

Cambridge Economics

News from the Cambridge Faculty of Economics

Issue 11 Winter 2018

A Good Knight's Work

Distinguished Alumnus: Professor Sir Angus Deaton*

Angus Deaton was awarded the 2015 Nobel Prize in Economic Sciences for 'his analysis of consumption, poverty and welfare'. The citation for his UK knighthood, conferred the following year, was for 'services to research in economics and international affairs'. Following James Meade and Richard Stone, both of whom were friends and the latter his closest mentor, and after Amartya Sen and James Mirrlees, who spent much of his career at Cambridge, Angus is the fifth Nobel Laureate from Cambridge economics.

Cambridge life

No-one, including Angus, could have foreseen this outcome when he first came to Cambridge in 1964, from Fettes College in Edinburgh, to read Mathematics. He says he found the subject, as taught, difficult to engage with: he lost interest; played lots of bridge and went to the cinema; did very little work; discovered Cambridge pubs, and consequently fared badly in examinations.

By the end of his second year he was on the point of giving up and leaving Cambridge. But his tutor at Fitzwilliam College who, like his father, was anxious to keep him in the College, persuaded him otherwise, saying: 'There is only one thing for people like you – Economics!'

Continued overleaf...



INSIDE:

From the Editor	3
Professor Sanjeev Goyal	4
The Education Production Function: A Brain Teaser	6
The Narrow Corridor to Liberty	8
Morality and the Market	10
GDP – Grossly Distorted Picture?	12
Better Economics Teaching? CORE!	13
The Digital Revolution and the State: The Great Reversal	14
The Economics of Religion in India	15
Systemic Risk-shifting in Financial Networks	16
Awards / Obituaries	18
Comings and Goings	20

Transferring to Part 2 of the Economics Tripos, Deaton graduated in 1967. He went to work in the (embryonic) research department of the Bank of England. But his mind was elsewhere: he had a girlfriend who was a doctoral candidate in English at Cambridge, and he wanted to come back to get married.

In 1969 he was appointed as a Junior Research Officer in the Department of Applied Economics, working on national wealth accounting data in collaboration with Dr Jack Revell, who was writing his book on 'The Wealth of the Nation' and had been Deaton's Director of Studies at Fitzwilliam. One of Deaton's tasks was manually to derive and prepare data held at the offices of the Registrar of Friendly Societies – a lengthy and tedious assignment. But it involved interacting directly with primary data which, he says, led him to start 'dreaming about numbers' and what they might reveal.

When Revell left Cambridge for a Chair at Bangor, in North Wales, Deaton became involved with the Growth Programme, led by Richard Stone and who was himself to become a Nobel Laureate in 1984. Deaton worked with Alan Roe on 'Finance for Growth', concentrating on 'saving and consumption', which proved to be the start for his lifetime's work on human wellbeing.

Looking back at life in the Economics Faculty, Deaton recalls the Coffee Room (Faculty Lounge) being dominated by Nicholas Kaldor and Joan Robinson, larger-than-life guardians of the Keynesian legacy. It was not easy for newly-recruited junior academic staff to get access to them: they were surrounded by their acolytes and had little time for young researchers from the DAE. Richard Stone and James Meade, by choice, did not engage socially

in the Coffee Room. But there were helpful people: Deaton remembers Ken Wigley, who was to move later to the OECD, and Gwyn Aneuryn-Evans, who was starting to bring econometrics into the Faculty. And, above all, the coffee was good – specially brewed and served by the concierge's wife.

In association with his University post, Deaton became Fellow and Director of Studies in Economics at Fitzwilliam in 1972, where he remained until 1976, when he was appointed to a Chair in Econometrics at Bristol University. He moved to Princeton as Professor of Economics and International Affairs in 1983 until he became Emeritus in 2016. Currently he is Senior Scholar in the Woodrow Wilson School at Princeton.

Knight work

Deaton's work has focused on the patterns and drivers of consumption in developed and developing countries, the form and analysis of the consumption function (linking income to aggregate demand), and the relationships with income, poverty, health and welfare.

At Cambridge, Deaton, following and working with Richard Stone, inherited Keynes' concept of the aggregate consumption function as a main driver of economic activity. On the pattern of demand, one of Deaton's early contributions (with John Muelbauer, then at Birkbeck) was to demonstrate the usefulness for empirical work of the standard neoclassical theory of consumption. This took as granted the rationality of the consumer in seeking to maximise individual utility, and in Deaton and Muellbauer's work, allowed for limited but interesting heterogeneity across individuals, while producing an empirically tractable model of demand. The

model maintains Slutsky symmetry in price responses, as well as the homogeneity condition that, if prices and income both increase by the same percentage, the consumer's ideal bundle of goods for consumption will remain unchanged.

This model, the origins of which can be traced back as far as the 19th century, had been the object of criticism, mainly on account of its restrictive assumptions. By building large and detailed databases – a very big manual task in those days – Deaton was able to disaggregate the consumption function so as to model heterogeneous consumer behaviour, in the context of relative price movements among commodities with different income and substitution effects. The outcome – the 'Almost Ideal Demand System' – gave a rich insight into consumer behaviour, and made possible the rebuilding of aggregate demand functions to demonstrate that, rather than being wrong, the standard theory had been mis-specified in practice.

Deaton's attention then turned to the study of consumption over time, and the part played by income and wealth. The permanent income/ life-cycle theory argued that temporary variations in income will lead to individuals adjusting their short-term savings behaviour so as to smooth their long-term pattern of consumption to match their expected long-term income. Moreover, if individuals are rational and have good information, permanent consumption will move towards equality with permanent income. Real-world aggregate data appeared to confirm these relationships.

But Deaton showed that this is misleading if, as in the textbooks, it

is interpreted as the behaviour of a representative agent. If a single agent were to receive average income, and behave rationally, consumption should be *less* smooth than income, what became known as the 'Deaton Paradox'. The moral is that we have to work with individual agents, not mythical representative agents, and that we must model realistically what they know and when they know it. The enduring significance of this is to demonstrate the importance of evidence-based, finely-grained and comprehensive empirical data at the level of households to make possible the *re-aggregation* of the consumption function – something which the digital revolution and recent work in macroeconomics is helping to carry forward.

Economic growth and the pursuit of happiness

This work led on naturally to considering the links between income and poverty. Here, in addition to developing frameworks for the identification and measurement of poverty, Deaton fully accepts the role of economic growth in alleviating poverty in poor countries. But the respective roles of growth and redistribution are hopelessly muddled in the data by the fact that household surveys, which are used to calculate distribution, are often wildly inconsistent with the national accounts statistics, which measure growth. Debates about growth versus redistribution can never be settled because debaters can essentially choose their own data to buttress their cases.

Deaton recognises and celebrates the importance and long-term benefits of economic growth, which through international trade and integration is associated with innovation, improved health and welfare, and with lifting

people out of poverty. A degree of income inequality is necessary to reward effort and innovation. He has brought all this together in his book 'The Great Escape' (2013)**.

Recently, in association with Princeton economist (and Angus's wife), Anne Case, he has studied the causes of the trend to increasing mortality and morbidity among mid-life white non-Hispanic Americans with low levels of education (that is, High School or less). It is associated with increases in drug overdoses, suicides and alcohol-related liver disease. While stagnant real wages and the loss of job opportunities are clearly relevant, the underlying causes go much deeper: households in this segment of the community suffer cumulative inter-generational disadvantages in labour market opportunities, in marriage and child outcomes, and in health. The challenge demands effective policy interventions: reducing excessive prescription of opioids is one; supporting increases in median real wages is another.

