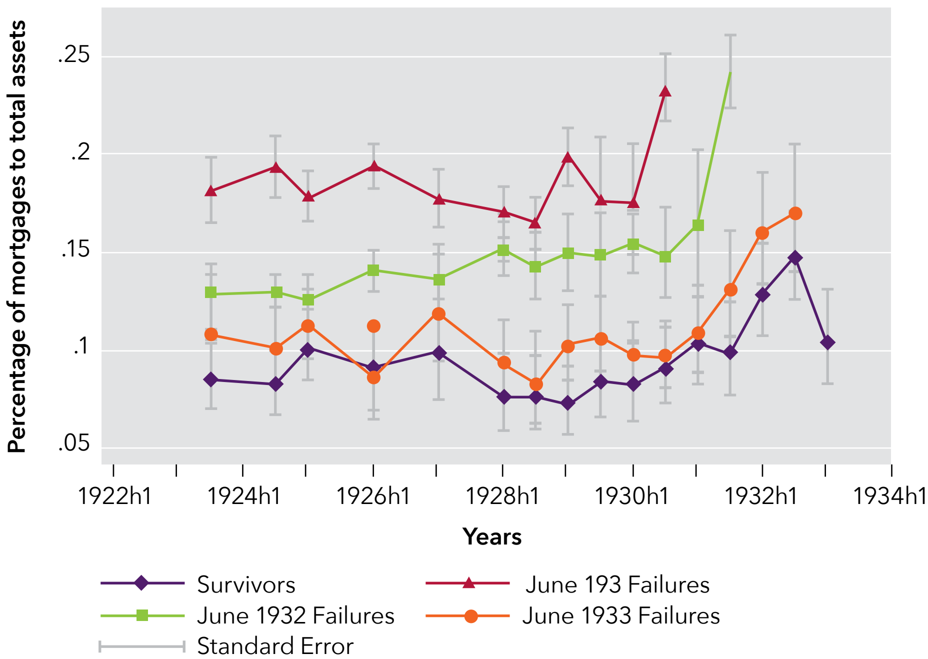


Figure 2: Proportion of total assets invested in real estate loans, by four groups of banks (1931 failures, 1932 failures, 1933 failures, and survivors), 1923-1933.



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Publication Details

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The full paper is available online at: **https://www.researchgate.net/publication/303354441_What_Caused_Chicago_Bank_Failures_in_the_Great_Depression_A_Look_at_the_1920s**

The cheerfulness of fruit and veg

By Andrew Oswald

Eating more fruit and vegetables can substantially increase people's later happiness levels.

DO YOU EAT ENOUGH? Fruit and veg, I mean. It has been known for a long time that fruit and vegetables provide important health benefits. These include lower cancer risk and better heart-attack prevention. Yet in Western society the typical citizen eats an unhealthy diet (US data are available at **www.cdc.gov/brfss** and European data at **www.eufic.org**). The difficulty of persuading people to consume more fruit and vegetables remains a stubborn one.

My new work, with Redzo Mujcic of the University of Queensland, explores a whole new approach to the problem. We look not at human health but at human happiness. Our findings are unusual – and suggest new reasons to eat lots of fruit and vegetables.

Published in the 2016 *American Journal of Public Health*, our paper, called "Evolution of Wellbeing and Happiness after Increases in Consumption of Fruit and Vegetables", is designed partly for scientific researcher and partly for public-health experts. But we hope it would also be interesting to any general reader. It uncovers evidence consistent with a longitudinal connection between the consumption of certain foods (especially fruit and vegetables) and later subjective well-being, and a channel that appears to be independent of long-run health. In simpler English, eat more fruit and veg today if you want eventually to be happier tomorrow. We were surprised by the strength of the statistical patterns. ▶

In simpler English, eat more fruit and veg today if you want eventually to be happier tomorrow.

Our work follows the lives of 12,000 Australian individuals to trace the potential linkages running from diet to later life satisfaction and happiness. We examine Australia because it has some of the best food-diary data in the world. Our analysis is first done by following individuals between 2007 and 2009. Just as the project was completed, however, new data were released, which made it possible to check the calculations also for the period 2009 to 2013.

There are precursors to our paper. Innovative research by Tamlin Conner and collaborators has found – using data on daily food diaries on 281 students tracked over a three-week period – that a high level of fruit and vegetable consumption appears to be predictive of greater emotional well-being on the following day. Various cross-sectional papers have also pointed to the possible existence of a statistical connection between psychological well-being and the amount of fruit and vegetables eaten.

Figure 1 is a simple graphical illustration of our study's key result for life satisfaction. A similar histogram holds also for happiness data. The plot in Figure 1 is based on a so-called fixed-effect regression equation. Changes in fruit and veg go along with big changes in happiness. This implied connection between diet and happiness is substantial. It is crucial to explain that we also allowed for the influence of household income, age, education, whether working, marital status, health, children, alcohol and food patterns, Body Mass Index, and exercise.

Our work is consistent with the idea that eating certain foods is a form of investment in future happiness. The implications of fruit and vegetable consumption are estimated to be substantial and to operate within the space of two years – too quickly to be a reflection of the physical advantages of diet for outcomes such as cardiovascular disease documented by earlier researchers.