Reflecting on current economic and social trends, Deaton notes emerging evidence among the millennial generation of discontent towards large multinational corporations, carrying implications and challenges for their business strategies. This forms part, perhaps, of a broader platform of doubt about the values of both capitalism and democracy. If this is so, he sees it as vital for democratic systems to deliver for the *majority* of people, rather than dedicated and active minorities, if economic and social welfare ('happiness') is to be improved.

Tony Cockerill

* Interview took place on 4 July 2018.

** Angus Deaton (2013). 'The Great Escape: health, wealth and the origins of inequality'. Princeton University Press.



From the Editor

It is an exciting, if controversial, time to be an economist. There are two major issues: the state of Economics and economic research; and the state of economics education.

For the first of these, the charges against conventional microeconomics are that it is dominated unduly by mathematical models; it lacks empirical relevance, and it fails to take account of developments in cognate subject areas - psychology, sociology, biology and history in particular. At the same time, macroeconomics is seen as needing to rebuild its intellectual architecture after having been unsettled by the financial shock of a decade ago. For the second issue, there are lively debates about the scope of the Economics curriculum and its relevance for today's students, and about pedagogic philosophy and method.

Economics in Cambridge is closely involved in all of this. Some aspects of what is going on is reflected in this year's issue of *Cambridge Economics*. Sanjeev Goyal's valedictory at the end of his four years as Chair of the Faculty shows the outstanding contribution he has made to the development of research and teaching in Economics in Cambridge. Matthew Elliott's review of his own work on risk-shifting in financial institutions is a fine example of contemporary empirical research, just ten years since the collapse of Lehman Brothers. Diane Coyle, who contributes much to the debate on the reform of Economics education, shows how insight, analytical precision and the Big Data revolution can alter our understanding and interpretation of fundamental economic indicators. Above all, perhaps, Nobel Laureate Angus Deaton's life-time work and achievements demonstrate the symbiosis between economics research and teaching.

This issue, in addition, marks significant publications by colleagues and summarises the key public lectures that have been given in 2017-18. The circulation of *Cambridge Economics* is amongst the largest of all alumni newsletters in the University. We value the interest and support that comes from across the whole range of alumni/ae. We are always happy to hear from you at www.econalum@hermes.cam.ac.uk.

Prof Tony Cockerill
27 September 2018

Professor Sanjeev Goyal looks back on his time as Chair of the Faculty of Economics



There is nothing so rewarding as to work closely with extraordinarily gifted colleagues in the pursuit of a shared vision.

I took over as Chair of Faculty on October 1, 2014 and am stepping down after a four-year term, at the end of this September.

Prior to taking over, I had been Director of Research and was the Founding Director of the Cambridge-INET Institute. I had also been involved in the setting up of the Keynes Fund for Applied Economic Research. These initiatives were part of a broader strategy to deepen the resource base and to raise research aspirations of the Faculty. My principal motivation for taking over as Chair was the desire to embed these initiatives on a more durable basis in the Faculty.

However, even before I had the time to settle into my new office on the first floor of the Faculty Building, the Faculty faced pressing problems relating to teaching. The 2013 Learning and Teaching Review revealed that students rated our Tripos and the MPhil

programmes very poorly (relative to assessments of other Cambridge degrees). So teaching became the focus of our efforts. I worked closely with Professor Alexei Onatski (responsible for the Tripos) and Prof Coen Teulings (responsible for MPhil programmes) to carry out a wide-ranging reform of the teaching programmes. In 2017, Dr Pontus Rendahl and Professor Robert Evans replaced Alexei and Coen, respectively. They brought new energy to the tasks. As a result of all this hard work, by 2018, student assessments had improved significantly: The Economics Tripos is now rated well above other Cambridge degrees. There has also been a significant improvement in the MPhil student evaluations.

In the meanwhile, the work on research and on the resource base was proceeding alongside. Working closely with Professor Hamish Low (responsible for Research) and Alexei and Coen, I prepared a Strategy Document and a Financial

Plan for the Faculty. The Plan was approved by the General Board of the University in November 2016.

The document spelled out the short and medium term goals of the Faculty and laid out a financial basis for attaining them. The key objectives were to carry out world-leading research in the core fields of economics, to bring this research into the domain of applications and policy, and to educate the next generation of economists. The attainment of these goals required a significant expansion in the number of high quality economists at Cambridge.

The Faculty has invested heavily in recruitment over the past 4 years: seven new Lecturers and one new Reader have been appointed. The new recruits have combined with existing faculty to greatly step up the quality of research in the Faculty. This is reflected in the publication of influential papers and books, in the number of high level workshops

“A key point in the Financial Plan was the proposal to deepen the resource base of the Faculty through philanthropic gifts.”

and conferences, in the visits by many world leading academics and policy makers, and in the award of a number of prestigious European Research Council Grants to Faculty members. The rise in standards is also visible in the large number of internal University Promotions: we have had one colleague promoted to a Senior Lecturer post, seven promoted to a Reader post, and three promoted to a Professorship. In achieving this success, the Faculty has benefitted from the sustained support from the senior management of the University.

A key point in the Financial Plan was the proposal to deepen the resource base of the Faculty through philanthropic gifts. Working closely with Professor Giancarlo Corsetti (Director of the Cambridge-INET Institute), Professor Christopher Harris, and the University development office (CUDAR), we have made significant progress. By 2018, we have secured gifts in excess of £30 million. As a result, the

endowment income of the Faculty that was around £40K in 2010 has grown to over £1.2 million by 2018.

A key person in the project of deepening the resource base and of raising research aspirations has been the indefatigable Dr William (Bill) Janeway. Through his many gifts to us, Bill has become the most important benefactor of economics at Cambridge in its long and distinguished history. In addition to these gifts, Bill brings an intellectual passion and a level of commitment to new thinking in economics that inspired us to raise our efforts and also to think afresh. He has acted as a mentor to me and has been a constant source of support to the Faculty.

All through my term, I have been supported ably by the Senior Faculty staff, Marie Butcher, Silvana Dean, Emma Newman and Susie Wan. My personal secretary, Anne Mason, has managed my schedule with great patience and discretion.

Over its long history, the Faculty has had Alfred Marshall, Arthur Pigou, John Maynard Keynes, Joan Robinson, Richard Stone, James Meade, Jim Mirrlees and Partha Dasgupta, as its members. It has been an honour and a great privilege to lead the Faculty and to help in contributing to the continuation of this great tradition.

The role of the Chair comes with its surprises. But, looking back on these four years, what remains is the memory of a period of intense camaraderie: there is nothing so rewarding as to work closely with extraordinarily gifted colleagues in the pursuit of a shared vision. I am grateful to Cambridge for having given me this opportunity. I know that I have been very lucky.

In closing, I warmly welcome my good friend, Professor Hamid Sabourian, as the next Chair of the Faculty.

Professor Sanjeev Goyal FBA
29 September 2018

The Education Production Function: A Brain Teaser

Marshall Lectures: Caroline Hoxby*



The brain's capacity to gain and enhance cognitive skills continues to increase through to early adolescence.

While recognising Gary Becker's seminal contribution to the concept of human capital and its practical applications, Caroline Hoxby's work is transforming our understanding of the huge potential that exists for increasing the productivity of investment in education. Becker's standard education productivity function (EPF) relates output (for example, test grades or earnings gain) to ability and to the amount of 'schooling' (usually measured in years). In the received analysis, 'ability' is genetically endowed, fixed and unobservable. 'Schooling', conditioned by family background and other controls, is the only direct variable by which to influence gain from education. Given variations in innate ability, individuals will differ in achievements and earnings even though the amount of schooling they receive is the same. Moreover, if each individual's education is

increased to the point at which the marginal (social) cost is just equal to the marginal (social) benefit, there will still be marked differences in the *levels* of individual achievement.

Hoxby shows that ability (she prefers 'cognitive skills') can be made plastic and that, by applying educational resources appropriately, the productivity of human capital can be raised across the whole of society, improving economic welfare and growth, and reducing inequalities in opportunities and in incomes.

She starts by considering the US Higher Education – Universities and Colleges – sector which over much of its range reflects a market-driven selective system in which higher measured ability applicants go to higher quality institutions that are resource-rich. If, as Becker's EPF assumes, education gain is influenced by (genetically-fixed) ability as well as by 'schooling', then

abler students will gain more per unit of schooling input than their less-able peers, and their unit cost of schooling will be *lower*. Moreover, as Hoxby's own work shows, the relative gain, as measured by income differentials, is persistent through time. So, given successful passages through college, higher ability students will, on average, have correspondingly higher life-time earnings expectations. The selective system is thus associated with significant private and social gains from higher education and also with income inequalities.

But, Hoxby asks, what does this tell us about the productiveness (or productivity) of the resource-intensive selective process? High ability students contribute heavily to the costs of their education, whether individually or with the help of their families and of college endowments. But they also consume educational resources heavily. The process becomes

circular and self-reinforcing: well-endowed colleges attract high ability students who bring resources with them and, in due course, become high earners themselves, no doubt making donations and endowments to their alma mater.

Hoxby's insight is to examine productivity in terms of value added: she relates the individual's estimated earnings gain to the individual's (marginal) social cost of the education resources consumed. She finds that, across the student population as a whole in the selective system, ranging from the poorly-endowed to the rich institutions, the pattern of unit gain in estimated earnings is essentially flat: high ability students gain more, but consume proportionately more resources in the process.

She then poses the crucial question that is at the heart of her Marshall Lectures: what if ability is not fixed but can be manipulated and increased? This would have the

potential to raise the gains from education and training with little overall increase in resources. In turn it would boost productivity in the economy, at the same time reducing income inequalities.

Alongside Becker's fixed-ability EPF, received wisdom in the economics of education emphasises the importance of early-years experiences for later education achievements. Drawing on recent developments in neuroscience, Hoxby shows that the brain's capacity to gain and enhance cognitive skills continues to increase through to early adolescence, around age 13½ years. The development of the brain's frontal lobe during this period is particularly important: it is the source of capacity for reasoning; planning; integration and self-control.

The outcome from this is that cognitive ability is not fixed and can be improved through appropriate education interventions in early

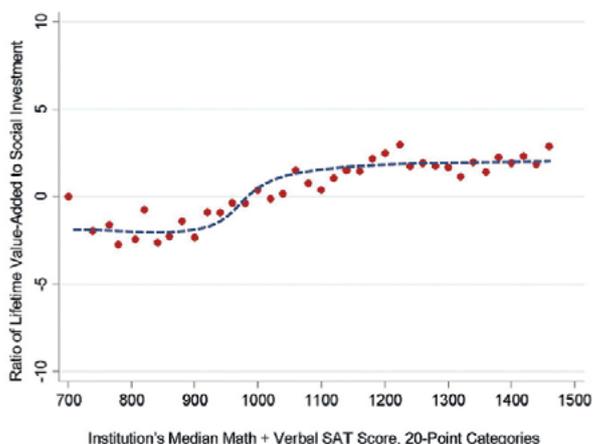
adolescence. As Hoxby points out, the irony is that school systems tend to cut-back on resources at just this stage in the education process: better teachers, by choice or because of professional responsibilities, tend to avoid working with early adolescents; and subject specialisation often leads to pupils being taught in larger, rather than smaller, classes.

Hoxby's assessment is that the marginal return to education is high in early adolescence; that school systems should recognise this and act on it; and that the scope for improving education outcomes, productivity, and economic growth and welfare are immense.

Tony Cockerill
6 August 2018

* Caroline Hoxby is the Scott and Donya Bommer Professor in economics at Stanford University and director of the Economics of Education Program for the National Bureau of Economic Research. Her research focuses on issues in education and public economics.

Average Productivity of a Dollar of Social Investment
= Lifetime Value-Added/Lifetime Social Investment
(relative to least selective institutions)





The Narrow Corridor to Liberty

Professor James Robinson*:

The 2017–18 Sir Richard Stone Annual Lecture

James Robinson is probably most well-known for his long-time collaboration with Daron Acemoglu, in particular, their popular book “Why Nations Fail”. His Sir Richard Stone Lecture, also co-written with Daron, concerned their investigation of the causes of why the comparative development of countries can differ so fundamentally. The emphasis of the Lecture, though, was on political rather than economic development and is the subject of their new book.

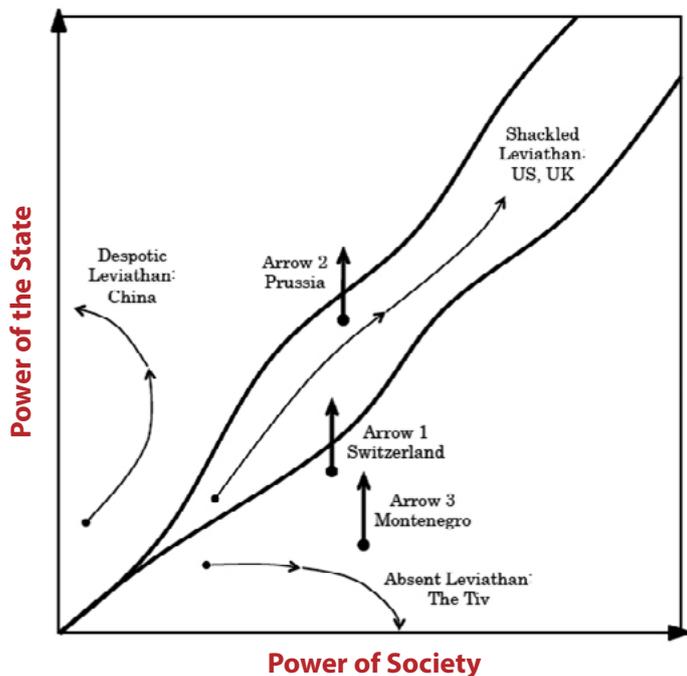
The particular interest is an attempt to understand why different parts of the world end up with different institutions and their variation across different states. To do so James used a super-stylised taxonomy based on a comparison of the relative strengths of state and society (see chart). Leading illustrative examples used were Iraq and Liberia, very weak states unable to ensure the basic provision of public goods such as education and security, and China, a very strong state but with highly centralised societal control. In contrast many countries in the West appear to

have both a strong state and civic society. The Lecture attempted to reconcile these disparate polities.