Overall, however, the message of our work is simple. Eat fruit and veg to be cheery. Up to eight a day if possible. Go on – you can.

The first variable examined is self-reported life satisfaction, derived from the question: *"All things considered, how satisfied are you with your life?"* Respondents are told to: *"Pick a number between 0 and 10 to indicate how satisfied you are"*, and that *"the more satisfied you are the higher number you should pick"*. Another question we used is: *"how much of the time in the past four weeks..."* did he/she experience particular types of feelings/ symptoms, including *"… been a happy person"*.

The patterns that emerged in our numbers were striking.

In a sense, the paper offers a new possibility for future public-policy programs to encourage healthy eating – the possibility that citizens in western society could be given evidence that 'happiness' gains from healthy eating may show up much more quickly than any long-distant improvement to their physical health. If individuals weigh up the likely benefits of fruit and vegetables in their diet, and set that against any perceived costs, both pecuniary and non-pecuniary, of doing so, scientific evidence of extra gains from a healthy diet may help persuade people to raise their intake of fruit and vegetables.

Puzzles remain. The biochemical channels from eating certain food types to subjective well-being are not properly understood. There are a variety of intriguing possibilities. These include a potential influence from vitamin B12 upon the eventual production of human serotonin, as well as the idea of a role for folate deficiency. A further potential channel is that microbiota may modulate brain chemistry. Lastly, it may be possible eventually to link the current research to a new literature on antioxidants that is suggestive of a connection between human optimism and carotenoid in the blood. Further connections between the biology and practical public-health policy of healthy eating remain to be forged.

Overall, however, the message of our work is simple. Eat fruit and veg to be cheery. Up to eight a day if possible. Go on – you can. ◀

The Researchers

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Publication Details

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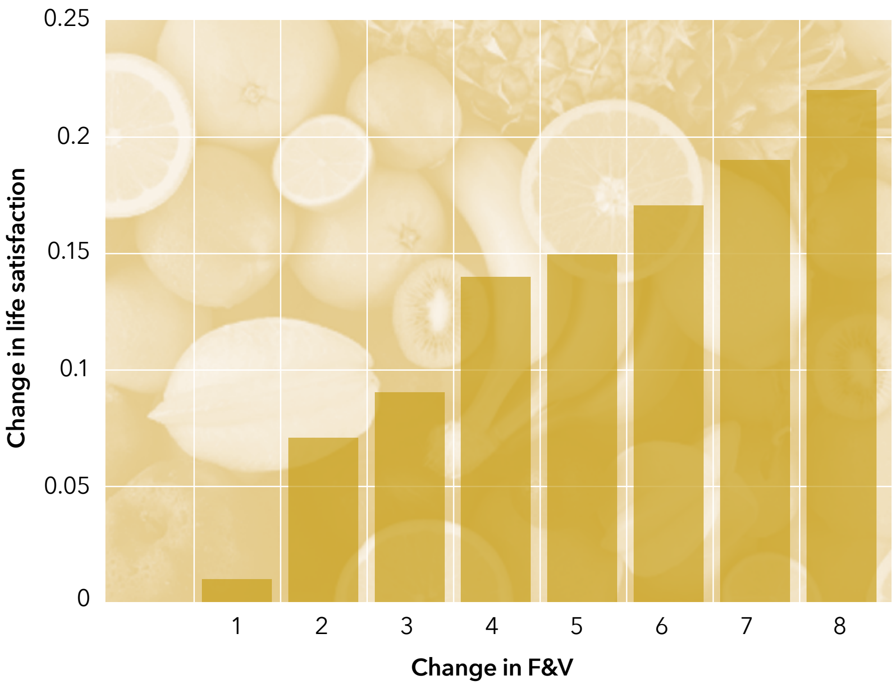
Figure 1 is a simple graphical illustration of our study's key result for life satisfaction. A similar histogram holds also for happiness data.

Figure 1. Longitudinal changes in fruit and vegetable (F&V) consumption are positively correlated with longitudinal changes in satisfaction with life. The vertical axis here measures life satisfaction; the horizontal axis measures daily F&V portions. The 0 on the horizontal axis denotes less than one portion of fruit and vegetables per day, 1 denotes higher than one portion but less than two portions per day and 8 denotes eight-and-above portions a day. The sample size is 12,385 Australian individuals measured in years 2007 and 2009.

(An equivalent diagram would hold symmetrically for reductions in F&V consumption).



Parting shot

DURING THE REFERENDUM CAMPAIGN, Michael Gove declared that "I think the people of this country have had enough of experts". If so, this is not good news for CAGE which is stuffed full of expertise. More to the point, it is really bad news for the general public because ignorance is not bliss – especially in the context of the making of economic policy.