Many historic examples illustrate these contrasts. Gilgamesh, King of Uruk, created a rich and powerful city but at the expense of crushing civic society. The solution to his overweening power was to create a “doppelganger” Enkidu to provide the “checks and balance” thereby to give Uruk peace. This example was juxtaposed by the use of witchcraft by Tiv in Nigeria which had no state and ostracism by Athenians to discipline individuals or elites who were thought to be or to

be becoming too powerful. But sometimes society is not sufficiently strong to resist a charismatic leader, e.g., Mohammad, Kamehameha or Shaka Zulu.

Some countries are able to enjoy and sustain a virtuous balance between state and society. To explain the dichotomy between state and society James invokes a phase diagram for the power of the state against that of society. Importantly, he identifies a “corridor” containing those countries enjoying a productive interplay between state and society which is not a knife-edge unstable equilibrium.



The Corridor and the Red Queen Effect

- But sometimes a balance emerges, it's precarious but it isn't heading the Red Queen Effect.
- In some circumstances the strength of the strength of the state can feed on a the struggle to dismount the other, the become a lot stronger.
- This dynamic balance is the key to the liberty.
- How do places get into this corridor? about Europe...

A highly stylised game-theoretic model describes the interaction of players (“civil society” and “elite” as the state) and their conflict over the surplus produced. Three stable equilibria result: a dominant but relatively weak state, a dominant but relatively weak society and, finally, the “corridor” in which a strong state is in balance with a strong society.

Countries may move into and out of the “corridor”, Prussia being a case in point of the latter when after the Thirty Years War the state became relatively strong. Robinson argues that the initial conditions typically enjoyed by countries did not differ that greatly but the evolution of the relative strengths of state and society determines the particular institutional

structures to-day. This central claim of the Lecture is at variance with many others in that, for example, a strong state need not precede the creation of democratic institutions or state and society need not be in incompatible opposition. The Lecture and subsequent book will excite considerable interest and debate, in particular, among those concerned with comparative political and economic development.

Further details may be found at www.econ.cam.ac.uk/Stone

Professor Richard J Smith
31 July 2018

* Harris School of Public Policy, University of Chicago.

“State and society need not be in incompatible opposition.”



Morality and the Market

Keynes Lecture: Jean Tirole

The first Keynes Lecture, sponsored by the Economics Faculty's Keynes Fund, was given by Professor Jean Tirole, of the Toulouse School of Economics on 1 March 2018. His work covers a wide range of theoretical and applied economics: industrial organisation; regulation; corporate finance; financial markets and intermediation; organisational economics; macroeconomics and banking; and psychology-based economics. He was awarded the Nobel Prize for Economics in 2014.

This report of the Lecture has been prepared by three students of Economics on the 2018 International Spring Semester Programme of Pembroke College: Rachel Fisher, Vassar College; Emmanuella Kyei Manu, Princeton University; and Samantha Samoylenko, Wellesley College.

The International Semester Programme enables high-achieving undergraduates from universities and colleges worldwide to follow selected parts of a Tripos as fully matriculated members of the University.

Jean Tirole begins his discussion of morality and the market by making the argument that economics is a moral and philosophical science. This is justified through the normative aspects of economics, which are based on opinions

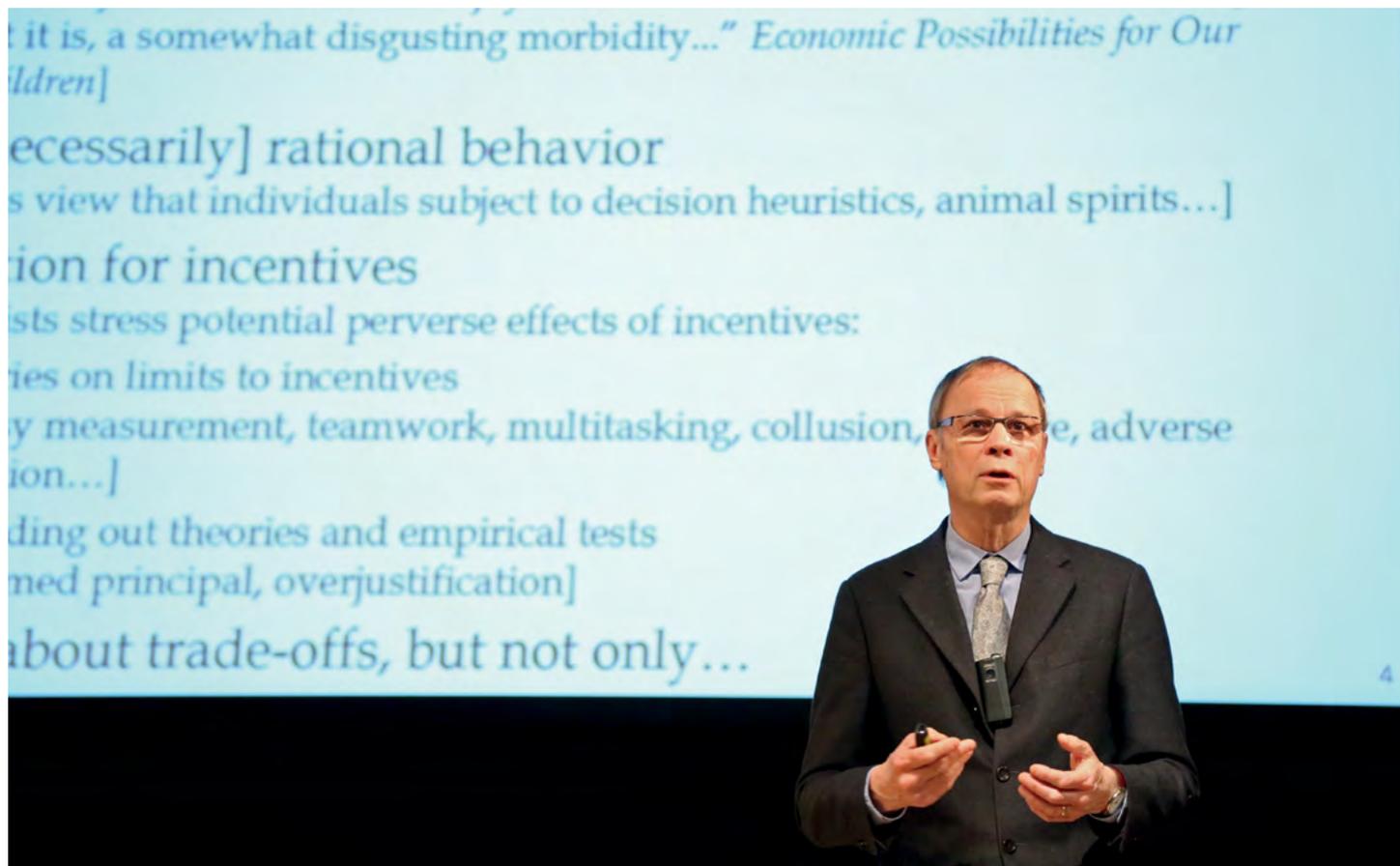
and judgements that aim to prescribe how the world ought to be. Economics is a moral and philosophical science, and therefore, the concept of morality can, and should, be applied to markets. Since normative economics is used in the making of public policy, morality is at the heart of public policy, and at constant debate.

Are markets moral? Is the market just to put a price on goods and services and sell them? Some say the market is essential for both society and the government to function. Others question where the line is drawn between goods with a price, and dignity. Kant's moral theory on dignity and price asserts that dignity has a value that exceeds any price. There are certain goods and services that, it may be agreed, should not be put for sale and given a price – for example babies for adoption, surrogacy, votes in an election.

Arguments for why some markets lack morality centre on failures which limit efficient exchange between consenting adults. One such failure is the presence of externalities; where two parties' actions affect a non-consenting third party – for example, pollution, child labour, voting, or the image of another person. Another is imperfect competition, which may give one party extensive market

power: this can lead to price gouging, which has negative effects on consumers and can compel contracts under duress. Imperfect markets also imply asymmetric information, where all parties do not have the information to be able to make informed decisions. Markets may also lack morality due to externalities, which arise from the failure of individuals to pursue their own self-interest. The main cause of this is a lack of self-control – people who smoke may not consider the negative effects on their own health, but rather their immediate gratification. Since it can be argued that markets may be made less than moral by such market failures, policy attempts to correct them by using regulation.

But, Tirole argues, individuals have the potential to base their moral guidelines on less universal values like emotion, belief-based disgust, tradition, etiquette, respect for authority, and group loyalty. Such feelings are an unreliable source of ethical inspiration that can lead to the condemnation of victimless acts, like gay marriage. Moral assertions on others override people's freedom and basic rights. His view is that, despite what may be an individual's moral stance, markets do exist and there is no benefit in pretending they do not. Instead, it is more important to focus on their regulation. The



alternative can be unregulated, untaxed, underground markets, which is more undesirable and potentially more dangerous.

He develops a model for how individuals make the decision to undertake a moral or pro-social action. The factors that are exogenous to his model are the cost to the individual of the action, its personal moral value to them, and their self-control. Part of the benefit from the pro-social action is an externality that spills over into society; each individual has an importance that they assign to their social image. Tirole models how individuals make the decision to engage in pro-social behaviour by relating the individual's net benefit from the action to its expected value in society. An individual will

be likely to engage in pro-social behaviour if they have a mixture of: high self-image; high self-control; low cost of pro-social behaviour; and high perceived social benefit, perhaps together with a low initial personal reputation that can be enhanced.

There are several insights to be drawn from the model. First is a decision of when to seek or avoid moral choices; some might be heavily influenced by image or reputation and behave 'too morally' for their own sake. Moral preferences can be elicited by directly asking the minimum amount of money that an individual would require in order to take or reject a specific action. Second, narratives can be used to influence individuals' actions. A positive

narrative appeals to moral precepts by asking questions such as: 'what if that person were you?' or 'what if everyone did that same thing?' A negative narrative changes beliefs by downplaying the harm of the action, or by blaming others for it.

In conclusion, Tirole outlines three pillars of society: creation of value; accountability, and social responsibility. Value is created when individuals pursue their own self-interest, as per Adam Smith. Referencing Pigou, the State needs to be held accountable to correct market failure. Finally, since it is difficult for the State to address all such failures, society must have a good conscience and be willing to act morally.

14 August 2018



GDP – Grossly Distorted Picture?

There is next to no sign of digitalisation in the economic statistics.

The rapidly growing interest in how to measure the economy, and in the intricate details of how economic statistics are constructed, is both surprising and revealing. For some decades now, economists have been cheerfully downloading GDP and other national accounts figures without giving much thought to the statistical niceties. The teaching of national accounting in the undergraduate curriculum has faded away.

Yet in the past two or three years, the amount of academic research in this area has ballooned – including among economic sociologists as well as economists. There is also much wider public interest. I spoke in the Cambridge series in this year's Hay Festival to a lively audience of about 300, presumably normally more interested in literature than in GDP. There have been many popular books recently on GDP and economic measurement – many highly critical, so my 2014 *GDP: A Brief But Affectionate History* looks rather kind to our key economic indicator by comparison. There has even been a high profile prize, the Indigo Prize, to encourage the development of alternative approaches to economic measurement.

Ever since the national accounts were codified in the post-war years, there have been some well-known criticisms of the definitions and conventions, including the exclusion of unpaid work in the home, and the omission of environmental

externalities and resource depletion. These have been much debated – for example in the 2009 Sen-Stiglitz-Fitoussi report – and then largely ignored at least in terms of policy.

Now, these old critiques are back on the agenda. One reason is the lacklustre post-financial crisis recovery, resulting in an absence of any real income growth for millions of households. To many people, being told the economy was fine because of growth in GDP discredited the figures, or at least the story being woven around them. Indeed, the crisis also prompted some well-justified scepticism about the apparent contribution of the finance sector to the economy, a contribution increased by a methodology change implemented in the UK in 2008.

The second reason is the digital economy. Smartphones and pervasive internet access are part of everyday life and are transforming business models. Yet there is next to no sign of digitalisation in the economic statistics. There has been no data collection on quite a lot of the new activities. There are acute forms of classic dilemmas about innovation – such as new goods problems in price indices: for example, is the price of a camera the price of a camera or the much lower price of the app and the chip inside a smartphone? Zero priced goods like those we all access online constantly pose problems for measuring aggregate expenditure. Marketed activities such as travel agency are migrating across the production boundary into household

work. The quality adjustment and product differentiation challenges make a compiler of the GDP deflator want to weep. These various measurement challenges mean statistics might be a small part of the explanation for the 'productivity puzzle', the flat-lining post-crisis productivity trend.

These issues came to a head in the UK with the publication of Sir Charles Bean's independent review of economic statistics, which recommended a programme of work for the Office for National Statistics to respond to the measurement challenges old and new. It set up the Economic Statistics Centre of Excellence at NIESR, where I run the 'measuring the modern economy' programme. The excitement of digital should not distract attention from the older measurement challenges, and ONS is also in the lead internationally in compiling measures of natural capital. I hope to be taking forward research on the measurement of natural and social capital in the near future, as well as continuing to explore whether a mass production age accounting framework can function for the digital age – or whether in fact a different approach is needed to help us codify and understand the significant structural economic changes we are experiencing.

Diane Coyle
3 August 2018

* Dr. Diane Coyle is Bennett Professor of Public Policy in the Department of Politics and International Studies.

Better Economics teaching? CORE!

Economics is 'not to be seen through the distorting lens of a limited set of traditional paradigms'

Diane Coyle, who writes opposite on developments in the concept and measurement of GDP, is leading the work of the newly-endowed Bennett Institute for Public Policy in the Department of Politics and International Studies. Diane is an economist with wide experience in public service, in journalism and the broadcast media, in the private sector, and as an academic, most recently as Professor of Economics at Manchester University. She was made CBE in the 2018 New Year's Honours List for 'services to the public understanding of economics'.

Diane is a founding contributor to the Curriculum Open-Access Resources in Economics (CORE) project. Led by Professor Wendy Carlin of University College, London, the CORE project aims to develop and provide free access to material for an introduction to an integrated study of economics, so that the world can be seen 'as it is'. Integration involves the use of real-world data and information for student-centred exercises and study that is not to be seen through the distorting lens of a limited set of traditional paradigms, and which relates to current regional and global issues, such as environmental damage, exploitative power, and inequalities. These issues require economics to be used alongside economic history and cognate physical and social sciences in order for them to be fully understood and analysed, and for effective policy measures to be developed. Critics argue that, as economists, many of us have been brought

up on a frugal diet of neoclassical microeconomics that is characterised by limiting assumptions about self-interest, rationality, and full-employment equilibrium in which economic efficiency and welfare are maximised. Marginal analysis is crucial to this process. Market failure, associated with third-party impacts as a result of externalities or with imperfect competition, can be regarded as an inconvenience that needs appropriately-judged policy interventions so that the equilibrium of the elegant model can be regained. From this perspective macroeconomics is seen a relative newcomer, with little integration between the Keynesian, Monetarist, and evolving paradigms, and almost none with microeconomics.