At bottom, CAGE research is about how to improve living standards. Our work has a large empirical component which expands the evidence base on which policymakers can draw. We put a great deal of effort into communicating the results of this work to various audiences including other academics, the policy community and the general public. We write peer-reviewed journal articles and policy briefing papers. We present technical seminars as well as talks for school children. We expect to be challenged to justify our findings and to engage in reasoned debate about our findings. This is, however, futile if policy is in future going to be decided on the basis of anti-elitist gut instinct, asking Paul the Psychic Octopus, or consulting Mystic Meg while at the same time our research is rubbished and our motives impugned.

A future in which economic policy is made by the likes of Marie Le Pen and Donald Trump would be not only a poorer but a frightening place.

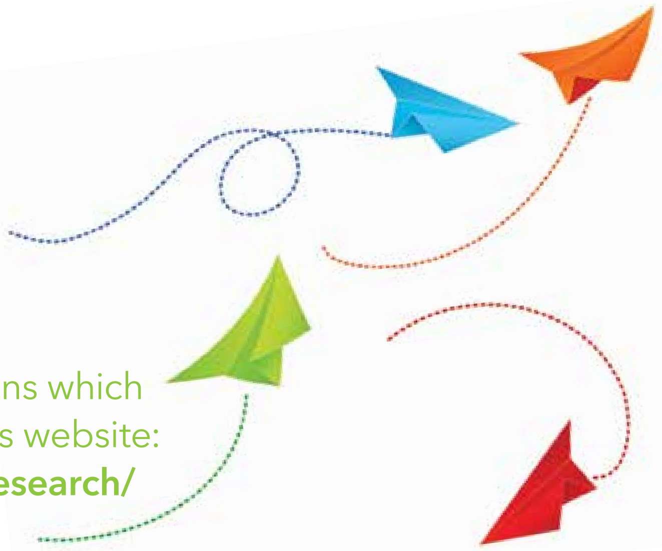
Whose fault is this sorry state of affairs? The lazy answer for economists is 'the tabloids' and the perverse way that 'balance' is implemented by the BBC. It is certainly true that I do not expect to write an op-ed for the Daily Express any time soon. And there are some people whose anti-intellectualism is so deeply ingrained that there is no way they can ever be persuaded that economic analysis has any value. Even so, I suspect that I and my fellow economists should take some responsibility for the disregard, or even disrepute, into which our advice has fallen. We need to be more effective communicators of our ideas.

I am not sure how exactly to make our voice more clearly heard and given a bit more respect but exploring this problem should be a high priority for the economics profession since whatever we have been doing no longer seems to be working very well – with the exception of the Institute for Fiscal Studies whose findings are still taken seriously. These are issues primarily for bodies such as the Royal Economic Society and the British Academy and I look forward to initiatives from them. For CAGE, the long-term aspiration must be to build a reputation that will underpin a similar level of influence to that which IFS has attained.

A future in which economic policy is made by the likes of Marie Le Pen and Donald Trump would be not only a poorer but a frightening place. An 'Age of Unenlightenment' would not be conducive to raising living standards. Michael Gove may wish to inhabit such a world but I don't. To put it in language that he should appreciate, the experts really do need to find a way to 'take back control'. ◀

Nicholas Crafts, Director of CAGE

CAGE publications
An overview



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EVENTS

ESRC Festival of Social Science
The ESRC Festival of Social Science for 2016 will run from 5-12 November. The Festival celebrates the importance of the social sciences with a wide variety of events across the UK. CAGE is delighted to participate in the Festival and will be organising the following event:
In the Company of Strangers: Nationbuilding across the World
Public Lecture by Professor Sharun Mukand
8 November, Helen Martin Studio, Warwick Arts Centre, University of Warwick

For all CAGE events, go to: **www.warwick.ac.uk/fac/soc/economics/research/centres/cage/events/**

CAGE SEMINAR SERIES

CAGE seminars offer insight into the research frontier on a wide variety of topics. The programme for the autumn term is available on our website: **www.warwick.ac.uk/fac/soc/economics/events/seminars-schedule**

About CAGE

Established in January 2010, the Centre for Competitive Advantage in the Global Economy (CAGE) is a research centre in the Department of Economics at the University of Warwick.

Research at CAGE examines how and why different countries achieve economic success.

FUNDED BY THE Economic and Social Research Council (ESRC), CAGE is carrying out a 10 year programme of innovative research.

Research at CAGE examines how and why different countries achieve economic success. CAGE defines success in terms of personal well-being as well as productivity and competitiveness. We consider the reasons for economic outcomes in developed economies like the UK and also in the emerging economies of Africa and Asia. We aim to develop a better understanding of how to promote institutions and policies which are conducive to successful economic performance and we endeavour to draw lessons for policymakers from economic history as well as the contemporary world.

CAGE research uses economic analysis to address real-world policy issues. Our economic analysis considers the experience of countries at many different stages of economic development; it draws on insights from many disciplines, especially history, as well as economic theory. In the coming years, CAGE's research will be organised under four themes:

- What explains comparative long-run growth performance?
- How do culture and institutions help to explain development and divergence in a globalising world?
- How do we improve the measurement of well-being and what are the implications for policy?
- What are the implications of globalisation and global crises for policymaking and for economic and political outcomes in western democracies?

Advantage is the magazine of the Centre for Competitive Advantage in the Global Economy.

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