Any disillusionment we may have felt about the standard economics curriculum, as evidenced by textbooks and lecture courses, was reinforced in dramatic fashion by the financial crisis of 2008/09, about which Queen Elizabeth II asked: 'Why did nobody notice it?' Economics was seen as being obsessed with mathematical models and analytical frameworks that had little, if any, relevance to major economic, social, technological and political issues.

The crisis triggered urgent action to assist the public understanding of economics by making clear the complexity and relevance of current research and by bringing introductory study plans and textbooks up-to-date. CORE has been at the heart of this. Its major text, *The Economy*, first published as an e-book in 2014 and subsequently up-dated, consists of 22 units which bring together six themes: history, instability and growth; the global economy; inequality; environment; innovation; and politics and policy. The first unit is 'The capitalist revolution'. Diane's main contribution has been to 'Innovation, information and the networked economy' (Unit 21). A second e-book, *Economy, Society and*

Public Policy, intended for those taking economics as a minor, as opposed to a major, subject for their course of study, has recently been published.

Some of those who support the drive for more relevance and empirical realism in the teaching of economics argue that CORE has not (yet) gone far enough. In particular, it is asserted that the approach is still weighted towards Pareto efficiency and market solutions. The very act of preparing data for analysis, it is said, risks introducing implicit framework bias. CORE's methodology, while integrative, is said to lack pluralism: different methodological approaches are excluded and issues such as power and politics; social class; and feminist economics are largely ignored. Moreover, little heed is given to educational philosophy in the teaching of economics (see Mearman et al. 2017).

Diane, in addressing the charges of irrelevance and the over-weening influence of the neoclassical paradigm, demonstrates the diversity, complexity and social importance of economic research and shows how, within CORE's framework, the issues of technological disruption, market distortions, and appropriate public policy interventions have a central place in economics teaching. She also notes critically the gender gap in the economics profession (see Coyle 2018).

CORE's programmes have been widely adopted – so far by more than one hundred universities and colleges worldwide. But not, to date, by Oxford or Cambridge.

Tony Cockerill

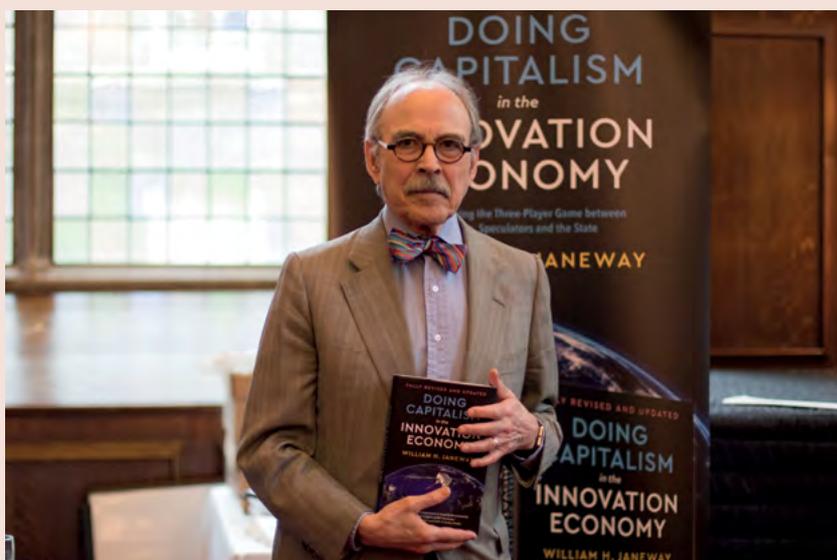
21 August 2018

References

Coyle, D (2018). 'In defence of the economists'. *Prospect*, April.

Mearman, A, D. Guizzo and S. Berger (2018). 'Whither political economy? Evaluating the CORE project as a response to calls for change in economics teaching'. *Review of Political Economy*, May.

The Digital Revolution and the State: The Great Reversal



The Digital Revolution, now in process of transforming our capitalist economies as profoundly as the previous technological revolutions - from coal and cotton through the railroads and on to electrification - was sponsored in all of its particulars by the American state, specifically the U.S. Department of Defense. Now it has taken on a life of its own, no longer dependent on the sponsorship of the American state but rather attacking the authority of that state - and others - at multiple levels and along multiple dimensions, while also generating new digital platforms that are disrupting ecosystem after ecosystem in the market economy.

Directly through automation of work and, at one remove, through the radical reduction of technological frictions which, in turn, vastly increases the integration of international supply chains for goods and services - including especially labour services - and the integration of financial markets and institutions, the Digital Revolution has challenged the capacity of the state to buffer its constituents from its economic consequences. Especially in the Anglo-American world, it has also contributed substantially to increases

“The Digital Revolution has challenged the capacity of the state to buffer its constituents from its economic consequences.”

in inequality not seen since before the Great Depression.

This great reversal in the relationship between the state and the Digital Revolution has been amplified by the renewed deligitimization of the American state as an economic actor, following the transient role it played in constructing a floor under the economic consequences of the Global Financial Crisis (“GFC”). The GFC dramatically demonstrated that the markets of the economy depend for continuity on institutions external to the markets that command political legitimacy: central banks and courts, most notably. The survival and success of capitalism through the 20th century

turned on the hard-earned coexistence of markets with increasingly democratic political processes. The political events of 2016 - the Brexit Referendum and Trump’s election - show how fragile that coexistence is, subject to discontinuous shocks when market outcomes overwhelm the capacity of governments to respond.

Even as recovery from the Great Recession establishes itself, the extreme distributional consequences of the Digital Revolution persist and dominate. While the digital giants extend their global reach across markets, maintaining competitive markets will require legitimate state engagement, even as it did when the second industrial revolution in the late 19th century spawned monopolies and cartels around the world and when the Great Depression smashed markets and stressed democratic institutions to the breaking point.

Dr. William H. Janeway
3 September 2018

William Janeway is an affiliated member of the Faculty of Economics. His book, *Doing Capitalism in the Innovation Economy: Reconfiguring the Three-Player Game between Markets, Speculators and the State*, was published in May 2018 by Cambridge University Press.



The Economics of Religion in India

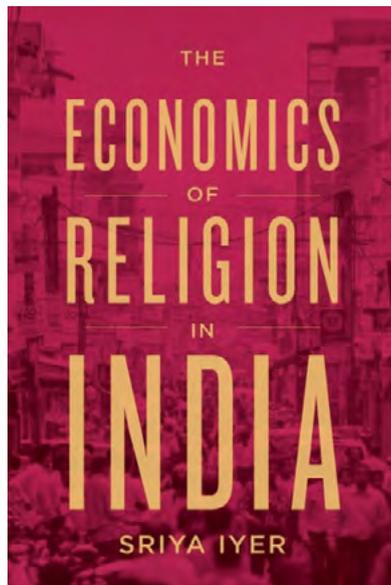
Religious organizations may play a positive role in India's socioeconomic development.

Sriya Iyer is a Janeway Fellow in Economics and Affiliated Lecturer in the Faculty of Economics; and a Bibby Fellow and College Lecturer at St. Catharine's College, Cambridge. Her research is broadly in the fields of development economics, economics of religion, demography and education; and her research also examines how economics interacts with related social science disciplines.

Sriya published her book on 'The Economics of Religion in India' in September 2018*. Here she discusses the origins, methods, results and policy implications of her important research.

I use economic methods to study religion. Religion is not a popular target for economic analysis. Yet the tools of economics can offer deep insights into how religious groups compete, deliver social services, and reach out to potential converts—how, in daily life, religions nurture and deploy market power. I study this in India, one of the most religiously diverse countries in the world.

Growth, inequality, education, technology, and social trends both affect and are affected by religious groups. My research project began over ten years ago, and includes a survey of almost 600 Hindu, Muslim, Christian, Jain and Sikh religious



organizations in seven Indian states; to reveal the many ways religions interact with social welfare, economic development and political conflict. The survey examines both religious and non-religious service provision in India in areas such as education, health, employment, food distribution, child-care, and other areas. I document differences across religions in the provision of these religious and non-religious services, and how changes in these services might also be related to income inequality and religious competition.

After India's economy was liberalized in 1991 religious organizations substantially increased their provision of services, in some ways breaching the gap left by inadequate state provision. My data indicate that religious violence is more common

where economic growth is higher, apparently because growth increases inequality. As inequality leads to social polarization, religious doctrines become more extreme. But there are also hopeful patterns as well, for example women's religious and community participation is on the rise, contributing to their welfare. Religious organizations, on balance, may play a positive role in India's socioeconomic development.

An important issue is the role of religious education, especially the difficult question of how to reform madrasa (Muslim religious schools) education in India in order to widen the teaching of science, computers and mathematics. How to balance religious education with the teaching of secular subjects, as well as how to provide adequate teacher training are important concerns for religious schools if these schools are going to continue to be widely used.

While researching in this area of economics poses complexities and challenges to the hopeful researcher, nevertheless the power of economics can be applied to help illuminate some of societies' deepest-held beliefs and dynamics. There is still much to learn about countries like India and other pluralistic economies the world over.

* Sriya Iyer (2018). *The Economics of Religion in India*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press.



Systemic Risk-shifting in Financial Networks

The empirical evidence is that, in managing risk, banks form stronger financial connections to banks that face more similar exposures to themselves.

Financial organizations seek to hedge their exposures by writing contracts with other financial organizations, whom become their counterparties. But this generates a new source of risk. If one of their counterparties fails then this counterparty may not make good on the contract, and the hedge may fail. Thus, if an organization faces a source of risk it is seeking to hedge, it is intuitive that it should seek a counterparty not exposed to the same risk. This reduces the possibility that the insurance the hedging contract provides will fail when it is needed. Indeed, the conventional wisdom is that for this reason financial organizations will prefer counterparties with less correlated underlying exposures. However, there is anecdotal evidence from the financial crisis running contrary to this:

- In the United States, over-the-counter (OTC) derivatives trading was concentrated at the five largest banks that were among the most exposed

to housing market risks (2011, Financial Crisis Inquiry Commission).

- US investment banks used monoline insurers to hedge their subprime mortgage risk, but these monoline insurers, through their asset management and collateralised debt obligation (CDO) arms, increased their exposure to subprime mortgage risk at the same time (SEC, "Risk Management Reviews of Consolidated Supervised Entities," internal memo to Erik Sirri and others, November 6, 2007, p. 3)¹.

In an ongoing joint project, together with researchers at the Bundesbank / University of Cape Town and MIT, we seek to better understand these phenomena. First, we gather evidence to investigate whether the anecdotes are anomalies, or indicative of something more systematic. Having found evidence suggesting the latter, we build a theoretical model to better understand the motives

of financial organizations that could lead to this.

In the empirical component of the paper we exploit supervisory data from the German Credit Register to examine interbank loans between German commercial banks. This provides a measure of the strength of the financial links between different pairs of commercial banks in Germany. We then consider the loan books of these banks, and see which banks lend to similar sets of firms. The loan book portfolio similarity of two banks is found to be strongly correlated with the amount of interbank lending between them. This provides some systematic evidence that is consistent with the anecdotal evidence above---banks form stronger financial connections to banks that face more similar exposures to themselves.

In our theoretical model, we first consider the benchmark case of socially efficient financial networks (which maximize the expected sum of equity and debt value in the financial system). A standard

way to do this, which we follow, is to consider what a hypothetical benevolent social planner would do. Our social planner faces a fundamental trade-off. Connections are essential for hedging risks and preventing failures from relatively small shocks, but carry the risk that these same connections act as a conduit for shocks and can lead to cascades of failures after large shocks. We show the social planner optimally balances these forces in two ways. First, the social planner avoids creating strong links between banks facing similar exposures. Second, the social planner chooses a financial network structure that exhibits “firebreaks.” Banks are grouped into clusters with strong links within cluster, enabling them to hedge shocks, and with only weak links across groups that make sure that very large shocks create failures that are still contained within each cluster.

The analysis of the social planner’s problem suggests that the correlations found in the empirical part of the paper (and anecdotal evidence from the financial crisis),

are inefficient. We then consider the equilibrium, strategic behaviour by the banks. There are strong externalities in this environment. When a bank takes on more risk, its counterparties suffer. These effects are not internalized and would normally be expected to inhibit efficient outcomes from occurring in equilibrium. Surprisingly, despite the presence of these strong externalities, the efficient solution is an equilibrium when banks seek to maximise their expected sums of equity-holder and debt-holder values. Banks cannot profitably deviate from these efficient outcomes because of the interlinkages in the financial system—deviations increase the expected number of failures, and enough of the resulting losses flow back to a deviating bank through the financial system for these deviations to be unprofitable. Again though, this is at odds with the empirical findings.

However, if banks instead maximise expected equity value only, the social optimum is unstable. In this case, banks seek to create strong connections to other banks facing

similar exposures to themselves, even though doing so increases systemic risk. The intuition is that although this can prevent hedges from working effectively, this only happens when the bank is already failing and hence these losses are passed onto debt holders.

The practice of shareholders undertaking activities that pass risks onto debt holders is known in finance literature as risk-shifting. This is a well known and studied phenomenon. The contribution of the paper is to show that this operates at the level of financial networks, with important implications for systemic risk. Risk-shifting motivates banks to correlate their failures with their counterparties, despite it creating systematic risk.

Matthew Elliott

Dr Elliott acknowledges the contribution of his undergraduate Research Assistant, Luther Yap (Hughes Hall), to this article.

1. As an example, Merrill Lynch was heavily exposed to the subprime crisis and hedged that exposure by writing Credit Default Swap (CDS) contracts with monoline insurer ACA. But, ACA was also long on the housing market and ended up being downgraded by S&P to junk status. Ultimately, Merrill was taken over by Bank of America.



Professor Geoffrey Harcourt

In the Queen's Birthday Honours List this year, distinguished Cambridge economist Dr Geoff Harcourt was made a Companion in the General Division of the Order of Australia (AC). The AC is the highest order of the Orders of Australia. Geoff's citation is 'for eminent service to higher education as an academic economist and author, particularly in the fields of Post-Keynesian economics, capital theory and economic thought'. Currently at the University of New South Wales, Geoff has Emeritus appointments in Cambridge as Reader in Economics and Fellow of Jesus College. He came to Cambridge from the University of Melbourne in 1955 to work for his doctorate; he was a full-time member of the Faculty of Economics between 1982 and 1998. He has written extensively on the work of Keynes, Joan Robinson, and other Cambridge economists and has made seminal contributions to our knowledge of income, capital formation, profits and economic growth.

Tony Cockerill
5 September 2018



Professor Kenneth Arrow (1921 – 2017)

Kenneth Arrow, who died last year aged 95, is among the greatest economists of the 20th century. His work and interests within Economics were wide and deep, covering in particular, social choice; risk and uncertainty; general equilibrium analysis, and public policy.

While he spent most of his academic career at Stanford, his Cambridge connection came as a Fellow of Churchill College, in 1963-64, 1970 and 1986. It was during a shorter visit in 1973 that he met (now Sir) Partha Dasgupta. Both were working, independently, on aspects of John Rawls'; notion of the 'Just Savings Principle' (JSP), which forms part of his utilitarian social welfare function. This function favours maximising the expectations of the least advantaged groups in society; the JSP has inter-generational implications. Encountering a fierce intellect, Dasgupta found their intense debates 'a terrifying experience', despite it being cushioned within a kind and humble persona*.

One of Arrow's later outstanding theoretic and empirical contributions is the so-called 'Impossibility Theorem', which demonstrates that no voting system is capable of leading unequivocally to collective decisions that reflect the desires of individuals. An

implication of this is that government needs ethical standards in order to guide the process of social choice. This applies in particular to the market mechanism, which can only function well when properly regulated.

Arrow was awarded the Nobel Prize for Economics 1972, together with Sir John Hicks. In later life, Arrow became active in issues of ecological economics, with particular concern for the developing world.

Arrow first studied mathematics and statistics before taking up Economics at Columbia, where he obtained his doctorate. After war service in the US Air Force (as a weather analyst and forecaster) and further graduate work, he took up a post in Economics at Stanford in 1951. He moved to Harvard in 1968, returning eleven years later to Stanford as Joan Kenney Professor of Economics and Professor of Operations Research, where he remained for the rest of his life.

Tony Cockerill
4 September 2018

* Professor Sir Partha Dasgupta's tribute to Kenneth Arrow, delivered at a Plenary Session of the Vatican's pontifical Academy of Social Sciences on 29 April 2017 is at: <http://www.econ.cam.ac.uk/events-files/news/docs/KJA.pdf>.



Professor Sir James Mirrlees (1936 – 2018)

James Mirrlees, who died in Cambridge on 29 August this year, aged 82, was one of the most outstanding economists of his generation, much liked and respected as researcher and teacher by both colleagues and students. As an undergraduate, he read Mathematics at Trinity, having previously taken a degree in the same subject at Edinburgh. On graduation he moved to Economics to work for his doctorate on economic planning, under the supervision of Richard Stone. Following government advisory work in Swaziland and Pakistan and a further spell in Cambridge, in 1968, aged 32, he was appointed Professor of Economics and Fellow of Nuffield College at Oxford.

He returned to Cambridge and to Trinity as Professor of Political Economy in 1995. On retirement from his Cambridge post, he became the Founding Master of Morningside College in the Chinese University of Hong Kong. Mirrlees received the Nobel Prize in Economics, jointly with William Vickrey, in 1996. The citation for the award was for his work in 'information asymmetry'. He was knighted in 1997.

Today's undergraduates encounter Mirrlees' work particularly in optimal taxation and in cost-benefit analysis. His work with Peter Diamond of MIT (himself a Nobel Laureate in 2010) on the principles for optimal taxation led to the Diamond-Mirrlees efficiency theorem (1971). Recognising the inevitability of government taxation on commodities for general revenue purposes, the theorem demonstrates that, in order to maintain efficiency, the price distortions caused by taxation must fall not on the production side of the economy, but rather on consumers.

In cost-benefit, Mirrlees' work at Nuffield with Ian Little on 'Project Appraisal and Planning for Developing Economies' (1974) remains the foundation for investment appraisal – and not only in the context of economic development.

A full appreciation of Mirrlees and his work will appear next year in *Cambridge Economics*.

Tony Cockerill
5 September 2018

We welcome

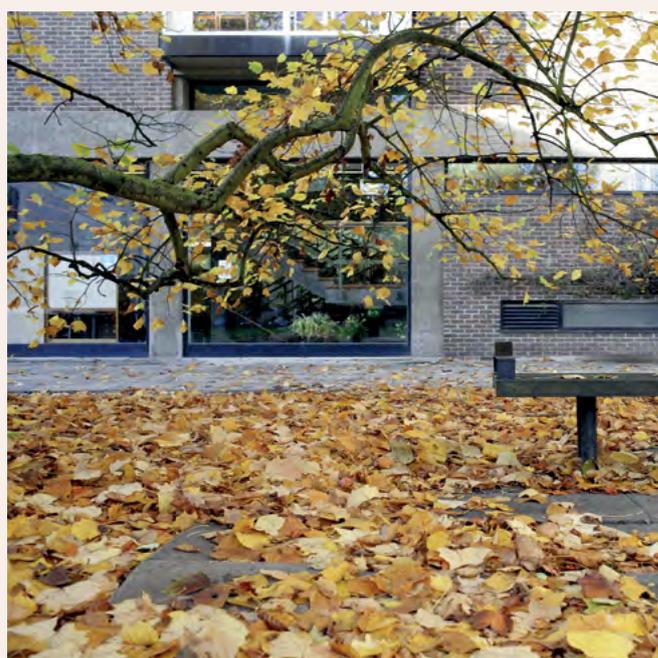
Two new University Lecturers:

Dr Noriko Amano Patino from Yale. Noriko's specialisms are in Labour Economics and Applied Econometrics. She completed her doctorate with a dissertation on 'Dimensions of Inequality', looking particularly at household diets and nutrition; Affirmative Action legislation and wage outcomes; and influences on the widening gender wage gap.

Dr Weilong Zhang from the University of Pennsylvania. Weilong works in the fields of Labour Economics, Education Economics, Family Economics and Psychology Economics. His recent publications are on the effects of local and universal minimum wage policies, and on the relationships between personality traits, household bargaining weights and wage outcomes.

The Pitt Professor for 2018–19:

Professor Naomi Lamoreaux. Naomi is visiting from Yale, where she is Stanley B. Resor Professor of Economics and Professor of History. Her work is on US Economic, Business and Technological History. Her current research interests include patenting and the market for technology in the late nineteenth and twentieth century U.S., business organizational forms and contractual freedom in the U.S. and Europe in the nineteenth and twentieth centuries, the public/private distinction in U.S. history, and the rise and decline of innovative regions.



Recent promotions have been

As Professor: **Dr Vasco Carvalho**

As University Reader: **Dr Tiago Cavalcanti; Dr Meredith Crowley; Dr Matthew Elliott; Dr Sara Horrell** and **Dr Pontus Rendahl**

As University Senior Lecturer: **Dr Petra Geraats**

We say many thanks and farewell to

Professor Hamish Low
Professor Coen Teulings

Contact

Editor:

Professor Tony Cockerill

Editorial Team:

Toke Aidt, Edoardo Gallo, Craig Langton, William Peterson,
Richard Smith, Susan Wan

econalum@hermes.cam.ac.uk